City Of Merced Wastewater Collection System Master Plan

DRAFT ENVIRONMENTAL IMPACT REPORT

CHAPTER 4.0 ALTERNATIVES
September 2020

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4.0 ALTERNATIVES

In accordance with California Environmental Quality Act (CEQA) Guidelines Section 15126.6, this chapter of the Environmental Impact Report (EIR) provides the City of Merced's (City's) consideration of reasonable alternatives to the Program. The following sections present the alternatives analysis that the City used to evaluate alternatives compared to the Program and proposed Projects and to select the environmentally superior action alternative. The following sections discuss the methodology and analysis used by the City in selecting alternatives, the alternatives considered, the alternatives considered but rejected from further consideration, and an evaluation of the alternatives for their potential to reduce one or more significant impact of the Program, and finally identify an environmentally superior alternative.

4.1 ALTERNATIVE ANALYSIS

According to the CEQA Guidelines (14 California Code of Regulations [CCR] Section 15126.6(a)), the discussion of alternatives, "shall describe a range of reasonable alternatives to a project, or its location, that would feasibly obtain most or all of the basic objectives of the project but would avoid or substantially lessening the significant effects of the project." It is the responsibility of the Lead Agency to select and publicly disclose the reasoning for selecting those alternatives. There is no ironclad rule governing the nature or scope of the alternatives to be discussed other than the rule of reason. Although, an EIR must contain a discussion of "potentially feasible" alternatives, the ultimate determination whether an alternative is feasible or infeasible is made by the Lead Agency's decision-making body (Public Resources Code [PRC] Section 21081[a][3]).

The CEQA Guidelines indicate that the range of alternatives included in this discussion should be sufficient to allow decision-makers a reasoned choice between alternatives and the proposed project. In determining what alternatives should be considered in the EIR, it is necessary to acknowledge the goals and objectives of a project, the project's significant effects, and unique project considerations, as well as the feasibility of the alternatives. This section outlines the alternative identification selection process and evaluates feasible alternatives following the CEQA Guidelines requirements.

4.1.1 No Project Alternative

CEQA Guidelines Section 15126.6(e)(1) requires that the No Project Alternative be described and analyzed, "to allow decision makers to compare the impacts of approving the project with the impacts of not approving the project." The No Project Alternative analysis is required to discuss "the existing conditions at the time the notice of preparation is published… as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services" (Section 15126.6(e)(2)).

As directed by the CEQA Guidelines [Section 15126.6(e)(3)(B)], when a project consists of a development project on identifiable property, the "no project" alternative is the circumstance under which the project does not proceed. If disapproval of the project under consideration would result in predictable actions by others, such as the proposal of some other project, the "no project" consequence should be discussed.

The No Project Alternative assumes that if selected, the Program would not be implemented, the wastewater collection system within the City of Merced would remain operating under existing conditions, and limited connections would be available to future wastewater connections. It also means that developers or others may explore other means to provide sewer service (e.g. septic). None of the environmental impacts identified in Chapter 3.0, Sections 3.1 through 3.15 would occur; however, additional impacts could result from the existing system reaching capacity, aging, or conflicting with the City of Merced Vision 2030 General Plan (2030 General Plan). Furthermore, implementation of the No Project Alternative would not meet any of the Program objectives.

The Program objectives would not be accomplished if the Program were not approved and the No Project Alternative were selected. Implementation of the No Project Alternative would not provide the benefits of improving, upgrading, or replacing the wastewater collection system within the City of Merced. No new infrastructure would be built to convey and treat wastewater under the No Project Alternative, and therefore, the City would not be able to meet the future growth needs projected within the 2030 General Plan. The No Project Alternative would not meet any of the stated Program objectives and would not address the City's need for ensuring a reliable wastewater collection system capable of meeting the increased sewer capacity needs of the area. Additionally, the No Project Alternative would likely encourage other forms of sanitary systems, such as septic, that conflict with Central Valley Regional Water Quality Control Board (CVRWQCB) policy for regionalization of wastewater treatment (Table 4.1-1, Objective #9) (CVRWQCB 2009).

Although no direct environmental impacts would occur from the No Project Alternative, the wastewater collection and treatment system would continue to operate at existing capacity, which would not be sufficient to serve future growth identified in the 2030 General Plan. Currently, the wastewater collection system within the City, including both at the Wastewater Treatment and Reclamation Facility (WWTRF) and throughout the existing pipeline system, is reaching capacity. Keeping the system at this capacity would not allow the City to expand populations or accommodate future growth identified in the 2030 General Plan in any way. This would result in a greater impact to land use and planning and population and housing resources compared to the Program. Additionally, aging infrastructure within the existing collection system could potentially become a hazard and lead to cracks and pipe breakdown if not properly maintained and/or upgraded when needed. This could lead to additional environmental impacts and emergency situations. This could present impacts to air quality, hazards, hazardous materials, and wildfires, hydrology and water quality, public services and utilities, and transportation. If there is a failure(s) of existing facilities, a failure could affect the human environment due to broken pipes or could result in reduced capacity at the existing WWTRF due to things like power outages, floods, breakdowns.

4.1.2 Action Alternatives Considered

The City's methodology for identifying potential action alternatives included consideration of the following: Wastewater Collection System Master Plan (WCSMP) public and stakeholder feedback from City Council meetings and administrative draft iterations and WCSMP input from 2013 to 2017 (City of Merced 2015; 2016; 2017), CEQA Notice of Preparation scoping public and agency written comments (Chapter 1.0), and professional judgement for feasible alternatives that would reduce environmental impacts while still meeting most or all of the Program objectives.

The 2017 WCSMP was developed through multiple iterations and refinements beginning in 2014 (City of Merced 2017). Appendix E provides a detailed overview of the WCSMP alternative development process and the ultimate

selection of the Program and proposed Projects in the 2017 WCSMP (City of Merced 2015; 2016; 2017). Table 1 in Appendix E presents a summary of the identified alternatives considered and illustrates the evolution of alternative concepts and naming throughout the planning process. These sub-alternatives were ultimately developed to form the Program (the proposed Projects), the Campus Parkway Alternative, and the North Merced Satellite Treatment Facility Alternative (as described in the following sub-headings) based on considerations of alternate alignments and growth scenarios within the City's 2030 General Plan Specific Urban Development Plan/Sphere of Influence (SUDP/SOI).

The following list of action alternative concepts were identified by the City as potentially reasonable alternatives to further evaluate their ability to meet Program objectives and assess their feasibility. If they were found to be feasible and meet most the Program objectives, they were then considered for their ability to reduce one or more significant impacts associated with the Program. These action alternatives include the following:

- North Merced Satellite Treatment Facility[1] Alternative
- Decentralized Treatment Facilities Alternative
- Campus Parkway Trunk Alternative
- Recycled Water Reclamation Alternative
- Reduced Build-Out Sewer Capacity Alternative
- Parallel or Upsized Existing System Alternative

The following subsections provide a brief description of each alternative.

4.1.2.1 North Merced Satellite Treatment Facility Alternative

The North Merced Satellite Treatment Facility Alternative was derived as a part of the 2017 WCSMP development. The alternative would consist of building a second wastewater treatment facility in north Merced to accommodate new wastewater associated with development as the area grows to reasonable build-out of the SUDP/SOI. The new facility would require the City to purchase the industrial zoned property located west of the intersection of West Yosemite Avenue and State Route (SR) 59 (Figure 4.1-1). The facility would initially accommodate 4 to 5 million gallons per day (Mgal/d) wastewater flows with plans to expand to a maximum capacity of 14 to 15 Mgal/day at reasonable build-out, while the existing WWTRF would accommodate wastewater flows from the rest of the SUDP/SOI with an initial expansion to 16 Mgal/day and subsequent expansion as reasonable build-out is neared to reach a maximum capacity of 20 Mgal/day. Between the two treatment facilities the alternative would achieve the total 34 to 35 Mgal/day treatment capacity required to meet reasonable build-out conditions under the 2030 General Plan. Additionally, this alternative would require new effluent disposal and/or reuse facilities and discharge permits to serve the new treatment facility.

[1] WCSMP Plan B Alternative, from the 2017 WCSMP

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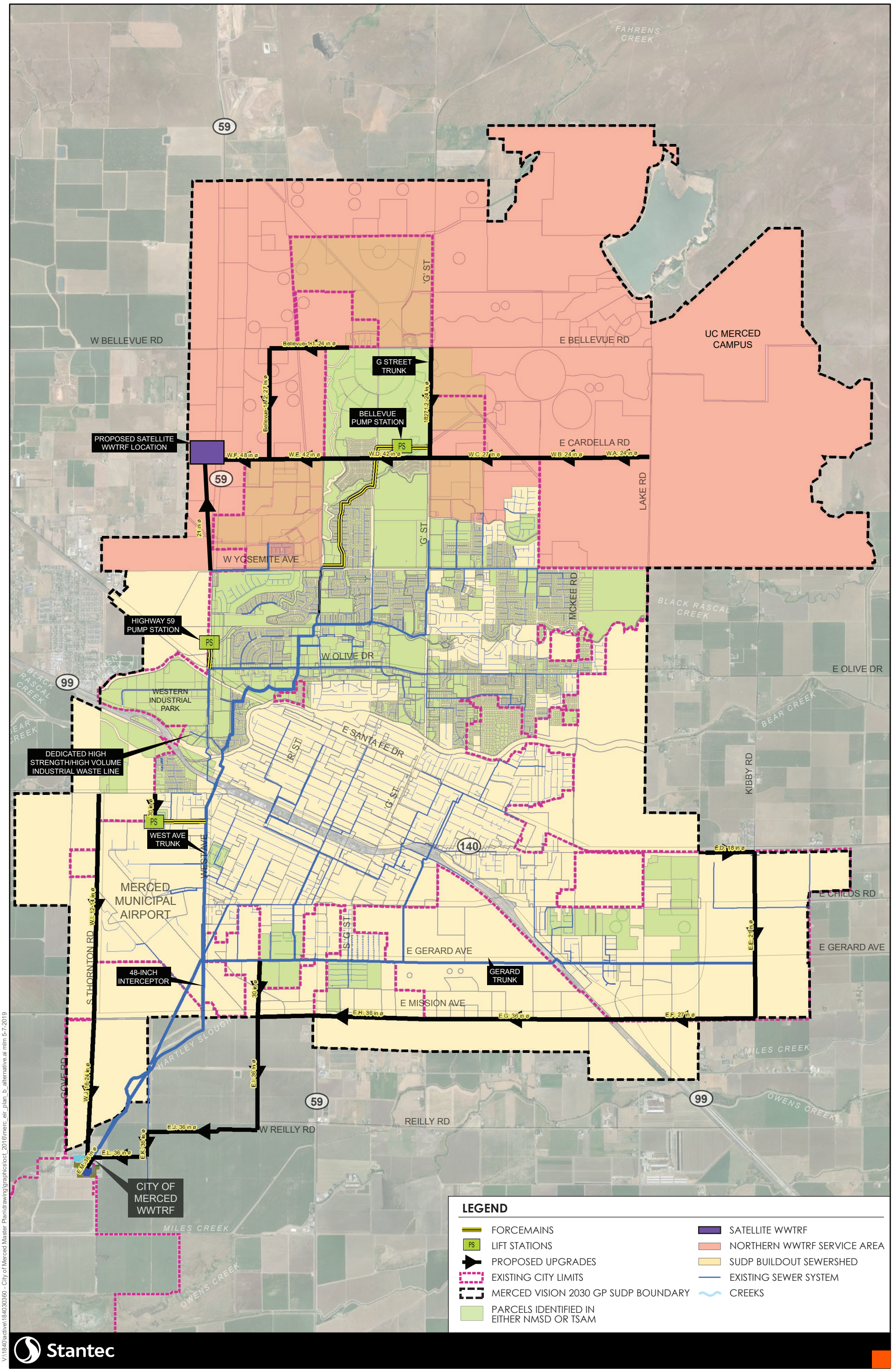

