CHAPTER 5
Project Alternatives

5.1 Introduction

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

Additionally, Section 15126.6(b) of the CEQA Guidelines requires consideration of alternatives that could substantially lessen or avoid significant adverse environmental effects of the project, including alternatives that may be more costly or would attain most of the project's objectives.

For projects applying for loans through the State Revolving Fund, regulations require that the alternatives analysis discuss the environmental impacts, cost-effectiveness, compatibility with proposed or existing projects, and the reasons for rejection for each alternative and include future options (e.g., recycling regionalization). The fund requirements state that potential alternatives should be feasible and reasonable and should accomplish the basic purposes of the project. Just as importantly, these requirements specify that the analysis carry forward alternatives that avoid or substantially lessen significant effects associated with the proposed project.

5.1.1 Factors in Selection of Alternatives

The alternatives addressed in this EIR were selected in consideration of one or more of the following factors:

- Those alternatives that had been suggested in previously received comment letters;
- The extent to which the alternative would accomplish most of the basic goals and objectives of the Wastewater Treatment Plant Expansion Project (Project) (see Chapter 2, Project Description);
- The extent to which the alternative would avoid or lessen any of the identified significant environmental effects of the Project;
- The feasibility of the alternative, taking into account hydraulic characteristics, site suitability, availability of infrastructure, and consistency with applicable plans and regulatory limitations;

- The appropriateness of the alternative in contributing to a "reasonable range" of alternatives necessary to permit a reasoned choice; and

- The requirement of the California Environmental Quality Act (CEQA) Guidelines to consider a "no project" alternative and to identify an "environmentally superior" alternative in addition to the no project alternative (CEQA Guidelines, Section 15126.6(e)).

The significant environmental impacts that the alternatives will seek to eliminate or reduce include:

- Impacts to biological resources and wetlands
- Conversion of prime agricultural land
- Water quality effects
- Air quality impacts (construction- -related)
- Growth-inducing effects
- Noise and nuisance effects on adjacent residential communities from increased haul trips

5.2 Alternatives Considered, But Eliminated From Further Consideration

A number of alternatives were considered, but eliminated from detailed consideration in this EIR because of their poor cost-effectiveness, limited reliability, and potential to result in significant environmental effects. Alternatives that consisted of a reduced treatment capacity of less than 12 million gallons per day (mgd), were not evaluated in the EIR because they would not meet the basic objectives of the Project, which is to provide sufficient treatment capacity to serve planned growth within the City of Merced's SUDP and the UC-Merced campus.

Therefore, each of the following alternatives is not considered to be feasible, based on criteria in the CEQA Guidelines, Section 15126.6(c):

- Alternative major phases or components
- Alternative siting locations
- Alternative project that could accomplish Project objectives

5.2.1 Alternative Major Phases or Components

Treatment Technologies

Prior to the development of the Project layout shown in Figure 2-3, the City considered alternative treatment technologies and establishing decentralized satellite treatment facilities at various locations in the Merced community. It was concluded that alternative siting options are restrictive from both an engineering and cost standpoint because of the location of the current facilities (e.g., primary clarifiers, headworks). The most cost-effective means to accomplish the proposed wastewater treatment plant (WWTP) upgrades is to place new and/or replacement

facilities near their associated counterparts. This would limit costs for construction materials and maintenance and provide the logical layout of the overall WWTP.

Likewise, the placement of the new outfall pipeline alignment has been identified as the preferred location because of its short distance, avoidance of the woodland areas to the south, and placement within areas currently disturbed by past WWTP operations.

Beyond the WWTP expansion area identified in Figure 2-4, no additional lands are proposed to support physical elements of the Project. Additional lands may be used for biosolids disposal, subject to local review and approval.

Tertiary Treatment Technologies

Tertiary treatment alternatives evaluated as part of Project engineering included sand media, cloth-medium "disk" filters, and membrane filtration technologies. Each of these technologies could produce acceptable quality tertiary effluent consistent with California Department of Health Services "Title 22" pathogen-free reuse criteria. Cloth-medium filters were preferred and selected for the following reasons:

- There are now two Title 22-approved vendors who can provide cloth-medium filters in a competitive environment.
- Cloth-medium filters appear to be the least expensive of the filtration options considered and cost about 15 percent less than conventional sand filtration.
- Cloth-medium filters operate at lower head loss than other filter types and have low backwash rates (ECO:LOGIC, 2006).

Use of Existing Headworks

Continued use of the existing headworks was considered but eliminated because the grit removal channels provide marginal grit removal and generate objectionable odors. Influent Pump Stations Nos. 1 and 2 cannot be expanded cost-effectively to accommodate Project design peak-hour wet weather flows. The required seismic upgrades to the building, electrical modifications, new structures, and condition of the piping and pumps make rehabilitating the facilities more costly than constructing a new pump station. The septage receiving station is in an area that can result in traffic congestion for both the septage haulers and plant operations and conflict with security control of the WWTP facilities (ECO:LOGIC, 2006).

Biosolids Disposal

The proposed biosolids treatment process, as shown in Figure 2-6, includes a combination of facilities that allow the disposal of sludge to multiple locations both before and after drying. Because this combination provides the greatest operational flexibility for disposal options and would result in the lowest risk for future disposal cost increases, the biosolids treatment and handling methods outlined in Chapter 2 were considered the most feasible.

Viable disposal options available in addition to the proposed actions and facilities described in Chapter 2 include offsite hauling to the Forward Landfill in Manteca, California; hauling to the Synagro landfill as both Class A composting and Class B land disposal; or hauling to the Lehigh Cement Plant for disposal (ECO:LOGIC, 2006). These alternatives were generally not preferred due to their higher transportation costs and associated increasing criteria air pollutants emissions (namely, NO_x [nitrogen oxides] and PM_{10} [particulate matter with a diameter of 10 microns or less]). Continued treatment at Class B levels was not considered feasible because of concerns expressed by the Central Valley Regional Water Quality Control Board (RWQCB) and limitations on where Class B may be applied.

