Patterson Wastewater Master Plan and Diablo Grande Sewer Line

Final Environmental Impact Report

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TABLE OF CONTENTS

TABLE OF CONTENTS
Continued

TABLE OF CONTENTS
Continued

TABLE OF CONTENTS
Continued

Chapter/Section — Page

Exhibits — Page

TABLE OF CONTENTS
Continued

1 INTRODUCTION AND SUMMARY

1.1 PURPOSE OF THE PROPOSED PROJECT

The City of Patterson is expecting rapid growth over the next two decades. The City's current population (approximately 13,050) is projected to grow by 6% annually through 2010, adding approximately 7,800 residents to a total exceeding 20,000 during that period. The City's population is projected to grow to 30,000 by the year 2020, which is the projected holding capacity of the current General Plan. Much of this growth is planned to occur in the western portion of the City. The unincorporated portion of Stanislaus County west of Patterson is also projected to grow over the next decade. The City's proposed Wastewater Master Plan includes expansion of the City's wastewater facilities to collect, treat, and dispose of wastewater generated by this approved and planned growth.

1.1.1 PLANNED AND APPROVED GROWTH IN THE PATTERSON AREA

In January 2003, the City approved the Patterson Gardens mixed-use development in the western portion of the City; this development would add 987 residences and approximately 302,500 square feet of commercial, retail, and office uses to the City. The City of Patterson also approved a General Plan amendment to annex the Keystone Pacific Business Park site and a portion of the West Patterson Business Park Master Development Plan area into the City's sphere of influence, adding approximately 343 acres of light industrial, warehouse, commercial, retail, and office uses to its sphere of influence.

Phase One of Diablo Grande is an approved planned residential and resort community consisting of approximately 2,100 residences, six golf courses, resort hotel and conference facilities, a Town Center, a research campus, commercial centers, open space, and agricultural land uses. Diablo Grande Phase One would be developed over a 10-year period. Two golf courses (i.e., the Ranch Golf Course and the Legends West Golf Course), including a clubhouse, two snack shacks, and two restrooms, are currently operating at Diablo Grande. At full buildout, Diablo Grande (Phase One) is currently projected to generate about 710,000 gpd of wastewater.

Through recent discussions, the City of Patterson and the Western Hills Water District (WHWD) have determined that it would be beneficial to both parties to proceed with a sewer treatment alternative whereby the City of Patterson would treat WHWD sewer influent generated from Phase One of the Diablo Grande project. This would be done at the existing Patterson wastewater treatment facility. This approach is beneficial to both parties for many reasons. First, the Central Valley Regional Water Quality Control Board (RWQCB) has

expressed an interest in reducing the number of plants through regionalization. This proposal would result in wastewater from the City and the WHWD being collected and conveyed to one central facility thereby making its management, disposal and permitting easier. Secondly, the City of Patterson currently has much of the required maintenance and treatment infrastructure to serve a portion of Diablo Grande wastewater, and the service can be provided much more cost effectively and efficiently. Third, this approach will avoid the need for construction of additional onsite facilities or expansion of the plant now under construction at the Diablo Grande project. Fourth, Diablo Grande's conveyance of wastewater to the City of Patterson wastewater treatment plant allows the WHWD to participate in costs of City of Patterson collection facility improvements, thereby reducing the cost of the entire project to the City of Patterson.

1.1.2 PROJECT OBJECTIVES

The primary objectives of the proposed Wastewater Master Plan and Diablo Grande Sewer Line project are to:

- continue to provide wastewater services at a reasonable rate for approved and planned growth in the City and its sphere of influence through the General Plan buildout year of 2020;
- provide wastewater services at a reasonable rate to Phase One of the approved Diablo Grande Specific Plan project in Stanislaus County;
- minimize the number of wastewater treatment plants serving the Diablo Grande Specific Plan project to consolidate management, disposal and permitting of the facilities; and
- reduce the cost of wastewater facility improvements needed to serve the City and the Diablo Grande Specific Plan project by WHWD's participation in the combined facility improvements and by using the City's existing maintenance and facility infrastructure to serve the Diablo Grande Specific Plan project.

1.2 SUMMARY

This summary is provided in accordance with State California Environmental Quality Act (CEQA) Guidelines §15123. As stated in the State CEQA Guidelines §15123(a), "[a]n [Environmental Impact Report] EIR shall contain a brief summary of the proposed actions and its consequences. The language of the summary should be as clear and simple as reasonably practical." State CEQA Guidelines §15123(b) states, "[t]he summary shall identify: (1) Each significant effect with proposed mitigation measures and alternatives that would

reduce or avoid that effect; (2) Areas of controversy known to the Lead Agency including issues raised by agencies and the public; and (3) Issues to be resolved including the choice among alternatives and whether or how to mitigate the significant effects." Accordingly, this summary includes a brief synopsis of the proposed project and project alternatives, environmental impacts and mitigation, cumulative effects and mitigation, areas of known controversy, and issues to be resolved in the EIR. Table 1-1, at the end of this chapter, presents the summary of potential environmental impacts, their level of significance before mitigation, mitigation measures, and levels of significance with mitigation.

1.2.1 PROPOSED ACTIONS

The proposed project includes expansion of the City's wastewater facilities to serve approved and planned growth in the City and its sphere of influence, including the Creekside development area, Patterson Gardens, the Keystone Pacific Business Park, and buildout of the West Patterson Business Park Master Development Plan area. The proposed expansion would also accommodate wastewater generated by Phase One of Diablo Grande. The City is also requesting the RWQCB to revise the permitted capacity of its existing treatment and disposal facilities by 0.2 million gallons per day (mgd).

PHYSICAL CHARACTERISTICS

Proposed Wastewater Infrastructure Improvements

The proposed project would include construction of a sewer line from the Diablo Grande Specific Plan area to an existing City sewer trunk line near the intersection of Sperry and American Eagle avenues (described further below). The City's existing wastewater treatment plant would treat a portion of the wastewater generated by Diablo Grande (approximately 0.18 mgd), using a portion of the remaining capacity of the plant (approximately 0.5 mgd).

The proposed project also includes a first-phase expansion of the City's wastewater treatment facility (1.25 mgd) to serve: the portion of the previously approved Creekside residential development that cannot be accommodated with the plant's current remaining capacity; the Patterson Gardens development; and the first phases (about 150 acres) of the Keystone Pacific Business Park (a total of 0.5 mgd). The remaining capacity of the first-phase expansion (0.75 mgd) would replace the existing capacity that would be used to accommodate the initial 0.18 mgd of Diablo Grande wastewater, and the remaining wastewater generated by Phase One of Diablo Grande. Wastewater generated by Phase One of Diablo Grande is currently projected to total approximately 0.71 mgd. If actual flows are higher, the City would accommodate up to 0.75 mgd of wastewater from Diablo Grande Phase One.