Figure 4.1-1
North Merced Satellite Treatment Facility Alternative
City of Merced - Draft Environmental Impact Report

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Similar to the proposed Projects, the key wastewater collection system trunk pipelines have been identified for the same alignments as the proposed Projects shown on Figure 4.1-1 but exclude the area crossing from north to south Merced with many potential utility and right-of-way (ROW) conflicts like the railroad, highways, and Merced Irrigation District (MID) canals. This alternative would require the construction of a new WWTRF within the City SUDP/SOI, which would result in additional costs and associated long-term maintenance that currently does not exist. This would not fully meet the objective of the Program to achieve the lower overall life-cycle costs for sewer service for anticipated operation and maintenance over the coming decades since it would require operation of a second WWTRF. Additionally, this alternative would require additional land for effluent disposal, which could total approximately 4,550 acres of land. Although this alternative could reduce agricultural use of groundwater in the area through this effluent disposal and could meet most the Program objectives.

Construction impacts of the alternative would be temporary and would be similar in scale to the Program. The location of the alternative would also occur in the City's SUDP/SOI in existing and future ROWs and therefore would result in similar impacts as described under the Program. Although the pipelines under this alternative would follow a slightly different alignment than under the Program, general system upsizing and placement of pipelines throughout the City's SUDP/SOI would still be required under this alternative and would include similar installation methods as described under the Program. Impacts associated with construction would be similar to the Program, with slightly different construction footprints (less area for the Northern Trunk Sewer, no pump station but more area required for an additional treatment facility). Operationally, the alternative would require operation of a second facility, which would increase employees, operational truck routes, and additional effluent discharge and biosolid disposal. Impacts associated with the Northern Trunk Sewer crossing from north Merced to south Merced would be reduced under this alternative since there would be no crossing. This would include a reduced potential to conflict with Caltrans and Union Pacific Railroad (UPRR) ROWs as well as MID canals. It would also require less directional drilling under creeks and waterways, which would have a lesser impact than the Program's already less than significant impact.

New private land would be needed to house the new treatment facility, which could be located on environmentally sensitive areas, resulting in greater impacts to environmental resources. Additionally, operation of the alternative would require additional baseline emissions and operational impacts (i.e., from additional trunk trips) that would not be included under Program. The long-term visual impacts of construction of a new treatment facility could also be greater under this alternative. Further, operation of two WWTRFs would require two Waste Discharge Requirement permits to be obtained from the CVRWQCB, which would be less efficient with respect to the City's efforts to simplify its monitoring and compliance efforts. Lastly, the proposed location of the alternative is within the Lake Yosemite inundation zone, and therefore could experience flooding and potential contamination if a dam failure were to occur.

4.1.2.2 Decentralized Treatment Facilities Alternative

The concept of multiple wastewater treatment facilities in the north Merced area was raised by stakeholders during the WCSMP planning process as a potential means to reduce the initial size, cost, and time delays associated with conveying City wastewater to the existing WWTRF. This would be a decentralized system with multiple treatment facilities developed in phases to accommodate anticipated growth within the City. These new WWTRFs would be built in new development areas and would treat the wastewater associated with each new development as they occur.[2] This alternative would require the placement of trunk and collector pipelines using gravity fed systems to the

[2] Due to uncertainty with respect to specific location of future developments, no figure is available to illustrate the location of this alternative.

maximum extent feasible to convey wastewater flows to the new decentralized facilities as well as to the existing WWTRF throughout the City's SUDP/SOI. This alternative would require the individual treatment and permitted disposal of effluent at each new site as well as operations and maintenance associated with each new facility added. Each facility would require a treatment train sufficient to treat the wastewater generated within a particular development area and would be required to meet waste discharge permitting requirements and maintain an individual National Pollutant Discharge Elimination Service (NPDES) permit, or provide reclamation lands on which to reuse treated effluent, as well appropriate discharge permits issued by the CVRWQCB.

The decentralized treatment facilities alternative would not meet the objective to achieve the lower overall life-cycle costs for sewer service for anticipated operation and maintenance over the coming decades (Section 4.1.3, Ability to Meet Basic Program and Project Objectives). Additionally, multiple decentralized facilities would require additional land acquisitions that do not currently exist, which would increase the City's capital investment and also not meet the objective to minimize land use impacts and to use existing publicly owned property to the extent feasible. Constructing multiple decentralized facilities would result in a larger overall footprint and potentially increased risk to wastewater treatment standards, which could lead to greater environmental impacts.

Impacts from pipelines would be reduced under this alternative, which would provide smaller onsite treatment facilities as development occurred. However, impacts related to the facilities from construction and operations would be substantially more than the Program. Stream crossing and ROW impacts would be reduced by this alternative as well as trenching depths. An increased need for localized effluent disposal would also potentially jeopardize water quality. New land would need to be obtained to house the new treatment facilities, which could be located on environmentally sensitive areas, resulting in greater impacts to environmental resources. Additionally, operation of the alternative would include additional baseline emissions and operational impacts (i.e., from additional trunk trips) that would not be included under the Program. The long-term visual impacts of construction of new treatment facilities could also be greater under this alternative. Further, operation of multiple treatment facilities would require multiple Waste Discharge Requirement permits to be obtained from the CVRWQCB, which would be less efficient with respect to the City's efforts to simplify its monitoring and compliance efforts. Lastly, the proposed location of the alternative is located within the Lake Yosemite inundation zone (See Figure 3.9-2 in Section 3.9, Hydrology and Water Quality), which could experience flooding and potential contamination if a dam failure were to occur.

4.1.2.3 Campus Parkway Alternative

The Campus Parkway Alternative is a variation on the Eastern Trunk Servicing Concept that was explored during the WCSMP development process described in Appendix E and was based on public input. The alternative would require an additional trunk sewer to be placed outside of the City's SUDP/SOI from the University of California, Merced (UC Merced) Campus to Campus Parkway where it would connect with the existing sewer collection system (Figure 4.1-2). This alternative would involve two phases to reach the reasonable build-out capacity needed and analyzed in the 2030 General Plan.

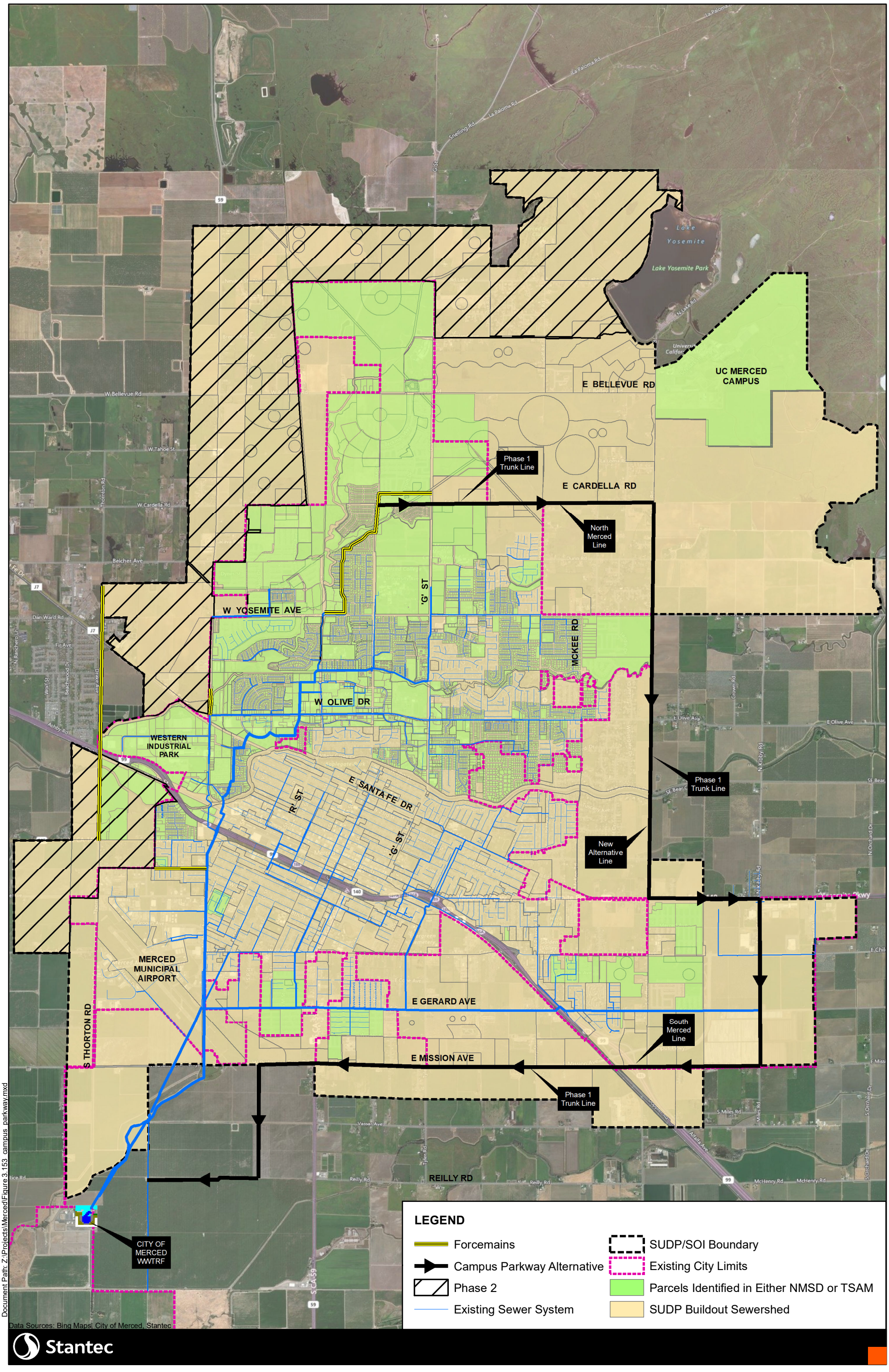

Figure 4.1-2
Campus Parkway Alternative
City of Merced - Draft Environmental Impact Report

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Phase 1 of the Campus Parkway Alternative would involve conveyance of wastewater within the Campus Community area, and possibly from additional portions of the service area to flow down through this system and eventually reach the City's existing WWTRF near the southwest portion of the City's SUDP/SOI. Trunk sewers in the north would be reduced in size as flow from the northwestern portion of the service area would be conveyed via this expansion of the existing WWTRF. Expansion of the existing WWTRF would be required to reach the maximum 35 Mgal/d reasonable build-out capacity, similar to the Program.