5.2.2 Alternative Siting Locations

As part of its North Merced Sewer Master Plan (ECO:LOGIC, 2002), the City evaluated the feasibility of constructing a satellite WWTP in the north Merced area to serve planned development and to minimize the need to expand the current WWTP. The analysis focused on the threshold unit cost (dollars per acre-foot) to be economically feasible to generate a reclaimed water supply. The City concluded that the construction of satellite treatment facilities would not be cost-effective when compared to improving and expanding the current WWTP. This finding is based on the higher price of reclaimed water needed to offset satellite facility construction as compared to other water supplies and the fact that there is demand for reclaimed water only during the dry season (ECO:LOGIC, 2002).

5.2.3 Alternative Projects That Could Accomplish the Project Objectives

Project Objectives

The objectives of the Project consist of:

- Installing sufficient WWTP capacity to meet wastewater loads generated by planned population growth and development within the City's service area
- Installing additional levels of wastewater treatment sufficient to meet current and future effluent quality regulatory limits by replacing aged facilities with improved wastewater treatment technologies and processes

The physical capacity and authorized discharge of the current WWTP is 10.0 mgd. With the installation of previously planned improvements, issuance of a new NPDES permit and certification of this EIR, the WWTP could be operated at an average daily wastewater flow of 11.5 to 12 mgd. The physical facilities at the WWTP are not capable of a higher capacity without sacrificing effluent quality and possibly exceeding effluent quality limits established in Waste Discharge Requirements. Therefore, there are no viable alternatives to installing equipment and treatment facilities capable of increasing the WWTP capacity.

As noted in Chapter 1, the approved City of Merced SUDP and UC-Merced campus LRDP call for future population growth and development that will ultimately create wastewater loads of 20 mgd. Alternatives that would enhance existing treatment technologies (e.g. tertiary-treatment) without establishing additional WWTP capacity capable of serving this volume would conflict with these plans and previous land use decisions. For this reason, other projects that would only provide enhanced treatment technologies were eliminated from further consideration in this document. For various engineering, cost, or other reasons, other treatment technologies, alternative sites, and alternative facilities were considered, but eliminated from detailed consideration in this analysis. Based on these circumstances, the alternatives considered in this EIR are limited to the CEQA-mandated No Project Alternative.

5.3 Alternatives Evaluated in This EIR

As previously discussed, several alternative projects, technologies, and locations were considered during the Project's engineering and planning stages. Only the No Project Alternative is being carried forward for detailed consideration in this document.

5.3.1 No Project Alternative

With selection of the No Project Alternative, the Project would not be constructed. The No Project Alternative would avoid construction-related impacts to wetlands and adverse air quality effects that are associated with the Project's construction. Other impacts that would initially be avoided include land use conflicts, construction- and operation-related noise, potential erosion, conversion of prime agricultural land, and potential disruptions to traffic and emergency service. Wastewater flows would continue to be discharged into Hartley Slough at the existing rate of about 8.5 mgd and could increase up to the 10 mgd as currently authorized by the CVRWQCB. However, the City would be unable to satisfy its objective of providing sufficient wastewater treatment capacity and, therefore, be unable to serve planned populations and development anticipated in the City's General Plan and the UC-Merced LRDP. If the No Project Alternative is selected, community growth and development would be limited by available WWTP capacity.

Water quality benefits associated with the Project would not be realized, including upgrades to achieve disinfected, tertiary-treated effluent that could be used as recycled water. It may be technically feasible for another entity to propose and operate a wastewater treatment facility to serve the Merced SUDP, UC-Merced campus, and surrounding unincorporated lands; however, multiple constraints would likely limit such a facility's location, operation, and ability to comply with regulatory requirements. For instance, a suitable receiving waterway would need to be identified for discharge of treated effluent. If not identified, the land-application of treated effluent with sufficient storage to retain flow during wet winter months would likely be needed. Such a facility would likely discharge treated effluent overlying existing groundwater supplies used by the City. Additional study would be needed to determine if such an operation would contaminate existing City drinking water supplies.

Establishment of a separate wastewater treatment facility to serve lands within the SUDP would require modify existing sewers and wastewater conveyance systems. Substantial reconstruction and installation of additional pumping and conveyance facilities may be needed to serve portion of the SUDP, separate from the existing WWTP.

Because of the complexities and potential for significant environmental effects, the establishment of other wastewater facilities is considered to be a separate project and would be subject to another CEQA environmental impact review process.

5.4 Environmentally Superior Alternative

The No Project Alternative would avoid many of the potential environmental effects associated with construction of the Project. However, it would not achieve the long-term water quality improvements that would occur with implementation of the Project. Because the Project would improve the long-term water quality of Hartley Slough, the Project is considered to be environmentally superior to the No Project Alternative.

With selection of the No Project Alternative, the City would be unable to meet planned wastewater demands and unable to achieve improved effluent quality. The No Project Alternative would conflict with the City's General Plan objective of updating sanitary sewer infrastructure and facilitating continued implementation and build-out of the Specific Urban Development Plan and the UC-Merced LRDP. Under the No Project Alternative, the City would not be able to fulfill the objectives of the Central Valley RWQCB to improve the water quality within Hartley Slough, which is classified as an effluent-dominated water body that ultimately drains toward the San Joaquin River. As a result, the Project considered Environmentally Superior Alternative when compared to the No Project Alternative.