Although not a physical improvement, the City is currently requesting the RWQCB to revise (i.e., re-rate) the permitted capacity of the activated sludge system at its existing treatment plant by 0.2 mgd without additional modifications to the plant.

City Infrastructure Improvements

During preparation of this EIR, the City of Patterson submitted a Report of Waste Discharge (RWD) to the Regional Water Quality Control Board (RWQCB) to request authorization for expansion of the City's wastewater treatment facilities. During the subsequent consultation process, the RWQCB requested the City to consider expanding their wastewater treatment capacity using an activated sludge treatment process rather than an advanced integrated pond system (AIPS) process. In response to the RWQCB's request, the City evaluated the environmental effects of an Activated Sludge Alternative at a level of detail sufficient for the City Council to approve this alternative, if desired. The City has now selected the Activated Sludge Alternative as the proposed project. The following text describes the AIPS treatment system proposed by the City in the DEIR. The Activated Sludge Alternative is described in detail in Section 13.2.1 (Page 13-5) of this EIR, and is fully evaluated in Section 13.2.2 of this EIR.

Improvements required for the first-phase expansion include two new advanced integrated pond systems (AIPS) with 1.25 mgd of total treatment capacity on about 19 acres of land in the 100-acre treatment plant site. The new AIPS would be constructed where percolation ponds now exist. The City is also proposing to construct two sludge stabilization basins where percolation ponds and the sludge drying beds now exist. Other improvements would include an additional screen, grinder, and diversion gates for the existing headworks, two additional effluent pumps, an effluent flow meter, additional effluent piping (including a force main from the effluent pump station to the new percolation ponds), and landscaping at the plant. Other proposed improvements to upgrade the plant include a new maintenance and storage building, a concrete erosion skirt for the existing AIPS finishing ponds, and replacement of the existing 200-kilowatt (kW) diesel-powered backup generator with a 500-kW diesel-powered backup generator. Future facility upgrades might also include disinfection of treated effluent with sodium hypochlorite, the active ingredient in liquid bleach. Sodium hypochlorite would be used in a 12% solution. Facilities might include on-site storage tanks with spill containment structures, a double-walled metering pump, and double-walled piping.

It is estimated that the first-phase wastewater treatment plant expansion (1.25 mgd) would include up to 125 acres of land for the percolation/evaporation ponds, including replacement ponds for the area to be used for new AIPS. Because the City is examining several potential alternative locations for the first-phase ponds (and for future phases), this EIR discusses and analyzes approximately 277 acres of alternative pond sites at an equal, project-level of detail.

No river discharge is proposed. The City will consider annexation of the percolation pond sites in the future, but is not currently proposing annexation as part of the Wastewater Master Plan.

Diablo Grande Sewer Line and Lift Station

Under the proposed project, the WHWD would construct a sewer trunk line extending from within the Diablo Grande Specific Plan Area, down Diablo Grande Parkway to Del Puerto Canyon Road. This portion of the Diablo Grande sewer trunk line would be a force main, pressurized by a lift station constructed near the entrance of Diablo Grande. The precise location of the lift station has not yet been determined, but would consist of 2 or 3 pumps constructed within a fenced area of approximately 100 feet by 100 feet within the Diablo Grande Specific Plan area. It would also be sited in a location downhill from all wastewater-generating sources within Diablo Grande. The Diablo Grande lift station would include a propane-powered backup emergency-use generator. The size has not yet been determined. From Del Puerto Canyon Road, the Diablo Grande sewer line would run east along Sperry Avenue to the connection with the City's approved sewer trunk line in Sperry Avenue at American Eagle Avenue. This portion of the Diablo Grande sewer line would flow via gravity.

The section of the Diablo Grande sewer line west of Interstate 5 (I-5) would be constructed entirely within the shoulder of the existing Diablo Grande Parkway and Del Puerto Canyon Road. These roads have previously undergone CEQA review in the *Diablo Grande Specific Plan EIR* (Stanislaus County, June 15, 1993). East of I-5, the Diablo Grande sewer line would run eastward, parallel to Sperry Avenue. The sewer line would be located approximately 200 feet south of Sperry Avenue between I-5 and Rogers Road, and approximately 20 feet south of Sperry Road until it joins a City sewer line on the east side of Salado Creek. The sewer line would be bored beneath the California Aqueduct and the Delta-Mendota Canal, but would be trenched within the area between them. The sewer line is expected to be trenched across Salado Creek.

General Plan Buildout

Buildout of the City's General Plan and Diablo Grande Phase One would generate approximately 4.1 mgd of wastewater, including the wastewater currently treated by the City. As discussed above, the City's plant capacity is currently permitted at 1.3 mgd. Re-rating the plant's capacity could provide another 0.2 mgd, for a total of 1.5 mgd. The first-phase expansion would accommodate another 1.25 mgd. The City would then need an additional 1.35 mgd of capacity to accommodate buildout of its General Plan.

As with the proposed first-phase expansion, subsequent expansion phases of the treatment system would be accommodated by converting existing percolation ponds within the 100-acre plant to treatment ponds. Disposal of 4.1 mgd of wastewater would require up to 400 acres of land for percolation ponds, including the 125 acres currently proposed by the City for its first-phase expansion. The City will also need to construct sewer trunk lines in the East-North and East-South buildout areas and remove an existing lift station at the corner of Orange Avenue and First Avenue when that portion of the City is developed. The approximate locations of these trunk lines have been tentatively identified; however, their exact locations have not be identified, because buildout of the East-North and East-South areas would not occur for at least 5 to 10 years.

LAND USE APPROVALS

Implementation of the Wastewater Master Plan would require the following approvals by the City Council.

- Approval of the Wastewater Master Plan components.
- Approval of an agreement between the City and WHWD for the City to collect, treat, and dispose of wastewater generated by Diablo Grande.
- Approval of purchase agreements for acquisition of the percolation pond sites.
- Certification of this EIR.

Implementation of the Wastewater Master Plan would require the following approvals by the Stanislaus County Board of Supervisors.

- Approval of an amendment to the Diablo Grande Specific Plan to revise the method for wastewater collection, treatment, and disposal.
- Issuance of a Special Use Permit for construction and operation of the percolation ponds within parcels zoned as General Agriculture.
- Issuance of encroachment permits for: construction of the Diablo Grande sewer line within County road rights-of-way; any City collection lines constructed within County rights-of-way; and for the effluent force main between the treatment plant and the percolation ponds if it passes through County rights-of-way.

Implementation of the Wastewater Master Plan would require the following approval by the WHWD:

- Approval of an agreement between the City and WHWD for the City to collect, treat, and dispose of wastewater generated by Diablo Grande.