Phase 2 of this alternative would require additional wastewater infrastructure for the new development in the far north and northwestern portions of the City (partially outside of the City's SUDP/SOI). These additional alternative features would require the installation of pipelines with sufficient capacity to serve the new growth in the area, as well as associated appurtenances and possible pump and lift stations to achieve adequate flow to the existing WWTRF. Service outside the SUDP/SOI would also likely require additional planning and annexation or other approvals to connect to City services.

This alternative would require the placement of pipe through areas outside of the City's current SUDP/SOI, which would necessitate the need for Merced County coordination and approvals. As such, this alternative would not meet the Program objective to minimize land use impacts and use existing publicly owned property to the extent feasible because it could place additional land use restrictions associated with the sewer easement. Additionally, this alternative would require additional creek crossing and disturbance of prime farmland, which could have further environmental impacts when compared to the Program.

Impacts associated with this alternative would generally be similar to those of the Program but on the eastern side of the SUDP/SOI rather than the western. There are more agricultural lands designated as important farmland and Williamson Act contracted lands on the eastern side of the Program Study Area, which would result in this alternative having a greater potential to impact agricultural resources. The alternative would avoid some of the receptors and the airport in western Merced. Additionally, implementation of the Campus Parkway Alternative would require construction of new pipelines outside of the City's SUDP/SOI, which could result in greater impacts to land use and may be inconsistent with the 2030 General Plan. Additional permits and agreements with Merced County would be required for placement and long-term maintenance and operation of these pipelines.

4.1.2.4 Recycled Water Reclamation Alternative

The concept of developing a recycled water system was explored within the 2017 WCSMP and in previous administrative drafts of the WCSMP. This alternative would implement that concept to recharge groundwater use in north Merced by returning effluent from the WWTRF to north Merced through a network of reclaimed water pipes. Based on the evaluation for pipeline placement of the proposed Projects for implementation of the Program, it is assumed that recycled pipelines would follow the same alignments as the proposed Projects and future program collector infrastructure. These recycled water pipelines would likely be required to have appropriate health and safety setbacks from the Program pipelines (approximately a minimum distance of 10 feet or other form of sewer containment such as encased pipes). Recycled water uses and connections within the City would be required under this alternative for areas such as City parks or landscaped areas. Where the Program pipelines gravity flow to the WWTRF, pumping the recycled water back up the system would be required. Pumping would require placement of one or more pumps or lift stations.

This alternative would result in additional environmental impacts related to construction and operation as it would expand and almost double the existing infrastructure planned to serve the City from that required for the Program. The alternative was developed in response to a Notice of Preparation (NOP) comment relating to groundwater impacts and the need for recharge in near the location of groundwater extraction. While this alternative was considered, it would not result in a benefit to the net groundwater condition within the Merced groundwater basin, since the basin is all in one aquifer, and the City's water distribution system benefits the entire City regardless of where the groundwater wells are located.

4.1.2.5 Reduced Build-Out Sewer Capacity Alternative

This alternative considers a reduction in the total maximum reasonable build-out capacity of the Program. The alternative would reduce the scale and magnitude of Program impacts. While the proposed Trunk Sewer Projects would retain their footprint, the pipe and pump sizing could be reduced, and the total amount of infrastructure needed would be less than the Program and would not include the WWTRF Expansion Projects. This alternative would not necessarily change the 2030 General Plan SUDP/SOI boundary, but it would require the City to restrict development to only certain developments or certain densities less than what was planned for in the 2030 General Plan. It is anticipated that this reduced build-out alternative would serve 20 Mgal/d capacity.

This alternative would have similar footprints, operations, and construction activities to the Program (see Program figures in Chapter 2.0). Many potential impacts associated with the Program would still occur but some at a lesser magnitude.

4.1.2.6 Parallel or Upsized Existing System Alternative

The 2017 WCSMP also explored installing parallel sewers adjacent to the main existing trunk lines within the City limits to accommodate interim wastewater flows and to allow for additional sewer connections within north and eastern Merced. This alternative expands on that concept by considering the parallel or upsized trunk lines within the City adjacent to trunk sewers. This alternative would target critically impacted sewers, installing a parallel or upsized trunk sewer within the ROW associated with West Avenue and Olive Avenue and adjacent to or within the ROW of existing sewers at or near capacity as shown on Figure 4.1-3. This alternative would require construction throughout many of the developed areas within the City, would require utility relocations, and would require resolution of conflicts with other utilities and infrastructure. This alternative would be designed to meet reasonable build-out flows identified within the 2030 General Plan and would require parallel pipes or upsized replacement pipes throughout much of the existing system.

Aging pipelines within the existing collection system could potentially become a hazard and lead to cracks and pipe breakdown if not properly maintained and/or upgraded when needed. The alternative's reliance on this infrastructure could result in critical limitations to wastewater services. This could lead to additional environmental impacts and emergency situations.

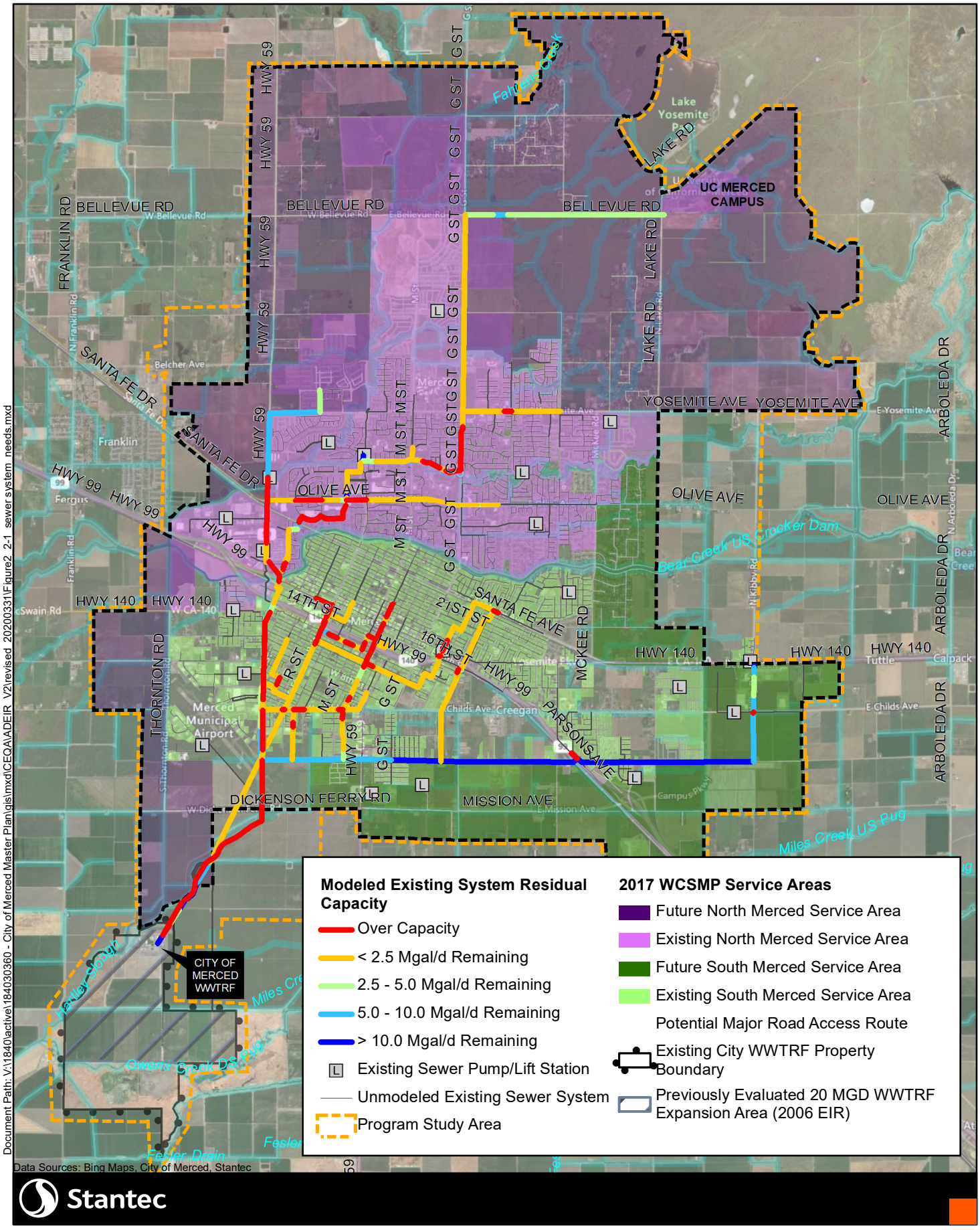

Figure 4.1-3
Parallel or Upsized Existing System Alternative
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4.1.3 Ability to Meet Basic Program and Project Objectives

As required by CEQA, to be considered as a viable alternative to the proposed Program, an alternative must meet all or most of the following Program objectives (as described in Section 2.0). The Program objectives were developed based on engineering requirements, City planning needs, and stakeholder and public input during development of the 2017 WCSMP and this Draft EIR. The following table presents an analysis of the identified alternative's ability to meet the Program objectives:

Table 4.1-1: Alternatives Ability to Meet Program Objectives

Program Objective	No Project Alternative	North Merced Satellite Treatment Alternative	Decentralized Facilities Alternative	Campus Parkway Alternative	Recycled Water Reclamation Alternative	Reduced Build-Out Sewer Capacity Alternative	Parallel or Upsized Existing System Alternative
1. Construct and maintain safe and reliable facilities	No – no construction and no facilities would be built or improved	Yes – would double the maintenance and compliance required, but a second facility would be safe and reliable	No – would result in lower-grade treatment and more maintenance at each individual facility, which would not be as safe	Yes – would provide pipelines design to operate at current standards	Yes – would provide pipelines engineered to design and operate to current standards	Yes – would provide pipelines engineered to design and operate to current standards	Yes – would provide pipelines engineered to design and operate to current standards
2. Meet long-term sewer service collection system needs by constructing the components of the collection system in stages, as needed	No – no changes to the collection system would occur	Yes – would serve collection system needs and could be done in stages	Yes – would serve collection system needs and could be done in stages	Yes – would serve collection system needs and could be done in stages	Yes – would serve collection system needs and could be done in stages	No – could be done in stages, but does not meet long-term collection system needs	Yes – would serve collection system needs and could be done in stages

Program Objective	No Project Alternative	North Merced Satellite Treatment Alternative	Decentralized Facilities Alternative	Campus Parkway Alternative	Recycled Water Reclamation Alternative	Reduced Build-Out Sewer Capacity Alternative	Parallel or Upsized Existing System Alternative
3. Achieve lower overall life-cycle cost and maintain relatively low costs for sewer service considering upfront costs and anticipated operation and maintenance costs over the coming decades	No – implementing the project would require multiple quick fixes that would cost more in the long term	No – operating two treatment systems would cost more and require more maintenance and staff	No – operating multiple treatment systems would cost more and require more maintenance and staff	Yes – this would be similar to the Program in terms of operation and life-cycle costs	No – adding a recycled water system would increase the amount of infrastructure to be maintained	Yes – this would be similar to the Program in terms of operation and life-cycle costs	No – upfront costs for constructing in City streets would be significantly more, and long-term maintenance would run the risk of potential conflicts

Program Objective	No Project Alternative	North Merced Satellite Treatment Alternative	Decentralized Facilities Alternative	Campus Parkway Alternative	Recycled Water Reclamation Alternative	Reduced Build-Out Sewer Capacity Alternative	Parallel or Upsized Existing System Alternative
4. Maintain high water quality and wastewater treatment standards	Yes – existing WWTRF operations and planned expansions would continue up to 20 Mgal/day. The existing wastewater collection system would be at risk of failure with overflow from future flows and treatment mechanisms other than the Program would be required	No – operation of two treatment systems may likely only achieve secondary or tertiary treatment at the new facilities and would likely not have UV or other forms of disinfection due to the cost of constructing and operating such facilities. While new facilities would be required to maintain water quality standards, the highest levels of water quality and treatment would not be achieved	No – operation of multiple treatment systems would likely only achieve secondary or tertiary treatment at the new facilities and would likely not have UV or other forms of disinfection due to the cost of constructing and operating such facilities. While new facilities would be required to maintain water quality standards, the highest levels of water quality and treatment would not be achieved	Yes – this would be similar to the Program in terms of water quality and treatment standards	Yes – this would be similar to the Program in terms of water quality and treatment standards	Yes – this would be similar to the Program in terms of water quality and treatment standards	Yes – this would be similar to the Program in terms of water quality and treatment standards

Program Objective	No Project Alternative	North Merced Satellite Treatment Alternative	Decentralized Facilities Alternative	Campus Parkway Alternative	Recycled Water Reclamation Alternative	Reduced Build-Out Sewer Capacity Alternative	Parallel or Upsized Existing System Alternative
5. Reduce or maintain relatively low operational costs and energy demand by selecting gravity systems where feasible	Yes – no conveyance would be required; however, septic systems or other treatment methods may result	Yes – this would decrease the need for the Northern Trunk pump station and could be almost entirely served by gravity flows; however, an additional treatment facility would introduce additional treatment costs and energy demands	Yes – this would decrease the need for the Northern Trunk pump station and could be almost entirely served by gravity flows; however, additional treatment facilities would introduce additional treatment costs and energy demands	Yes -- this would have similar costs and energy demands to the Program	No – this would require extensive pumping to return treated water from the WWTRF to north Merced increasing energy costs that would not allow the selection of gravity systems	Yes – this would have similar costs and energy demands to the Program, but would ultimately reduce treatment energy demands by not increasing WWTRF to full build-out capacity	Yes – while the complexities of working around infrastructure and within City streets could require additional energy demand, the alternative would have similar overall energy costs as the Program
6. Maintain consistency with the Merced Vision 2030 General Plan	No – this would not accommodate the growth projections of the 2030 General Plan	No – Policy P-1.2 of the 2030 General Plan emphasizes using existing infrastructure to the extent possible; this alternative would require new treatment infrastructure	No – Policy P-1.2 of the 2030 General Plan emphasizes using existing infrastructure to the extent possible; this alternative would require new treatment infrastructure	Yes – this would be similar to the Program in terms of consistency with the 2030 General Plan	No – Policy P-1.2 of the 2030 General Plan emphasizes using existing infrastructure to the extent possible; this alternative would require new treatment infrastructure	No – this would not accommodate the growth projections of the 2030 General Plan	Yes – this would be similar to the Program in terms of consistency with the 2030 General Plan

Program Objective	No Project Alternative	North Merced Satellite Treatment Alternative	Decentralized Facilities Alternative	Campus Parkway Alternative	Recycled Water Reclamation Alternative	Reduced Build-Out Sewer Capacity Alternative	Parallel or Upsized Existing System Alternative
7. Plan collection system infrastructure that meets reasonable build-out conditions of 35 Mgal/d	No – this would not accommodate the growth projections of meeting 35 Mgal/d	Yes – this could accommodate build-out	Yes – this could accommodate build-out	Yes – this could accommodate build-out	Yes – this could accommodate build-out	No – this would not accommodate the growth projections of meeting 35 Mgal/d	Yes – this could accommodate build-out
8. Minimize land use and environmental impacts. (See Section 4.1.5 for further analysis)	Yes – this would not impact land use. There would be limited environmental impacts	Yes – the additional treatment site would require additional land but would not need the pump station site. Some impacts would be reduced	No – the additional treatment sites would require additional land. Many additional impacts would be generated, and few would be reduced	Yes – while this alternative would likely have greater impacts to agricultural resources, it is anticipated that other land use and environmental impacts would be similar to the Program	No – this would increase construction impacts with larger footprints and potentially additional alignments. It would increase supplies and could double the size of pipeline footprint	No– while this would limit the ability to serve some future development, most of the sewer infrastructure would still be required and downsizing wouldn't substantially minimize impacts but may minimize a few	No -- while this would reduce disturbance of other areas within the City, it would have greater land use and environmental impacts due to proximity to receptors and developed portions of the City

Program Objective	No Project Alternative	North Merced Satellite Treatment Alternative	Decentralized Facilities Alternative	Campus Parkway Alternative	Recycled Water Reclamation Alternative	Reduced Build-Out Sewer Capacity Alternative	Parallel or Upsized Existing System Alternative
9. Adhere to federal and state policies and regulations in support of regionalization, reclamation, recycling, and conservation for wastewater treatment plants (such as Central Valley Regional Water Quality Control Board Resolution Number R5-2009-0028)	No – with the No Project Alternative, forms of wastewater treatment would be required in conflict with regionalization policies	No – building a second treatment facility is in conflict with regionalization policies	No – building multiple treatment facilities is in conflict with regionalization policies	Yes – this would maintain the treatment objectives of the Program with different conveyance infrastructure	Yes – recycled water would be consistent with recycling and conservation policies	Yes – this is a reduced capacity version of the Program; it would provide regionalization for wastewater treatment	Yes – this would maintain the treatment objectives of the Program with different conveyance infrastructure
10. Use the existing publicly owned property, roadways, and right-of-way to the extent feasible	Yes – no project would occur	Yes – this would include an additional treatment site but would not require the northern pump station	No – this would require acquisition of property for each new facility and would not make use of public ROWs	No – this alternative would run cross country and not make use of existing roadways	Yes – recycled water lines would be placed within existing ROWs and roadways similar to the Program infrastructure	Yes – this footprint would be similar to the Program infrastructure	Yes – this would capitalize on existing infrastructure which is predominantly in existing roadways and public ROWs
Total Number of Objectives Met	**3/10**	**6/10**	**3/10**	**9/10**	**6/10**	**6/10**	**8/10**

Notes:
City = City of Merced
Mgal/d = million gallons per day
ROW = right-of-way
UV = ultraviolet
WWTRF = Wastewater Treatment and Reclamation Facility

4.1.4 Reasonable Alternatives Feasibility

As required by CEQA, the term "feasible" is defined as, "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors" (14 CCR Section 15364). CEQA does not require that an EIR determine the ultimate feasibility of a selected alternative, but rather that an alternative be potentially feasible. Accordingly, no studies have been prepared regarding the economic feasibility of the selected alternatives.

Although, an EIR must contain a discussion of "potentially feasible" alternatives, the Merced City Council has made the determination, based on technical information presented by consultants, of feasibility of many of the alternatives considered throughout the 2017 WCSMP update process (PRC Section 21081(a)(3)). The City's development of feasible alternatives and the range of feasible alternatives considered for this EIR are discussed in the following section in a manner to foster meaningful public participation and informed decision-making. Pursuant to the CEQA Guidelines, factors taken into consideration for assessing feasibility of alternatives include the following:

> *Site suitability, economic viability, availability of infrastructure, General Plan consistency, other plans or regulatory limitations, jurisdictional boundaries (projects with a regionally significant impact should consider the regional context), and whether the proponent can reasonably acquire, control or otherwise have access to the alternative site (or the site is already owned by the proponent). No one of these factors establishes a fixed limit on the scope of reasonable alternatives.*

Table 4.1-2 illustrates a summary of the feasibility of the identified reasonable alternatives.

Table 4.1-2: Reasonable Alternative Feasibility

Alternative	Feasible?
No Project Alternative	Yes – Failure to implement the Program would limit sewer service within the SUDP/SOI in a strategic and well thought out manner, but it would be possible to limit development.
North Merced Satellite Treatment Facility	Yes – As evaluated within the 2017 WCSMP, this alternative is a feasible alternative, although costs associated with operating a second treatment facility would be doubled.
Decentralized Facilities	No – Permitting and operational costs associated with treatment of decentralized facilities would be exponentially higher than the WWTRF. This would be inconsistent with the identified land uses within the 2030 General Plan and would require acquisition of exponentially more City property for siting.
Campus Parkway	Yes – Construction of trunk sewers similar to those of the Program would be feasible in a different location provided that it would similarly be within planned or existing roadways.
Recycled Water Reclamation	No – As evaluated in the 2017 WCSMP, recycled water would be too costly due to increased energy demands required to pump reclaimed water from the WWTRF back uphill to north Merced.
Reduced Build-Out Sewer Capacity	Yes – A reduced capacity system would be feasible and would be similar to the proposed Projects and Program, but trunk sewers would be downsized.
Parallel or Upsized Existing System	No – As evaluated in the 2017 WCSMP and previous WCSMP planning efforts, parallel pipelines were considered next to existing sewer infrastructure within the City and found to have too many conflicts with existing infrastructure and facilities to allow for appropriate setbacks.