1.2.2 SUMMARY OF ENVIRONMENTAL EFFECTS

Chapters 4 through 10 of this EIR describe in detail the environmental impacts that would result from implementation of the proposed project. Impacts of a proposed project may be classified as either: (1) less than significant (adverse effects that are not substantial according to CEQA); (2) significant (substantial or potentially substantial adverse changes in the environment, for which mitigation measures must be recommended, if feasible); or (3) significant and unavoidable (substantial or potentially substantial adverse changes in the environment that cannot be feasibly reduced with mitigation measures to a less-than-significant level). Cumulative impacts are discussed in Chapter 11 of this EIR. Any significant unavoidable adverse impacts, growth-inducing impacts, and significant irreversible environmental changes that would occur with implementation of the proposed project are discussed in Chapter 12 (Other CEQA-Mandated Sections) of this EIR.

A description of the environmental impacts (including cumulative impacts), the level of significance before mitigation, mitigation measures, and level of significance after mitigation is presented in Table 1-1, at the end of this chapter.

1.2.3 SUMMARY OF ALTERNATIVES

ACTIVATED SLUDGE ALTERNATIVE

Discussion

During preparation of this EIR, the City of Patterson submitted a Report of Waste Discharge (RWD) to the Regional Water Quality Control Board (RWQCB) to request authorization for expansion of the City's wastewater treatment facilities. During the subsequent consultation process, the RWQCB requested the City to consider expanding their wastewater treatment capacity using an activated sludge treatment process rather than an Advanced Integrated Pond System (AIPS) process (a detailed description of these two processes in included in Section 2.3 of this EIR). In response to the RWQCB's request, the City is evaluating the environmental effects of an Activated Sludge Alternative at a level of detail sufficient for the City Council to approve this alternative, if desired. Therefore, the environmental analysis of this alternative in Chapter 13 of this EIR includes environmental impact conclusions and mitigation measures that facilitate the City of Patterson's review of the Activated Sludge Alternative. The environmental conclusions are based on the analyses performed for the proposed project and provided in Chapters 4 through 11 of this EIR. All mitigation measures recommended for the

proposed project that are applicable to the Activated Sludge Alternative would be incorporated into this alternative, and are listed in Section 13.2.2 of this EIR.

This alternative would be substantially similar to the proposed project. The wastewater collection and disposal systems would be similar to the proposed project. The City would expand its wastewater treatment facilities by approximately 1.25 mgd to accommodate wastewater from approved development (Creekside Meadows, Walker Ranch, Keystone Pacific Business Park, Patterson Gardens, and Diablo Grande), and would continue to expand its wastewater facilities to accommodate buildout of its General Plan. Similar to the proposed project, the 1.25-mgd first phase expansion would require up to 125 acres of land for percolation ponds, and expansion to accommodate General Plan buildout would require up to 275 additional acres.

Under this alternative, however, the City would treat the wastewater using an activated sludge process rather than an AIPS process. The new treatment facility would be constructed at the site of existing Percolation Pond 6, located south of the existing treatment facility and within the boundaries of the wastewater treatment plant. The activated sludge process would be a biological nutrient removal oxidation ditch with a single secondary clarifier. Solids produced from the new activated sludge process would receive additional biological treatment by use of two aerobic digesters. Sludge from the digesters would be dewatered in plastic media sludge drying beds. Supernatant from the digesters would be returned to the headworks of the plant for additional treatment. Coagulant chemical (polymer) would be added as required to thickened sludge from the aerobic digester as it is pumped to the sludge drying beds to enhance dewatering. The drying beds would utilize slotted plastic tiles to enhance drainage. Drainage from the drying beds would be returned to the plant headworks.

All sludge drying beds would be entirely contained in a reinforced concrete structure. To provide additional protection for the shallow groundwater, a 40-mil high-density polyethylene liner would be installed beneath each drying bed structure. Approximately one-third of the beds would be covered to permit operation during wet weather periods. Secondary sludge drying would be accomplished in a self-contained open area. Sludge would be periodically removed from the site and disposed of in a manner compliant with California state law.

The existing influent pump station would be modified to divert a portion of the influent flow to the new treatment process. Flow diverted to the new treatment process would receive preliminary treatment by means of a barscreen and grinders.

Conclusions

The Activated Sludge Alternative would result in similar environmental impacts as the proposed project. The mitigation measures for this alternative would reduce most significant environmental impacts to a less-than-significant level. Similar to the proposed project, the Activated Sludge Alternative would result in significant unavoidable project-level impacts related to farmland conversion for construction of the percolation ponds, and the increased odor-generating potential of the percolation ponds. Also similar to the proposed project, the Activated Sludge Alternative would result in significant unavoidable cumulative impacts related to farmland conversion and increases in regional criteria pollutants. This alternative would feasibly meet all project objectives.

NO PROJECT/NO DIABLO GRANDE CONNECTION

Discussion

Under this alternative, the City would not implement the Wastewater Master Plan as proposed in this EIR, and would not accommodate Diablo Grande wastewater. Accordingly, the WHWD would not construct the Diablo Grande sewer line and lift station. The City would implement a facility expansion project that was analyzed in the certified *West Patterson Projects EIR* (City of Patterson 2003). This alternative would include a two-phase, 1-mgd expansion of approximately 0.5 mgd per phase. The first-phase expansion would serve residential development that is approved or under construction in the Creekside development area, including Creekside Meadows, Walker Ranch I and II, and Shire Place residential projects. It would provide additional capacity to serve the Patterson Gardens proposal and a portion of the Keystone Pacific Business Park. The second-phase expansion would serve the balance of the Keystone Pacific Business Park, and future development within the West Patterson Business Park Plan Area. The project would also include all sewer collection lines to serve Patterson Gardens and the Keystone Pacific Business Park, and approximately 120 acres of percolation ponds required for the proposed expansion. This alternative would not accommodate buildout of the City's General Plan. Diablo Grande wastewater would be treated by onsite wastewater treatment facilities in accordance with its approved specific plan.

Conclusions

Although the total acreage of farmland conversion would be less than the proposed project, this alternative would still be expected to result in significant impacts related to farmland conversion (unavoidable impacts), loss of Swainson's hawk foraging habitat, short-term construction-related emissions, and odors (unavoidable impacts). This alternative would

eliminate one significant, but mitigable impact (i.e., San Joaquin kit fox), but would not reduce any significant unavoidable impacts to a less-than-significant level.