Notes: WCSMP = Wastewater System Collection Master Plan; WWTRF = Wastewater Treatment and Reclamation Facility

4.1.5 Alternatives Ability to Lessen One or More Environmental Impacts

The CEQA Guidelines further require that the alternatives be limited to those that would avoid or substantially lessen any of the significant effects of the proposed project (CEQA Guidelines Section 15126.6(f)). The CEQA Guidelines require that potential impacts of the alternatives be compared to the project's environmental impacts and that the "no project" alternative be considered (CEQA Guidelines Section 15126.6(d)[e]). Finally, Section 15126.6(b) of the CEQA Guidelines defines requirements of the alternatives analysis as follows:

> *Because an EIR must identify ways to mitigate or avoid the significant effects that a project may have on the environment (Public Resources Code [PRC] Section 21002.1), the discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly.*

Pursuant to the CEQA Guidelines, potentially significant effects include both those that are significant and unavoidable and those that are less than significant with mitigation. The alternatives considered within this section aim to provide a means of reducing the level of impact that would otherwise result from implementation of the Program and proposed Projects even though no significant impacts were identified.

The alternatives were reviewed for their ability to reduce one or more significant effects of the Program or proposed Projects. Table 4.1-3 includes that assessment:

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Table 4.1-3: Alternatives Impact Comparison

Environmental Resource Area	Program	No Project Alternative	North Merced Satellite Treatment Alternative	Decentralized Facilities Alternative	Campus Parkway Alternative	Recycled Water Reclamation Alternative	Reduced Build-Out Sewer Capacity Alternative	Parallel or Upsized Existing System Alternative
Aesthetics and Visual Resources	LTS/M	**Lesser Impact** – no change to the aesthetic environment of the City; however, inaction to accommodate the sewer service demands of anticipated future growth could result in private or alternative methods of wastewater collection and or treatment, which could result in additional impacts.	**Greater Impact** – an additional treatment plant would be constructed introducing a new above-ground feature with greater potential to substantially impact public views and introduce permanent above-ground lighting to the area (Impacts AES-3 and AES-4 respectively). There would be no change to Impacts AES-1 and AES-2 from that described for the Program. Program MM AES-1, AES-2, and AES-3 would apply.	**Greater Impact** – additional treatment facilities would be constructed introducing a new above-ground feature with a greater potential to impact public views in more areas throughout the City (Impact AES-3). The multiple treatment facilities would also increase operational lighting in multiple areas within the City (Impact AES-4). There would be no change to Impacts AES-1 and AES-2 from that described for the Program. Program MM AES-1, AES-2, and AES-3 would apply.	**Similar Impact** – the addition of the trunk sewer within Campus Parkway in the eastern portion of the City would result in similar impacts related to scenic vistas (Impact AES-1), scenic resources (Impact AES-2), public views (Impact AES-3), and nighttime lighting (Impact AES-4) as those described for the Program. Program MM AES-1, AES-2, and AES-3 would apply.	**Greater Impact –** this alternative would result in similar impacts related to scenic vistas (Impact AES-1), scenic resources (Impact AES-2), public views (Impact AES-3), and nighttime lighting (Impact AES-4) as those described for the Program. The additional pipelines needed under this alternative would not substantially change any views in the area; however, the additional pump and lift stations would place additional above-ground structures that would result in additional impacts. It is anticipated that these would be constructed and operated in a similar manner as the pump stations described for the Program. Program MM AES-1, AES-2, and AES-3 would apply.	**Lesser Impact** – this alternative would result in similar impacts related to scenic vistas (Impact AES-1), scenic resources (Impact AES-2), public views (Impact AES-3), and nighttime lighting (Impact AES-4) as those described for the Program, except that the overall amount, intensity and length of construction activities would be slightly less than that described for the Program. Program MM AES-1, AES-2, and AES-3 would apply.	**Greater Impact** –this alternative would result in similar impacts related to scenic vistas (Impact AES-1), scenic resources (Impact AES-2), public views (Impact AES-3), and nighttime lighting (Impact AES-4) as those described for the Program, except that construction and operation of the parallel or upsized system would occur in the developed areas of the City where there are more potential viewers and scenic corridors. Program MM AES-1, AES-2, and AES-3 would apply.
Agricultural and Forestry Resources	LTS	**Lesser Impact** – no change to any agriculture lands or forestry resources; however, inaction to accommodate the sewer service demands of anticipated future growth could result in private or alternative methods of wastewater collection and/or treatment, which could result in additional impacts.	**Lesser Impact** – the additional treatment facility would be constructed on an industrial parcel designated as disturbed land, and there would be shorter trunk pipelines. This would not result in any additional impacts related to designated farmlands or forestry resources (Impacts AG-1 through AG-5).	**Greater Impact** –the additional treatment facilities have the potential to be located on designated farmlands, resulting in conversion to non-agricultural use. The facilities would require more land than the Program and would have a greater potential for impacts (Impact AG-1 through 3 and AG-5). Similar to the Program, no impacts to forestry resources would occur because there are no forestry resources within the City (Impact AG-4).	**Greater Impact** – similar to the Program, much of this alternative would be constructed within the roadway ROW; however, the non-roadway portions would cross designated farmlands, potentially resulting in greater environmental impacts than the Program (Impact AG-1 through AG-5).	**Greater Impact** – placement of additional pump stations and lift stations associated with the recycled water pipelines would have the potential need to be located on designated farmlands, requiring conversion to non-agricultural use. This potential impact would be greater than impacts associated with the Program (Impact AG-1 through 3 and AG-5). No impacts to forestry resources would occur because there are no forestry resources within the City (Impact AG-4).	**Lesser Impact** – this alternative would be constructed within the roadway ROW with the developed areas of the City and would not result in any additional impacts to agricultural or forestry resources beyond those described for the Program (Impact AG-1 through AG-5). Additionally, the limited capacity would limit the extent of the collector infrastructure and thereby the reduce the potential footprint.	**Lesser Impact** – this alternative would be constructed within the roadway ROW within the developed areas of the City and would not result in any additional impacts to agricultural or forestry resources beyond those described for the Program (Impact AG-1 through AG-5). Additionally, the developed nature of the area surrounding the existing system and the urban farmland use designation indicates that potential impacts would be less than those of the Program.

Environmental Resource Area	Program	No Project Alternative	North Merced Satellite Treatment Alternative	Decentralized Facilities Alternative	Campus Parkway Alternative	Recycled Water Reclamation Alternative	Reduced Build-Out Sewer Capacity Alternative	Parallel or Upsized Existing System Alternative
Air Quality	LTS/M	**Lesser Impact** – no increases in construction or operational emissions would occur; however, inaction to accommodate the sewer service demands of anticipated future growth could result in private or alternative methods of wastewater collection and/or treatment, which could result in additional impacts.	**Greater Impact** – the additional treatment facility would require additional construction activities and transporting of materials to the treatment facility site, and therefore could result in greater impacts related to construction emissions (i.e., Impact AIR-1 through AIR-3). The additional treatment facility would also be located within 300 feet of numerous existing residences and could therefore introduce a potentially significant impact related to odors (Impact AIR-4) to an area that currently does not experience treatment facility odors. Program MMs AIR-1 through AIR-3 would apply. Program MM AIR-4 is specific to the existing WWTRF and would not apply.	**Greater Impact** – the additional treatment facilities would require additional construction activities and transporting of materials to the treatment facilities sites, and therefore could result in greater impacts related to construction emissions (i.e., Impact AIR-1 through AIR-3). The additional treatment facilities could also be located near numerous existing residences and could therefore introduce a potentially significant impact related to odors (Impact AIR-4) to areas that currently do not experience treatment facility odors. Program MMs AIR-1 through AIR-3 would apply. Program MM AIR-4 is specific to the existing WWTRF and would not apply.	**Similar Impact** – this alternative would not result in additional impacts to air quality (Impact AIR-1 through AIR-4) beyond those described for the Program. Program MMs AIR-1 through AIR-4 would apply.	**Greater Impact** – construction of this alternative would require additional pipes as well as pump and lift stations which could result in greater impacts related to construction emissions (i.e. Impact AIR-1 through AIR-3). No changes to odor impacts (Impact AIR-4) are anticipated for the Recycled Water Reclamation Alternative beyond those described for the Program. Program MMs AIR-1 through AIR-4 would apply.	**Lesser Impact** – this alternative would not result in additional impacts to air quality (Impact AIR-1 through AIR-4) beyond those described for the Program, however, may result in overall less construction related air quality emissions because the intensity ad length of construction activities would be less under this alternative. Program MMs AIR-1 through AIR-4 would apply.	**Greater Impact** – this alternative would have more complicated construction within the existing City limits in closer proximity to more sensitive receptors resulting in greater impacts related to construction emissions (i.e. Impact AIR-1 through AIR-3). No changes to odor impacts (Impact AIR-4) are anticipated for this alternative beyond those described for the Program. Program MMs AIR-1 through AIR-4 would apply.
Biological Resources	LTS/M	**Lesser Impact** – no construction or operational impacts to special status species, critical habitats, or protected waters would occur; however, inaction to accommodate the sewer service demands of future anticipated growth could result in private or alternative methods of wastewater collection and/or treatment, which could result in additional impacts.	**Greater Impact** – construction of the additional treatment facility could have additional impacts to special status species, critical habitats, and protected waters (Impacts BIO-1 through 5). Program MM BIO-1 through BIO-12 as well as MM GEO-1 would likely still apply to this alternative depending on species, habitats, and waters present within the area.	**Greater Impact** – construction and operation of these additional treatment facilities could have additional impacts to special status species, critical habitats, and protected waters (Impacts BIO-1 through 5). Program MM BIO-1 through 12 as well as MM GEO-1 would likely still apply to this alternative depending on species, habitats, and waters present within the area.	**Similar Impact** – construction of this alternative would result in similar impacts to biological resources as described for the Program (Impact BIO-1 through BIO-5) because it would occur in a linear nature within existing and planned ROW. Program MM BIO-1 through 12 as well as MM GEO-1 would likely still apply.	**Greater Impact** – construction of this alternative would require additional pipes as well as pump or lift stations, which could have additional impacts to special status species, critical habitats, and protected waters (Impacts BIO-1 through 5). Program MM BIO-1 through 12 as well as MM GEO-1 would likely still apply to this alternative depending on species, habitats, and waters present within the area.	**Lesser Impact** – construction of this alternative would result in similar impacts to biological resources as described for the Program (Impact BIO-1 through BIO-5) because it would occur in a similar footprint as the Program. Program MM BIO-1 through 12 as well as MM GEO-1 would likely still apply; however, the reduced capacity would not require as much construction as the Program.	**Lesser Impact** – construction of this alternative would result in similar impacts to biological resources as described for the Program (Impact BIO-1 through BIO-5); however, the alternative may result in less overall impacts to species and habitats because construction activities would occur in more developed portions of the City (i.e., less likelihood to impact species, habitats and waters). Program MM BIO-1 through BIO-12 as well as MM GEO-1 would likely still apply.

Environmental Resource Area	Program	No Project Alternative	North Merced Satellite Treatment Alternative	Decentralized Facilities Alternative	Campus Parkway Alternative	Recycled Water Reclamation Alternative	Reduced Build-Out Sewer Capacity Alternative	Parallel or Upsized Existing System Alternative
Cultural Resources	LTS/M	**Lesser Impact** – no construction activities would occur, and therefore, no cultural resources would be potentially impacted; however, inaction to accommodate the sewer service demands of future growth could result in private or alternative methods of sewer collection and/or treatment, which could result in additional impacts.	**Greater Impact** – the additional treatment facility location would require further cultural resource investigations to determine if there are any known cultural resources (i.e., historical, archaeological, or tribal resources or potential human burial sites) in the area, thus resulting in potentially greater cultural impacts if resources are present (Impact CUL-1 through 4). Additionally, the presence of previously undiscovered cultural resources to be discovered on project sites is a possibility. Program MMs CUL-1 through CUL-5 would apply.	**Greater Impact** – the additional locations for the treatment facility would require further cultural resource investigations to determine if there are any known cultural resources (i.e., historical, archaeological, or tribal resources or potential human burial sites) in the areas, thus resulting in potentially greater cultural impacts if resources are present (Impact CUL-1 through 4). Additionally, the presence of previously undiscovered cultural resources to be discovered on project sites is a possibility. Program MMs CUL-1 through CUL-5 would apply.	**Similar Impact** – construction of the Campus Parkway trunk sewer would result in similar impacts related to cultural resources (i.e., historical, archaeological, or tribal resources or potential human burial sites) (Impact CUL-1 through CUL-4) since it would be constructed in existing and planned ROW. Program MMs CUL-1 through CUL-5 would apply.	**Greater Impact** – this alternative would require additional pipes as well as pump and lift stations, which would require further cultural resource investigations to determine if there are any known cultural resources (i.e., historical, archaeological, or tribal resources or potential human burial sites) in the area, thus resulting in potentially greater cultural impacts if resources are present (Impact CUL-1 through 4). Additionally, the presence of previously undiscovered cultural resources to be discovered on project sites is a possibility. Program MMs CUL-1 through CUL-5 would apply.	**Lesser Impact** – construction of this alternative would result in similar impacts related to cultural resources (i.e., historical, archaeological, or tribal resources or potential human burial sites) (Impact CUL-1 through CUL-4) since it would be constructed in a similar footprint as the Program. Program MMs CUL-1 through CUL-5 would apply. However, the reduced capacity of the alternative would require less construction and thereby less potential for impacting cultural resources.	**Greater Impact** – construction of this alternative would result in similar impacts related to cultural resources (i.e., historical, archaeological, or tribal resources or potential human burial sites) (Impact CUL-1 through CUL-4) since it would be constructed in existing and planned ROW. However, this alternative would be constructed in the more developed portions of the City, which would have a greater potential for impacting historic built-environment resources resulting in a greater potential impact than the Program. Also, there is still a potential that undiscovered cultural resources could be encountered during construction activities. Program MMs CUL-1 through CUL-5 would apply.

Environmental Resource Area	Program	No Project Alternative	North Merced Satellite Treatment Alternative	Decentralized Facilities Alternative	Campus Parkway Alternative	Recycled Water Reclamation Alternative	Reduced Build-Out Sewer Capacity Alternative	Parallel or Upsized Existing System Alternative
Geology, Soils, and Minerals	LTS/M	**Greater Impact** – no construction activities would occur; therefore, no erosion or loss of topsoil would occur. No facilities would be constructed; therefore, there would be no impacts related to geological hazards or paleontological resources. However, inaction to accommodate the sewer service demands of anticipated future growth could result in private or alternative methods of wastewater collection and or treatment, which could result in additional impacts such as development of new septic tanks (Impact GEO-5).	**Similar Impact** – construction and operational impacts for this alternative related to geology, soils, and mineral impacts would not change from those described for the Program (Impact GEO-1 through GEO-8). No additional geological hazards or conditions are present within the additional treatment facility location. Program MMs GEO-1 through GEO-3 would apply.	**Greater Impact –** construction and operation of the additional treatment plans could potentially be located on areas with additional geologic hazards such as fault zones (Impact GEO-1), unstable or expansive soils (Impact GEO-3 and GEO-4), or soils with greater potential for paleontological resources (Impact GEO-6). There would be no change related to erosion (Impact GEO-2), septic tanks (Impact GEO-5), and mineral resources (Impact GEO-7 and GEO-8) as described and analyzed for the Program. Program MMs GEO-1 through GEO-3 would apply.	**Similar Impact** – this alternative would be constructed in a similar method as described for the Program and no additional geologic hazards are anticipated for the Campus Parkway trunk sewer, therefore the impacts described for the Program relative to Impacts GEO-1 through GEO-8 would be the same as described for the Program. Program MMs GEO-1 through GEO-3 would apply.	**Similar Impact** – this alternative would be constructed in a similar method as described for the Program, and no additional geologic hazards are anticipated for the additional pipelines and pump stations; therefore, the impacts described for the Program relative to Impacts GEO-1 through GEO-8 would be the same as described for the Program. Program MMs GEO-1 through GEO-3 would apply.	**Similar Impact** – this alternative would be constructed in a similar method as described for the Program, and no additional geologic hazards are anticipated for the Reduced Build-Out Capacity Alternative; therefore, the impacts described for the Program relative to Impacts GEO-1 through GEO-8 would be the same as described for the Program. Program MMs GEO-1 through GEO-3 would apply.	**Similar Impact** – this alternative would be constructed in a similar method as described for the Program, and no additional geologic hazards are anticipated for the Parallel or Upsized Existing System Alternative; therefore, the impacts described for the Program relative to Impacts GEO-1 through GEO-8 would be the same as described for the Program. Program MMs GEO-1 through GEO-3 would apply.

Environmental Resource Area	Program	No Project Alternative	North Merced Satellite Treatment Alternative	Decentralized Facilities Alternative	Campus Parkway Alternative	Recycled Water Reclamation Alternative	Reduced Build-Out Sewer Capacity Alternative	Parallel or Upsized Existing System Alternative
Greenhouse Gases and Energy Resources	LTS	**Lesser Impact** – no construction activities would occur, and therefore, there would be no increases in GHG emissions or increases in energy consumption; however, inaction to accommodate the sewer service demands of anticipated future growth could result in private or alternative methods of wastewater collection and/or treatment, which could result in additional impacts.	**Greater Impact** – the construction of the additional treatment facility would require additional truck trips, materials, and workers, which could increase the overall construction emissions for this alternative (Impact GHG-1 and GHG-2). Additionally, the operation of a second treatment facility could increase energy consumption in the City and thus, result in potentially wasteful, inefficient, or unnecessary consumption of energy resources and conflict with state and local energy efficiency standards (Impact GHG-3 and GHG-4).	**Greater Impact** – the construction of additional treatment facilities would require additional truck trips, materials, and workers which could increase the overall construction emissions for this alternative (Impact GHG-1 and GHG-2). Additionally, the operation of multiple treatment facilities could increase energy consumption in the City and thus, result in potentially wasteful, inefficient, or unnecessary consumption of energy resources and conflict with state and local energy efficiency standards (Impact GHG-3 and GHG-4). While pipeline durations would be shorter under this alternative, the number of construction activities and mobilizations would increase.	**Similar Impact** – construction and operation of this alternative would not substantially change from that described for the Program (Impact GHG-1 through GHG-4). No additional construction or operational emissions or energy requirements would be anticipated for the Campus Parkway Alternative beyond those described in the Program.	**Greater Impact** – the construction of this alternative would require additional truck trips, materials, and workers which could increase the overall construction emissions for this alternative (Impact GHG-1 and GHG-2). The Recycled Water Reclamation Alternative is not anticipated to result in any changes related to wasteful, inefficient, or unnecessary consumption of energy resources or conflict with state and local energy efficiency standards beyond what was described for the Program (Impact GHG-3 and GHG-4).	**Lesser Impact** – construction and operation of this alternative would not substantially change from that described for the Program (Impact GHG-1 through GHG-4). A slight reduction in the amount of construction as well as the intensity and length could result in an overall reduction in GHG emissions and energy consumption requirements, however the impact would still remain less than significant as described under the Program.	**Similar Impact** – construction and operation of this alternative would not substantially change from that described for the Program (Impact GHG-1 through GHG-4). No additional construction or operational emissions or energy requirements would be anticipated for the Parallel or Upsized Existing System Alternative beyond those described in the Program.

Environmental Resource Area	Program	No Project Alternative	North Merced Satellite Treatment Alternative	Decentralized Facilities Alternative	Campus Parkway Alternative	Recycled Water Reclamation Alternative	Reduced Build-Out Sewer Capacity Alternative	Parallel or Upsized Existing System Alternative
Hazards, Hazardous Materials, and Wildfires	LTS/M	**Lesser Impact** – no construction activities would occur; therefore, there would be no potential to increase construction-related hazards and hazardous materials in the area; however, inaction to accommodate the sewer service demands of anticipated future growth could result in private or alternative methods of wastewater collection and/or treatment, which could result in additional impacts.	**Similar Impact** – construction and operation of the additional treatment facility would not substantially increase the use or transport of hazardous materials beyond those analyzed under the Program (Impact HAZ-1). The additional treatment facility would not result in any increases in hazards to the public or the environment (Impact HAZ-3), nor is the additional treatment facility location within 0.25 mile of an existing or proposed school, within a Cortese listed site, within 2 miles of an airport, within an evacuation plan or area, or an SRA or potential wildfire risk area (Impact HAZ-3 through HAZ-8). Program MMs HAZ-1 through HAZ-4, MM TRA-1, MM AIR-2, and MM AIR-3 would apply.	**Greater Impact** – construction and operation of additional treatment facilities would not substantially increase the use or transport of hazardous materials beyond those analyzed under the Program (Impact HAZ-1). The additional treatment facilities would not result in any increases in hazards to the public or the environment (Impact HAZ-3). However, because the exact locations of the additional treatment facilities are not yet known, they could result in additional impacts related to being located within 0.25 mile of an existing or proposed school, within a Cortese listed site, within 2 miles of an airport, within an evacuation plan or area, or an SRA and potential high-risk wildfire risk areas. Program MMs HAZ-1 through HAZ-4, MM TRA-1, MM AIR-2, and MM AIR-3 would apply.	**Similar Impact** – construction and operation this alternative would not substantially increase the use or transport of hazardous materials beyond those analyzed under the Program (Impact HAZ-1). The Campus Parkway Alternative would not result in any increases in hazards to the public or the environment (Impact HAZ-3), nor is the Campus Parkway Alternative located within 0.25 mile of existing or proposed schools, within a Cortese listed site, within 2 miles of an airport, within an evacuation plan or area, or a SRA or potential wildfire risk area (Impact HAZ-3 through HAZ-8) beyond those described for the Program. Program MMs HAZ-1 through HAZ-4, MM TRA-1, MM AIR-2, and MM AIR-3 would apply.	**Greater Impact** – construction and operation of this alternative would not substantially increase the use or transport of hazardous materials beyond those analyzed under the Program (Impact HAZ-1). The Recycled Water Reclamation Alternative would not result in any increases in hazards to the public or the environment (Impact HAZ-3). However, because the exact locations of the additional pump and lift stations are not yet known, they could result in additional impacts related to being located within 0.25 mile of an existing or proposed school, within a Cortese listed site, within 2 miles of an airport, within an evacuation plan or area, or an SRA and potential high-risk wildfire risk areas. Program MMs HAZ-1 through HAZ-4, MM TRA-1, MM AIR-2, and MM AIR-3 would apply.	**Similar Impact** – construction and operation of this alternative would not substantially increase the use or transport of hazardous materials beyond those analyzed under the Program (Impact HAZ-1). The Reduced Build-Out Capacity Alternative would not result in any increases in hazards to the public or the environment (Impact HAZ-3), nor is the Reduced Build-Out Capacity Alternative located within 0.25 mile of existing or proposed schools, within a Cortese listed site, within 2 miles of an airport, within an evacuation plan or area, or an SRA or potential wildfire risk area (Impact HAZ-3 through HAZ-8) beyond those described for the Program. Program MMs HAZ-1 through HAZ-4, MM TRA-1, MM AIR-2, and MM AIR-3 would apply.	**Greater Impact** - construction and operation of this alternative would not substantially increase the use or transport of hazardous materials beyond those analyzed under the Program (Impact HAZ-1). The Parallel or Upsized Existing System Alternative would not result in any increases in hazards to the public or the environment (Impact HAZ-3). However, due to the Parallel or Upsized Existing System Alternative's location with the more developed portions of the City, there is a greater potential for this alternative to be located within 0.25 miles of a school, within a Cortese listed site, within 2 miles of an airport, and within an evacuation plan or area (Impact HAZ-3 through HAZ-7). There would be no change related to being located in an SRA or potential wildfire risk area (HAZ-8) beyond that described for the Program. Program MMs HAZ-1 through HAZ-4, MM TRA-1, MM AIR-2, and MM AIR-3 would apply.