General Plan Buildout/No Diablo Grande Connection

Discussion

Under this alternative, the City would expand its wastewater treatment facilities by approximately 0.5 mgd to accommodate wastewater from approved development (Creekside Meadows, Keystone Pacific Business Park, and Patterson Gardens developments), and would continue to expand its wastewater facilities to accommodate buildout of its General Plan. The 0.5 mgd first-phase expansion would require up to 60 acres of land for percolation ponds. General Plan buildout would require approximately 335 acres of land for percolation ponds, instead of the 400 acres required for the proposed Wastewater Master Plan.

Conclusions

Although the total acreage of farmland conversion would be less than the proposed project (60 acres of new percolation ponds rather than 125 acres for the first-phase, and 335 acres of new ponds for General Plan buildout rather than 400 acres), this alternative would still be expected to result in significant impacts related to farmland conversion (unavoidable impacts), loss of Swainson's hawk foraging habitat, short-term construction-related emissions, and odors (unavoidable impacts). This alternative would eliminate one significant, but mitigable impact (i.e., San Joaquin kit fox), but would not reduce any significant unavoidable impacts to a less-than-significant level.

No Project/No Expansion of Treatment Capacity

Discussion

Under this alternative, the City would not expand its collection, treatment, or disposal facilities, and would not accommodate Diablo Grande wastewater. The 0.5-mgd capacity currently remaining at the City's wastewater treatment facility would serve previously approved development, but would not be sufficient to serve all previously approved development and would not serve buildout of the City's General Plan. Diablo Grande wastewater would be treated by onsite wastewater treatment facilities in accordance with its approved specific plan in the manner described in the No Project/No Diablo Grande Connection alternative.

Conclusions

This alternative would be expected to result in impacts associated with treatment and disposal of Diablo Grande wastewater as described in the *Diablo Grande Specific Plan EIR* (Stanislaus County 1993), and would eliminate all new environmental impacts related to expansion of the City's facilities and construction of the Diablo Grande sewer line and pump station. This alternative, however, would not be able to serve some previously approved development, including Patterson Gardens and the West Patterson projects.

First-Phase Expansion with Diablo Grande/No General Plan Buildout

Discussion

Under this alternative, the City would expand its wastewater treatment facilities by approximately 1.25 mgd to accommodate wastewater from approved development, including Creekside Meadows, Keystone Pacific Business Park, Patterson Gardens developments, and Diablo Grande. The City would not, however, continue to expand its wastewater facilities to accommodate buildout of its General Plan. This alternative would essentially be the first-phase of the proposed Wastewater Master Plan analyzed in this EIR.

The 1.25-mgd expansion would require up to 125 acres of land for percolation ponds. No future expansion phases would occur, so the maximum amount of land conversion for ponds would be about 125 acres.

Conclusions

Although the total acreage of farmland conversion would be less than the proposed project (125 acres of new percolation ponds rather than 400 acres for General Plan buildout), this alternative would still be expected to result in significant impacts related to farmland conversion (unavoidable impacts), loss of Swainson's hawk foraging habitat, short-term construction-related emissions, and odors (unavoidable impacts). This alternative, therefore, would not reduce any significant unavoidable impacts to a less-than-significant level.

Alternative Location - Wastewater Treatment Plant Expansion

Discussion

Constructing treatment facilities at an alternative location would require the same amount of land conversion for percolation ponds as the proposed project, but would also require conversion of about 19 additional acres for construction of the new AIPS facility. This

alternative would be expected to result in similar significant environmental effects as those generated by the proposed project related to air quality, odors, and cultural resources. Depending on the location, this alternative also could result in more conversion of farmland acreage (unavoidable impacts), and more loss of acreage for Swainson's hawk foraging habitat.

Conclusions

Constructing the expanded City wastewater treatment plant at an alternative location would result in similar impacts as the proposed project, but would require more land conversion than the proposed project because the new treatment facilities would not be constructed at the existing plant.

Alternative Location - Percolation Ponds

Discussion

This EIR fully analyzes the environmental effects of constructing the percolation ponds in several alternative locations. The Patterson area appears to provide a variety of locations for the ponds. The locations selected for analysis in this EIR do not likely represent the only feasible locations, but were identified after consideration of willing property owners and proximity to the existing wastewater treatment plant.

Conclusions

This alternative would be expected to result in similar environmental effects as the proposed project, and would not reduce any significant unavoidable impacts to a less-than-significant level.

Regional Treatment Facility Alternative

Discussion

Another alternative location scenario might include piping a portion of the untreated wastewater generated by the City and Diablo Grande to a regional wastewater facility. No regional facilities are located near Patterson. The City of Modesto's wastewater treatment facility serves the metropolitan Modesto area, which includes the City and nearby urbanized areas of Stanislaus County. The City of Modesto is currently preparing a study to assess the economic feasibility of expanding its wastewater facilities to serve as a regional facility. Alternatives for a regional facility might include one large regional treatment plant, or a variety of secondary treatment plants. Modesto's existing treatment and disposal facilities

currently have minimal additional capacity, and would not be able to accommodate projected flows from Patterson without additional expansion (Wong, pers. comm., 2003).

Conclusions

It is currently not feasible for Modesto's wastewater facility to serve as a regional facility to accommodate wastewater from the City of Patterson and Diablo Grande. Expansion of Modesto's facilities might present regional opportunities in the future, and the City of Patterson will evaluate such options at that time. A detailed discussion of potential environmental impacts would be speculative. However, it is reasonable to assume that, similar to the proposed Wastewater Master Plan, expansion of Modesto's facilities would convert farmland and/or natural habitat, generate air pollutant emissions and odors, and potentially affect cultural resources.

LAND DISPOSAL OF SECONDARY TREATED WASTEWATER

Discussion

Undisinfected secondary treated wastewater can be used to irrigate certain crops. Therefore, farmers electing to contract with the City to accept treated wastewater for irrigation might need to select other types of crops than they would otherwise choose to grow. Farming of a less economically productive crop could impair the agricultural productivity (i.e., economic productivity) of the farmland. However, because agricultural operations would be allowed to continue, this impact would be considered less than significant.

Up to 250 acres of irrigation land would be needed to dispose of the treated wastewater for the first-phase expansion (about 200 acres per mgd) and up to 560 acres would be needed for General Plan buildout. Approximately 60 acres (about 50 acres per mgd) of storage ponds would also be required for the 1.25-mgd first-phase expansion, and a total of about 140 acres would be needed for General Plan buildout.

Conclusions

The total acreage for land conversion for storage ponds would be less than the amount of land conversion needed for the proposed percolation ponds. This alternative would be expected to reduce the amount of groundwater currently pumped for irrigation, but would be expected to result in significant impacts related to farmland conversion (unavoidable impacts), loss of Swainson's hawk foraging habitat, construction noise, short-term construction-related emissions, and odors.