Environmental Resource Area	Program	No Project Alternative	North Merced Satellite Treatment Alternative	Decentralized Facilities Alternative	Campus Parkway Alternative	Recycled Water Reclamation Alternative	Reduced Build-Out Sewer Capacity Alternative	Parallel or Upsized Existing System Alternative
Hydrology and Water Quality	LTS/M	**Lesser Impact** – no construction activities would occur; therefore, there would be no increases in runoff, and there would be no potential water quality, groundwater, or drainage pattern impacts; however, inaction to accommodate the sewer service demands of anticipated future growth could result in private or alternative methods of wastewater collection and/or treatment, which could result in additional impacts.	**Greater Impact** – operation of two treatment facilities could result in greater impacts to water quality (Impact HYD-1 and Impact HYD-5) because two Waste Discharge Requirement permits would be required to be obtained from the RWQCB, which would be less efficient with respect to the City's efforts to simplify its monitoring and compliance efforts. Additionally, the proposed location of the additional treatment facility is within the Lake Yosemite inundation zone and therefore could experience flooding and potential contamination if a dam failure were to occur (Impact HYD-4). Impacts related to groundwater and drainage patterns (Impact HYD-2 and HYD-3) would be similar to those described for the Program. Program MM HYD-1, MM HYD-2, and MM GEO-2 would apply.	**Greater Impact** – operation of multiple treatment facilities could result in greater impacts to water quality (Impact HYD-1 and Impact HYD-5) because multiple Waste Discharge Requirement permits would be required to be obtained from the RWQCB, which would be less efficient with respect to the City's efforts to simplify its monitoring and compliance efforts. Additionally, the additional treatment facility locations could be located within inundation zones and therefore could experience flooding and potential contamination if a dam failure were to occur (Impact HYD-4). Impacts related to groundwater and drainage patterns (Impact HYD-2 and HYD-3) would be similar to those described for the Program. Program MM HYD-1, MM HYD-2, and MM GEO-2 would apply.	**Similar Impact** – Potential impacts related to water quality, groundwater resources, flooding, and drainage (Impacts HYD-1 through HYD-5) from the Campus Parkway Alternative would not substantially change from those described in the Program, because the Campus Parkway trunk sewer would largely occur within existing and planned ROW in the eastern portion of the City and would be constructed in a similar manner as described for the Program. Program MM HYD-1, MM HYD-2, and MM GEO-2 would apply.	**Lesser Impact** – Potential impacts related to water quality, groundwater resources, flooding, and drainage (Impacts HYD-1 through HYD-5) from this alternative would not substantially change from those described in the Program; however, by recycling the effluent and pumping back through the system, water could percolate into the north Merced groundwater basins, which could have a minor net benefit. This alternative would be constructed in a similar manner as described for the Program. Program MM HYD-1, MM HYD-2, and MM GEO-2 would apply.	**Similar Impact** – Potential impacts related to water quality, groundwater resources, flooding, and drainage (Impacts HYD-1 through HYD-5) from the Reduced Build-Out Capacity Alternative would not substantially change from those described in the Program because the Reduced Build-Out Capacity Alternative would be constructed in a similar footprint and manner as described for the Program. Program MM HYD-1, MM HYD-2, and MM GEO-2 would apply.	**Similar Impact** – Potential impacts related to water quality, groundwater resources, flooding, and drainage (Impacts HYD-1 through HYD-5) from the Parallel or Upsized Existing System Alternative would not substantially change from those described in the Program, because the Parallel or Upsized Existing System Alternative would largely occur within existing and planned ROWs would be constructed in a similar manner as described for the Program. Program MM HYD-1, MM HYD-2, and MM GEO-2 would apply.

Environmental Resource Area	Program	No Project Alternative	North Merced Satellite Treatment Alternative	Decentralized Facilities Alternative	Campus Parkway Alternative	Recycled Water Reclamation Alternative	Reduced Build-Out Sewer Capacity Alternative	Parallel or Upsized Existing System Alternative
Land Use and Planning	LTS	**Greater Impact** – no facilities would be constructed; however, the wastewater collection and treatment system would continue to operate at existing capacity, which would not be sufficient to serve anticipated future growth identified in the Merced Vision 2030 General Plan and could result in an overall greater impact to land use and planning in the City.	**Greater Impact** – the additional treatment facility could result in inconsistencies with the 2030 General Plan (Impact LU-2), which analyzed growth using only one treatment facility and using existing infrastructure to the maximum extent possible (Policy 1.2 of the 2030 General Plan). The additional treatment facility would not physically divide an established community (Impact LU-1) because it would be located on previously disturbed land, outside of existing communities.	**Greater Impact** – the additional treatment facilities could result in inconsistencies with the 2030 General Plan (Impact LU-2), which analyzed growth using only one treatment facility and using existing infrastructure to the maximum extent possible (Policy 1.2 of the 2030 General Plan). Further, the additional treatment facilities could result in additional impacts related to physically dividing an established community (Impact LU-1) because they could be located in or near current or future communities.	**Greater Impact** – this alternative would require construction of new pipelines outside of the City's SUDP/SOI which could result in greater impacts to land use and consistency with the 2030 General Plan (Impact LU-2). Additional permits and agreements with Merced County would be required for placement and long-term maintenance and operation of these pipelines. No change related to dividing an established community (Impact LU-1) would occur for the Campus Parkway Alternative from that described under the Program.	**Greater Impact** – no change related to dividing an established community (Impact LU-1) would occur for this alternative from that described under the Program. The additional land and approvals required for the additional pipelines and pump/lift stations could result in further land use impacts beyond those described for the Program (Impact LU-2)	**Similar Impact** – no change related to dividing an established community (Impact LU-1) would occur for this alternative from that described under the Program. The Reduced Build-Out Capacity Alternative would also result in similar less than significant impacts related to land use consistency as described for the Program (Impact LU-2).	**Similar Impact** – no change related to dividing an established community (Impact LU-1) would occur for this alternative from that described under the Program. The Parallel or Upsized Existing System Alternative would also result in similar less than significant impacts related to land use consistency as described for the Program (Impact LU-2).
Noise	LTS/M	**Lesser Impact** – no construction activities would occur; therefore, there would be no potential to increase noise in the area; however, inaction to accommodate the sewer service demands of anticipated future growth could result in private or alternative methods of wastewater collection and/or treatment, which could result in additional impacts.	**Greater Impact** – the construction and operation of the additional treatment facility would require construction activities to occur within 300 feet of multiple residences, thus resulting in additional permanent and temporary noise and vibration increases (Impact NOS-1 and NOS-2). Program MM NOS-1 through NOS-3 would still apply.	**Greater Impact** – the construction and operation of the additional treatment facilities would require construction activities to occur near multiple residences, thus resulting in additional permanent and temporary noise and vibration increases (Impact NOS-1 and NOS-2). Program MM NOS-1 through NOS-3 would still apply.	**Lesser Impact** – construction of this alternative would involve similar impacts related to noise and vibration (Impact NOS-1 and NOS-2) because this alternative would be constructed in a similar manner as described for the Program and would be located near sensitive receptors at similar distances as described for the Program. However, the distances from residences and other compounding noise sources such as the airport are greater and thereby potential noise impacts may be slightly less under this alternative.	**Greater Impact** – the construction and operation of this alternative would require additional construction activities for the pipes and pump/lift stations (Impact NOS-1 and NOS-2), thus resulting in an increase in overall noise and vibration impacts that were not analyzed within the Program. Program MM NOS-1 through NOS-3 would still apply.	**Lesser Impact** – construction of this alternative would involve similar impacts related to noise and vibration (Impact NOS-1 and NOS-2) because this alternative would be constructed in a similar footprint and manner as described for the Program and would be located near sensitive receptors at similar distances as described for the Program.	**Greater Impact** – construction of this alternative would involve similar impacts related to noise and vibration (Impact NOS-1 and NOS-2) because this alternative would be constructed in a similar manner as described for the Program and would be located near sensitive receptors at similar distances as described for the Program.
Population and Housing	LTS	**Greater Impact** – the wastewater treatment and collection facilities would continue to operate under existing conditions and therefore would not allow for future growth identified in	**Similar Impact** – the additional treatment facility would not result in additional impacts to direct or indirect impacts related to population and housing beyond those analyzed under the Program (Impact POP-1 and POP-2).	**Similar Impact** – the additional treatment facilities would not result in additional impacts to direct or indirect impacts related to population and housing beyond those analyzed under the Program (Impact POP-1 and POP-2).	**Similar Impact** – this alternative would not result in additional impacts to direct or indirect impacts related to population and housing beyond those analyzed under the Program (Impact POP-1 and POP-2).	**Similar Impact** – this alternative would not result in additional impacts to direct or indirect impacts related to population and housing beyond those analyzed under the Program (Impact POP-1 and POP-2).	**Similar Impact** – this alternative would not result in additional impacts to direct or indirect impacts related to population and housing beyond those analyzed under the Program (Impact POP-1 and POP-2).	**Similar Impact** – this alternative would not result in additional impacts to direct or indirect impacts related to population and housing beyond those analyzed under the Program (Impact POP-1 and POP-2).