WATER REUSE/TERTIARY TREATMENT

Discussion

Tertiary-treated wastewater compared to secondary treated wastewater; parks and playgrounds, schoolyards, residential landscaping, and unrestricted access golf courses; can be used for a wider variety of crops. Up to 250 acres of irrigation land would be needed to dispose of the treated wastewater for the first-phase expansion (about 200 acres per mgd) and up to 560 acres would be needed for General Plan buildout. Approximately 60 acres (about 50 acres per mgd) of storage ponds would be required for the 1.25-mgd first-phase expansion, and a total of about 140 acres would be needed for General Plan buildout.

Patterson parks alone would not accept all of the treated effluent generated by the expanded wastewater treatment facility. The remaining effluent would need to be used to irrigate farmland. Farming of a less economically productive crop could impair the agricultural productivity (i.e., economic productivity) of the farmland. However, because agricultural operations would be allowed to continue, this impact would be considered less than significant.

Conclusions

The total acreage for land conversion for storage ponds would be similar to the amount of land conversion needed for the proposed percolation ponds. This alternative would be expected to reduce the amount of groundwater currently pumped for irrigation, but would be expected to result in significant impacts related to farmland conversion (unavoidable impacts), loss of Swainson's hawk foraging habitat, construction noise, short-term construction-related emissions, and odors.

RIVER DISCHARGE OF TREATED WASTEWATER

Discussion

No storage ponds would be required if all effluent is discharged to surface water, but they would be required if river discharge occurred seasonally.

River discharge would require pipes (i.e., outfalls) to the river. It is conceivable that new outfalls could be constructed in a manner that would minimize or avoid impacts to the floodplain and to riparian habitat supported by the San Joaquin River, such as using a jack and bore construction method. It is also conceivable that mitigation measures could reduce potentially significant impacts related to outfall construction (e.g., vegetation removal,

erosion/sedimentation, nesting raptors, temporary loss of Swainson's hawk foraging habitat) to a less-than-significant level.

Conclusions

Because this alternative would discharge effluent directly into the San Joaquin River, under the current regulatory environment for new discharges, it is likely the City's wastewater treatment facility would require upgrading to tertiary treatment. Although technology is expected to be available to reduce the impacts of river discharge to a less-than-significant level, this alternative may not be feasible for other reasons. The cost of providing tertiary treatment for wastewater would not allow the City to provide wastewater services at a reasonable rate, and would make the project economically infeasible. RWQCB is currently developing Total Maximum Daily Load (TMDL) limitations for several pollutants in the San Joaquin River. Obtaining a National Pollutant Discharge Elimination System (NPDES) permit for river discharge during RWQCB's development of the TMDL plan would likely be difficult and, thus, could render a river discharge alternative infeasible at this time.

ENVIRONMENTALLY SUPERIOR ALTERNATIVE

As discussed in Section 13.7 of this EIR, neither of the two "no project" alternatives nor either of the reduced project alternatives (i.e., General Plan Buildout/No Diablo Grande Connection and First-Phase Expansion with Diablo Grande/No General Plan Buildout) would meet the project objectives. Also as discussed in Section 13.7, neither the Regional Treatment Facility nor the River Discharge of Treated Wastewater alternatives would be feasible at this time. The Alternative Location - Wastewater Treatment Plant Expansion alternative would likely result in more land conversion than the proposed project, and the Alternative Location - Percolation Ponds alternative would result in similar impacts as the proposed project. The Activated Sludge Alternative would feasibly meet all project objectives. However, the Activated Sludge Alternative would result in similar environmental impacts as the proposed project and, thus, is not considered environmentally superior to the proposed project.

Land disposal of secondary or tertiary treated wastewater would require a smaller acreage of land conversion for storage ponds than for the disposal ponds proposed in the Wastewater Master Plan. These alternatives, however, would result in similar impacts as the proposed project, and would not reduce any significant unavoidable impacts to a less-than-significant level. These alternatives, however, would be expected to reduce the amount of groundwater currently pumped for irrigation. For this reason, these land disposal alternatives are environmentally superior to the proposed project. However, only the land disposal of secondary treated wastewater would feasibly meet the project objectives. The cost of providing

tertiary treatment for wastewater would not allow the City to provide wastewater services at a reasonable rate and, moreover, would render the project infeasible.

Land disposal of secondary treated wastewater, therefore, is considered the environmentally superior alternative that feasibly meets all project objectives. Although land disposal (for irrigation) is not currently proposed for the Wastewater Master Plan, the City will consider land disposal alternatives for future disposal applications.

1.2.4 Areas of Known Controversy

The proposed project raises issues and some areas of controversy that will be considered by City and County decision-makers. Controversial issues are known through expressions of public opinions that are documented in the record or obtained through public meetings. Some areas of known controversy are not within the purview of CEQA, because that statute focuses on evaluation of significant effects to the *physical environment*. Some non-environmental issues are included below, however, to help provide information to County decision-makers. Those areas of controversy that relate to a physical impact issue within CEQA's purview are so noted below.

- Some members of the community expressed concerns at the scoping meeting about constructing percolation ponds near the wastewater treatment plant. The concerns cited by the commenters were related to land use compatibility and economics, specifically: (1) the potential effect of increased odors to nearby residences; (2) potential effects on scenic quality; and (3) potential (i.e., negative) effects on land values of nearby parcels. Chapter 8 of this EIR analyzes the project's odor-generating effects, and the Initial Study (included as Appendix A) addresses potential effects on aesthetics, and scoped the issue out of this EIR.
- Some members of the community also expressed concerns at the scoping meeting about perceived increases in land use compatibility impacts and potential economic effects (i.e, negative) related to the additional wastewater treated by the City that would be generated by Diablo Grande. Chapter 8 of this EIR analyzes the project's odor-generating effects, and the Initial Study (included as Appendix A) addressed potential effects on aesthetics, and scoped the issue out of this EIR.

1.2.5 Issues to be Resolved

The EIR analysis did not identify any environmental issues to be resolved. Therefore, none are presented.

1.3 INTENDED USE, TYPE, AND FOCUS OF THIS EIR

The *West Patterson Projects EIR* (certified in January 2003) analyzed expansion of the City's collection, treatment, and disposal facilities to serve approved and planned growth in the City and its sphere of influence west of the City. The West Patterson EIR analyzed a two-phase, 1.0-mgd expansion of approximately 0.5 mgd per phase. The *West Patterson EIR* also analyzed construction of all sewer collection lines and percolation ponds required for that expansion (City of Patterson 2003).

Pursuant to Section 15161 of the State CEQA Guidelines, this EIR is intended to serve as a Project EIR for a 1.25-mgd first-phase expansion that would accommodate wastewater from Phase One of Diablo Grande; construction of the percolation ponds on sites not previously analyzed in the *West Patterson EIR*; construction of sewer collection lines required to serve the remainder of the West Patterson Business Park plan area; and construction of the Diablo Grande sewer line and lift station.

Pursuant to Section 15168 of the State CEQA Guidelines, this EIR is also intended to serve as a Program EIR for future expansion of the City's wastewater treatment and disposal system to serve buildout of the West Patterson area, and expansion of the City's wastewater collection, treatment, and disposal system to serve buildout of the East-North and East-South area in accordance with the City's General Plan.

1.3.1 LEAD, TRUSTEE , AND RESPONSIBLE AGENCY ACTIONS

Section 15050(a) of the State CEQA Guidelines state, "where a project is to be carried out or approved by more than one public agency, one public agency shall be responsible for preparing an EIR or Negative Declaration for the project. This agency shall be called the Lead Agency." The State CEQA Guidelines provides the following criteria for identifying the Lead Agency: "If the project will be carried out by a public agency, that agency shall be the Lead Agency even if the project would be located within the jurisdiction of another public agency"(State CEQA Guidelines §15051[a]). Also, "the Lead Agency will normally be the agency with general governmental powers, such as a city or county, rather than an agency with a single or limited purpose such as an air pollution control district or a district which will provide a public service or public utility to the project" (State CEQA Guidelines §15051[b][1]).

In addition to the Lead Agency, a number of other agencies would have discretionary approvals related to the proposed project. A responsible agency includes "all public agencies other than the lead agency that have discretionary approval power over the project" (State CEQA Guidelines §15381). A trustee agency is a "state agency having jurisdiction by law over

resources affected by the project which are held in trust for the people of the State of California" (State CEQA Guidelines §15386).

CITY OF PATTERSON

The City will serve as the lead agency for CEQA compliance and will coordinate as necessary with CEQA responsible and trustee agencies. The City is the lead agency for CEQA purposes because it has overall responsibility for approving the project and for providing wastewater treatment in the City. Also, the City will take the lead in securing funding for and implementing the proposed project. As lead agency under CEQA, the City is principally responsible for conducting the environmental review process, including scoping, preparing appropriate environmental documentation (i.e., this EIR), and obtaining required permits and other regulatory approvals.

STANISLAUS COUNTY

The proposed project would require an amendment to the Diablo Grande Specific Plan to revise the method for wastewater collection, treatment, and disposal. Stanislaus County would serve as a responsible agency for approval of the specific plan amendment. The percolation ponds would be located within Stanislaus County jurisdiction, and would require County approval of a Special Use Permit. Construction of utility lines within County road rights-of-way require encroachment permits. The WHWD will require an encroachment permit for construction of the Diablo Grande sewer line within the rights-of-way of Del Puerto Canyon Road, the County portion of Sperry Avenue, and Diablo Grande Parkway if the parkway is dedicated to the County before construction of the sewer line. The City would also require a County encroachment permit for any City collection lines constructed within County rights-of-way, and for the effluent force main between the treatment plant and the percolation ponds if it passes through County rights-of-way. Stanislaus County would also serve as a responsible agency for approval of the Special Use Permit and the encroachment permits.

WESTERN HILLS WATER DISTRICT

Implementation of the Wastewater Master Plan would require WHWD approval of an agreement between the City and WHWD for the City to collect, treat, and dispose of wastewater generated by Diablo Grande. WHWD would serve as a responsible agency for this approval.

Other responsible and trustee agencies would also have discretionary approvals related to the Patterson Wastewater Master Plan project. Their related areas of review/discretionary authority are discussed in Chapter 2 (Project Description).

1.3.2 SCOPING AND PUBLIC REVIEW

NOTICE OF PREPARATION AND SCOPING

A public meeting on the proposed Wastewater Master Plan EIR was held on November 13, 2002, at the City of Patterson Council Chambers. The objectives of the meeting were to brief interested parties on the proposed project, summarize the possible environmental issues to be evaluated, and obtain the views of the public on the scope and content of the proposed EIR. A summary of the oral comments received at the meeting and the City's means of addressing these comments are included in Appendix A. No written comments were provided.

A Notice of Preparation (NOP)/Initial Study (IS) was issued by the City on April 16, 2003, and was filed with the State Clearinghouse as required by Section 15082 of the State CEQA Guidelines. The NOP/IS is included in Appendix A. A public scoping meeting was held on April 22, 2003 at the City Council Chambers. No members of the public or agency representatives attended the meeting. Therefore, no issues were raised at the meeting. Written comments received by the City are included in Appendix A.

PUBLIC REVIEW OF EIR

This Draft EIR is being circulated for 45 days in accordance with the requirements of CEQA. Interested parties may provide the City with written comments on this EIR. Because of time limits mandated by state law, comments must be received by the City no later than **5 p.m.** on **August 11, 2003**. Commenting agencies that will need to use the EIR when considering permits or other approvals for the proposed project should provide the City with the name of a staff contact person. Please send all written comments to:

Mr. Rod Simpson
Planning Director
City of Patterson
33 South Del Puerto Avenue
Patterson, CA 95363

1.4 INCORPORATION BY REFERENCE

An EIR may "... incorporate by reference all or portions of another document which is a matter of public record or is generally available to the public" (State CEQA Guidelines §15150). Portions of the documents that are relevant to the environmental analysis for the proposed project have been summarized in various sections throughout the Patterson Wastewater Master Plan EIR, and are described below. All referenced documents are available

at the City of Patterson Planning Department, 33 South Del Puerto Avenue, Patterson, CA 95363.

- City of Patterson. 1992 (June). *City of Patterson General Plan EIR.*
- City of Patterson. 1992 (June). *City of Patterson General Plan.*
- Dewante and Stowell Consulting Engineers. 1992 (April). *City of Patterson: Wastewater System Master Plan.*
- City of Patterson. 1993 (December). *Creekside Annexation to the City of Patterson Draft EIR.*
- City of Patterson. 1994 (February). *Creekside Annexation to the City of Patterson Final EIR.*
- City of Patterson. 2001 (June). *Western Expansion Area Sanitary Sewer Collection.*
- City of Patterson. 2003 (January). *West Patterson Projects EIR.*
- Stanislaus County. 1994 (October). *General Plan.*
- Stanislaus County. 1998 (July). *Diablo Grande Specific Plan* [adopted December 7, 1999].
- Stanislaus County. 1993 (June) *Diablo Grande Specific Plan EIR.*
- Stanislaus County. 1998 (June). *Diablo Grande Water Resources Plan Supplemental EIR.*