Environmental Resource Area	Program	No Project Alternative	North Merced Satellite Treatment Alternative	Decentralized Facilities Alternative	Campus Parkway Alternative	Recycled Water Reclamation Alternative	Reduced Build-Out Sewer Capacity Alternative	Parallel or Upsized Existing System Alternative
		the Merced Vision 2030 General Plan, resulting in a greater indirect impact to population and housing.						
Public Services and Utilities	LTS	**Greater Impact** – no construction activities would occur, and therefore no changes to public services or utilities would occur; however, inaction to accommodate the sewer service demands of anticipated future growth could result in private or alternative methods of wastewater collection and/or treatment, which could result in service deficiencies.	**Greater Impact** – the additional treatment facility could result in additional environmental effects beyond those analyzed under the Program, as discussed herein (Impact PUB-2). Impacts related to other public services, water infrastructure and supplies, and solid waste (PUB-1, and PUB-3 through PUB-6) would remain unchanged from those analyzed under the Program.	**Greater Impact** – the additional treatment facilities could result in additional environmental effects beyond those analyzed under the Program, as discussed herein (Impact PUB-2). Impacts related to other public services, water infrastructure and supplies, and solid waste (PUB-1, and PUB-3 through PUB-6) would remain unchanged from those analyzed under the Program.	**Similar Impact** – no additional impacts related to public services and utilities (Impact PUB 1 through PUB-6) are anticipated for this alternative beyond those described for the Program.	**Similar Impact** – no additional impacts related to public services and utilities (Impact PUB 1 through PUB-6) are anticipated for this alternative beyond those described for the Program.	**Greater Impact** – the reduction of sewer capacity could result in utilities being developed that would work to serve the SUDP/SOI or alternately would not be developed, in which case greater impacts to public service and utilities (Impact PUB 1 through PUB-6) could occur beyond those described for the Program. It is not anticipated that the reduced capacity would limit impacts further.	**Greater Impact** – conflicts with existing utilities and public services are anticipated under this alternative, and impacts would be greater than those described for the Program (Impact PUB 1 through PUB-6).
Recreation	NI	**Similar Impact** – recreational facilities within the City would continue to operate under existing conditions, which would not change as a result of implementation of the Program or one of the alternatives; however, inaction to accommodate the sewer service demands of future growth could result in private or alternative methods of wastewater collection and/or treatment, which could result in additional impacts.	**Similar Impact** – recreational facilities within the City would continue to operate under existing conditions, which would not change as a result of implementation of the Program or one of the alternatives.	**Similar Impact** – recreational facilities within the City would continue to operate under existing conditions, which would not change as a result of implementation of the Program or one of the alternatives.	**Similar Impact** – recreational facilities within the City would continue to operate under existing conditions, which would not change as a result of implementation of the Program or one of the alternatives.	**Similar Impact** – recreational facilities within the City would continue to operate under existing conditions, which would not change as a result of implementation of the Program or one of the alternatives.	**Similar Impact** – recreational facilities within the City would continue to operate under existing conditions, which would not change as a result of implementation of the Program or one of the alternatives.	**Similar Impact** – recreational facilities within the City would continue to operate under existing conditions, which would not change as a result of implementation of the Program or one of the alternatives.

Environmental Resource Area	Program	No Project Alternative	North Merced Satellite Treatment Alternative	Decentralized Facilities Alternative	Campus Parkway Alternative	Recycled Water Reclamation Alternative	Reduced Build-Out Sewer Capacity Alternative	Parallel or Upsized Existing System Alternative
Transportation	LTS/M	**Lesser Impact** – no construction activities would occur; therefore, there would no increases in traffic on roadways; however, inaction to accommodate the sewer service demands of anticipated future growth could result in private or alternative methods of wastewater collection and/or treatment, which could result in additional impacts.	**Greater Impact** – the additional treatment facility would require additional construction and operational truck trips to haul materials to and from the site, thus resulting in additional truck trips on the local roadways, greater interaction with emergency access, and potentially more interaction with farm equipment on the local roadways (Impacts TRA-1 through TRA-4). Program MMs TRA-1 and MM TRA-2 would still apply.	**Lesser Impact** – the additional treatment facilities would require additional construction and operational truck trips to haul materials to and from the sites, thus resulting in additional truck trips on the local roadways, greater interaction with emergency access, and potentially more interaction with farm equipment on the local roadways (Impacts TRA-1 through TRA-4). Program MMs TRA-1 and MM TRA-2 would still apply. However, the smaller localized facilities would require less trunk and collector pipelines disturbing less roadways and also are likely to be 'packaged' treatment facilities requiring less total construction all of which could have a lesser impact than the Program.	**Similar Impact** – this alternative would require similar construction and operational truck trips to haul materials and would result in similar impacts related to emergency personnel, and design hazards (Impacts TRA-1 through TRA-4) as described under the Program. The trunk sewer down Campus Parkway would not result in any additional impacts related to these topics. Program MMs TRA-1 and MM TRA-2 would still apply.	**Greater Impact** – this alternative would require additional construction and operational truck trips to haul materials for the additional pipes and pump/lift stations, and could result in greater impacts related to emergency personnel, and design hazards (Impacts TRA-1 through TRA-4) as described under the Program. Program MMs TRA-1 and MM TRA-2 would still apply.	**Lesser Impact** – this alternative would require similar construction and operational truck trips to haul materials and would result in similar impacts related to emergency personnel, and design hazards (Impacts TRA-1 through TRA-4) as described under the Program; however, the amount of construction would be reduced resulting in a lesser impact. Program MMs TRA-1 and MM TRA-2 would still apply.	**Greater Impact** – this alternative would require similar construction and operational truck trips to haul materials; however, construction within the City limits would result in greater potential impacts related to emergency personnel, and design hazards (Impacts TRA-1 through TRA-4) than those described under the Program. Because the Upsized Existing System Alternative would be constructed in the central portion of the City, where more traffic occurs, additional delays from construction activities would likely occur. Program MMs TRA-1 and MM TRA-2 would still apply.
Overall Impact	**NI: 1** **LTS: 5** **LTS/M: 9**	**Lesser: 10** **Similar: 1** **Greater: 4**	**Lesser: 1** **Similar: 4** **Greater: 10**	**Lesser: 1** **Similar: 2** **Greater: 12**	**Lesser: 1** **Similar: 13** **Greater: 1**	**Lesser: 1** **Similar: 4** **Greater: 10**	**Lesser: 8** **Similar: 6** **Greater: 1**	**Lesser: 2** **Similar: 6** **Greater: 7**
Environmentally Superior Value	**n/a**	**13**	**-14**	**-20**	**13**	**-14**	**20**	**-6**

Notes:
Environmentally Superior Values calculated with the following factors: lesser impact = +2 multiplier, similar impact= +1 multiplier, greater impact=-2 multiplier.
City = City of Merced
GHG = greenhouse gas
LTS = Less than Significant
LTS/M = Less than Significant with Mitigation Required
MM = Mitigation Measure
NI = No Impact
ROW = right-of-way
RWQCB = Regional Water Quality Control Board
SRA = State Responsibility Area
SUDP/SOI = Specific Urban Development Plan/Sphere of Influence

4.2 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

CEQA Guidelines Section 15126.6(e)(2) requires an EIR to identify an "environmentally superior alternative." If the No Project alternative is the environmentally superior alternative, the EIR must also identify an environmentally superior alternative from among the other alternatives.

The qualitative and quantitative environmental effects of each alternative in relation to the Program are included in Table 4.1-3. To quantitatively identify an environmentally superior alternative, the number of Program objectives (Table 4.1-1) the alternative meets was weighted and added to value of the environmental impact (Table 4.2-1). Accordingly, the feasible alternative (Table 4.1-2) with the highest quantitative score is the environmentally superior alternative. Table 4.2-1 provides a comparison of these quantitative results and presents the environmentally superior rankings.

Table 4.2-1: Environmentally Superior Alternative Comparison Summary

	No Project Alternative	North Merced Satellite Treatment Alternative	Decentralized Facilities Alternative	Campus Parkway Alternative	Recycled Water Reclamation Alternative	Reduced Build-Out Sewer Capacity Alternative	Parallel or Upsized Existing System Alternative
Weighted Objective Score	6	12	6	18	12	12	16
Overall Environmental Impact	13	-14	-20	13	-14	20	-6
Alternative Score	19	-2	-14	32	-2	32	10
Feasibility	Feasible	Feasible	Not Feasible	Feasible	Not Feasible	Feasible	Not Feasible
Alternative Ranking	3	5	7	1	5	1	4

Note: Alternative score was calculated by adding the overall environmental impact score with the weighted (by a factor of 2) number of objectives met.

Since the Program and proposed Projects would not result in any significant and unavoidable impacts, the environmentally superior alternative is selected based on the discussion in Table 4.1-3, which includes a comparison of whether the alternative would result in a lesser or greater impact than the Program. Overall, the Campus Parkway Alternative and the Reduced Build-Out Sewer Capacity Alternative tied for the best ranking. The Campus Parkway alternative achieves a decrease in fewer environmental effects (noise) but meets 9 out the 10 Program objectives and only has one resource that would increase the magnitude of impact (land use and planning). Conversely, the Reduced Build-Out Sewer Capacity Alternative achieves a decrease in the magnitude of construction related impacts for 8 resources (Aesthetics and Visual Resources, Agricultural and Forestry Resources, Air Quality, Biological Resources, Cultural Resources, Greenhouse Gases and Energy Resources, Noise, and Transportation) but only meets 6 of the 10 Program objectives and increases the environmental impact associated with Public Services and

Utilities. Both alternatives met the feasibility screening criteria and would require similar mitigation measures to reduce potential impacts as the Program. Since the alternatives tied, the environmental impact score was used to select the Reduced Build-Out Sewer Capacity Alternative as the environmentally superior alternative.

4.3 ABBREVIATIONS

CCR	California Code of Regulations
CEQA	California Environmental Quality Act
City	City of Merced
CVRWQCB	Central Valley Regional Water Quality Control Board
EIR	Environmental Impact Report
GHG	greenhouse gas
LTS	Less than Significant
LTS/M	Less than Significant with Mitigation
Mgal/d	Million Gallons Per Day
MID	Merced Irrigation District
MM	Mitigation Measure
NI	No Impact
NOP	Notice of Preparation
NPDES	National Pollution Discharge Elimination System
PRC	Public Resources Code
ROW	right-of-way
RWQCB	Regional Water Quality Control Board
SR	State Route
SRA	State Responsibility Area
SUDP/SOI	Specific Urban Development Plan/Sphere of Influence
UC Merced	University of California, Merced
UPRR	Union Pacific Railroad
WCSMP	Wastewater Collection System Master Plan
WWTRF	Wastewater Treatment and Reclamation Facility
2030 General Plan	City of Merced Vision 2030 General Plan

4.4 REFERENCES

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

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