TABLE 1-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

	Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
LAND USE AND PLANNING				
4-1	**First-Phase Expansion - Consistency with City General Plan Policies.** The proposed WWMP would be consistent with the applicable policies of the City of Patterson General Plan. The project would have no impact related to consistency with this land use plan.	NI	No mitigation measure is necessary.	NI
4-2	**First-Phase Expansion - Consistency with County General Plan Policies.** The proposed WWMP would be consistent with the applicable policies of the Stanislaus County General Plan. The project would have no impact related to consistency with this land use plan.	NI	No mitigation measure is necessary.	NI
4-3	**First-Phase Expansion - Consistency with Diablo Grande Specific Plan Policies.** The proposed WWMP would be consistent with all applicable policies of the Diablo Grande Specific Plan. The project would have no impact related to consistency with this land use plan.	NI	No mitigation measure is necessary.	NI
4-4	**First-Phase Expansion - Consistency with County General Plan Land Use Designation.** Neither the proposed percolation ponds nor the Diablo Grande lift station would conflict with the County's General Plan land use designations for their respective sites. The percolation pond sites would be located within the County's General Agriculture District. Similar to the existing percolation ponds at the City's wastewater treatment plant, operation of the proposed percolation ponds would not conflict with agricultural uses on surrounding or nearby land. The	NI	No mitigation measure is necessary.	NI

TABLE 1-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

	Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
	Diablo Grande lift station site would be located within the County's Specific Plan 1 land use designation. This designation presupposes that appropriate infrastructure will be provided to support development within the boundaries of a specific plan. The project, therefore, would be consistent with County General Plan Land Use designations, and would have no impact related to land use designation consistency.			
4-5	**General Plan Buildout - Consistency with City General Plan Policies.** The proposed WWMP would be consistent with the policies of the City of Patterson General Plan. The project would have no impact related to consistency with this land use plan.	NI	No mitigation measure is necessary.	NI
4-6	**General Plan Buildout - Consistency with County General Plan Policies.** The proposed WWMP would be consistent with the policies of the Stanislaus County General Plan. The project would have no impact related to consistency with this land use plan.	NI	No mitigation measure is necessary.	NI
4-7	**General Plan Buildout - Consistency with Diablo Grande Specific Plan Policies.** The proposed project includes an amendment to the DGSP to revise the method for wastewater collection, treatment, and disposal. The proposed WWMP, therefore, would be consistent with all applicable policies of DGSP. The project would have no impact related to consistency with this land use plan.	NI	No mitigation measure is necessary.	NI

TABLE 1-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

	Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
4-8	**General Plan Buildout - Consistency with County General Plan Land Use Designation.** The proposed percolation ponds for General Plan buildout would not conflict with the County's General Agricultural District land use designation. Similar to the existing percolation ponds at the City's wastewater treatment plant, operation of the proposed percolation ponds would not conflict with agricultural uses on surrounding or nearby land. The project, therefore, would be consistent with the County General Plan Land Use designation, and would have no impact related to land use designation consistency.	NI	No mitigation measure is necessary.	NI
AGRICULTURE CONVERSION				
5-1	**First-Phase Expansion - Conversion of Farmland to Non-Agricultural Uses.** Construction of the City's percolation ponds for the first-phase expansion would result in the conversion of up to 125 acres of state and federally classified Prime Farmland to non-agricultural uses. This is considered a significant impact.	S	**First-Phase Expansion - Contribute to the California Farmland Conservancy Fund.** The City of Patterson is considering contribution to the California Farmland Conservancy Fund pursuant to Public Resources Code Section 10231.5 for the purposes of funding projects in Stanislaus County under the California Farmland Conservation Program. Such projects might include the purchase of agricultural conservation easements, land improvement and planning grants, technical assistance, or other authorized activities under the California Farmland Conservation Program. Use of funding from the Farmland Conservation Program Fund requires	SU

TABLE 1-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		an appropriation by the Legislature. The amount of such contribution would, at minimum, reflect the then-current value of an agricultural conservation easement on comparable Prime agricultural land in the project vicinity equal in size to the acreage of the converted farmland, and a 10% increment for program administration under the Farmland Conservation Program. The per-acre valuation of such easement would be jointly developed in consultation with CDC. The City of Patterson is researching the cost of contributing to the California Farmland Conservancy Fund. If the contribution is considered to be cost prohibitive for the proposed project, this mitigation measure would be considered infeasible and would not be implemented.	
5-2 **First-Phase Expansion - Cancellation of Williamson Act Contracts.** Construction of the City's percolation ponds for the first-phase expansion would convert up to 125 acres of land currently under Williamson Act contracts to non-agricultural uses. This is considered a significant impact.	S	**First-Phase Expansion - Comply with Williamson Act Contract Cancellation Procedures.** The City will follow the cancellation and notification procedures as outlined in Government Code Section 51280, and other applicable sections of the Government Code, to advise the Director of CDC and the Stanislaus County Board of Supervisors of its need to	LTS

TABLE 1-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

	Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
			acquire the lands currently under Williamson Act contracts for a public use. The City will also take into consideration comments made by these agencies before to cancellation of the Williamson Act contracts. Pursuant to Government Code Section 51292, the City will also be required to make the following findings: "a) [t]he location is not based primarily on a consideration of the lower cost of acquiring land in an agricultural preserve"; and (b), "that there is no other land within or outside the preserve on which it is reasonably feasible to locate the public improvement."	
5-3	**First-Phase Expansion - Short-Term Impairment of Agricultural Productivity.** Construction activities related to expansion of the City's wastewater treatment facilities could substantially impair agricultural productivity of farmland. Substantial impairment of farmland productivity would be a significant impact.	S	**First-Phase Expansion - Minimize Impacts to Farmland During Construction.** The City will implement the following mitigation measures: ▸ To the degree possible, all pipelines will be routed within public roads or farm roads to minimize impacts on farmland. ▸ Where it is not possible to avoid construction on farmland, construction activities on or adjacent to farmland to be retained in agricultural production following project implementation will be restricted to periods when specific fields in which construction activities are proposed to occur are in a fallow	LTS

TABLE 1-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

	Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
			condition (i.e., construction activities in a specific field are not permitted during the planting, growing, and harvesting seasons of the field). The City will contact farmers of potentially affected farmland prior to development of the construction schedule to time construction activities to coincide with fallow periods. If it is not feasible for construction to occur during fallow periods, the City will provide monetary compensation to the affected farmer(s) in the amount of the production lost due to project construction. ▸ Topsoil removed during construction activities on important farmland that is to be retained in agricultural production will be properly salvaged, stockpiled, and protected from wind and water erosion, and will be redistributed in its previous location by the construction contractor(s).	
5-4	**General Plan Buildout - Conversion of Farmland to Non-Agricultural Uses.** Construction of additional percolation ponds to serve General Plan buildout would result in the conversion of up to 275 acres of state and federally classified Prime Farmland to non-agricultural uses. This is considered a significant impact.	S	**General Plan Buildout - Contribute to the California Farmland Conservancy Fund.** The City will implement Mitigation Measure 5-1.	SU

TABLE 1-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

	Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
5-5	**General Plan Buildout - Cancellation of Williamson Act Contracts.** Construction of additional percolation ponds to serve General Plan buildout could convert up to 275 acres of land currently under Williamson Act contracts to non-agricultural uses. This is considered a significant impact.	S	**General Plan Buildout - Comply with Williamson Act Contract Cancellation Procedures.** The City will implement Mitigation Measure 5-2.	LTS
5-6	**General Plan Buildout - Short-Term Impairment of Agricultural Productivity.** Construction activities related to expansion of the City's wastewater treatment facilities to serve General Plan buildout could substantially impair agricultural productivity of farmland. Substantial impairment of farmland productivity would be a significant impact.	S	**General Plan Buildout - Minimize Impacts to Farmland During Construction.** The City will implement Mitigation Measure 5-3.	LTS
BIOLOGICAL RESOURCES				
6-1	**First-Phase Expansion - Effects on Special-Status Plants.** No special-status plants are expected to occur in any of the construction areas. This is a less-than-significant impact.	LTS	No mitigation measure is necessary.	LTS
6-2	**First-Phase Expansion - Effects on San Joaquin Kit Fox.** Construction of the Diablo Grande sewer line could affect San Joaquin Kit Fox. This is a potentially significant impact.	PS	**First-Phase Expansion - Protection of San Joaquin Kit Fox.** WHWD will implement the following construction impact avoidance and minimization measures, in accordance with USFWS (1999) guidelines, for portions of the project that would be constructed west of the Delta-Mendota Canal:	LTS

TABLE 1-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		▸ An onsite biological monitor shall be present during construction. ▸ A worker education program will be conducted. ▸ Project-related vehicles will observe a 20-mph speed limit in the project area except on county roads, and State and Federal highways; this is particularly important at night when kit foxes are most active. ▸ Nighttime construction will be prohibited. ▸ To prevent inadvertent entrapment of kit foxes during construction, all excavated, steep-walled holes or trenches more than 2 feet deep will be covered at the close of each working day with plywood or similar materials, or equipped with one or more escape ramps constructed of earth fill or wooden planks. Before trenches are filled, they will be thoroughly inspected for trapped kit foxes. ▸ All construction pipes, culverts, or similar structures with a diameter of 4 inches or greater that are stored at a construction site overnight will be thoroughly inspected for kit foxes before the pipe is buried, capped, or otherwise used or moved in any way. If a kit	

TABLE 1-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		fox is discovered inside a pipe, that section of pipe will not be moved until the USFWS has been consulted. ▸ All food-related trash items, such as wrappers, cans, bottles, and food scraps, will be disposed of in a closed container and removed at least once a week from the construction site.	
6-3 **First-Phase Expansion - Effects on Swainson's Hawk.** Construction of the evaporation/percolation ponds would result in loss of Swainson's hawk foraging habitat. Construction activities for the evaporation/percolation ponds and wastewater collection lines could result in disturbance and loss of active Swainson's hawk nests. This would be considered a significant impact.	S	**First-Phase Expansion - Protection of Swainson's Hawk.** The City will implement the following measures: ▸ To avoid direct impacts to nesting Swainson's hawks, construction activities east of I-5 will not be conducted during the typical breeding season (March 1 to August 31). ▸ If avoiding construction during the breeding season is not feasible, pre-construction surveys will be conducted by a qualified ornithologist to identify active nests within 0.5 mile of the project area. The survey will be conducted no less than 14 days and no more than 30 days before the beginning of construction. To the extent feasible, the guidelines provided in the *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in the Central Valley* (Technical Advisory Committee 2000) will be followed.	LTS

TABLE 1-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		▸ If active nests are found, impacts will be avoided by establishment of appropriate buffers. No project activity will commence within the buffer area until a qualified biologist confirms that the nest is no longer active. CDFG guidelines recommend implementation of 0.25- or 0.5-mile buffers, but the size of the buffer may be adjusted if a qualified biologist and CDFG determine it would not be likely to adversely affect the nest. Monitoring of the nest by a qualified biologist may be required if the activity could adversely affect the nest. ▸ Loss of foraging habitat from construction of evaporation/percolation ponds will be mitigated by following the draft CDFG guidelines (1994), which state that Habitat Management lands will be provided to CDFG at ratios based on the distance of active nest trees to the project site. For projects within 5 miles of an active nest tree but greater than 1 mile, the mitigation ratio is 0.75 acres of Habitat Management lands for each acre developed. For projects within 1 mile of an active nest, the ratio is 1:1. Because the final locations of the evaporation/percolation ponds have not been selected, the actual distance from an active nest cannot be determined and	

TABLE 1-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

	Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
			neither can the mitigated acreage. However, the study area includes areas that range from less than 1 mile to 5 miles from an active nest. Following finalization of the construction footprint and before any project construction activity, the total acreage of Habitat Management lands required for mitigation will be calculated according to the above mitigation ratios.	
6-4	**First-Phase Expansion - Effects on Special-status Amphibians.** Construction of the Diablo Grande sewer line and pump station could result in indirect effects to California tiger salamander, California red-legged frog, foothill yellow-legged frog, and western spadefoot. This is a potentially significant impact.	PS	**First Phase Expansion - Protection of Special-status Amphibians.** The City will implement measures to minimize erosion and runoff into Salado Creek from construction of the Diablo Grande pump station and pipeline. Appropriate runoff controls such as berms, filtration systems, and sediment traps will be used to control siltation and the potential discharge of pollutants. These mitigation measures will be made part of the Storm Water Pollution Prevention Plan to be prepared for Mitigation Measure Hydro-1 included in the Initial Study prepared for the Wastewater Master Plan (Appendix A of this EIR).	LTS
6-5	**First-Phase Expansion - Effects on Western Pond Turtle.** Expansion of the treatment system at the existing wastewater treatment plant could affect western pond turtle. This is a potentially significant impact.	PS	**First-Phase Expansion - Protection of Western Pond Turtle.** A qualified biologist will be present to survey for western pond turtles during the pond draining. If any turtles are found during	LTS

TABLE 1-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

	Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
			the pond draining, they will be captured and moved by a qualified biologist to suitable habitat outside of the construction area.	
6-6	**First-Phase Expansion - Effects on Burrowing Owl.** Construction of the Diablo Grande sewer line and pump station, evaporation/percolation ponds, and wastewater collection lines could result in loss of burrowing owl nests. This is a potentially significant impact.	PS	**First-Phase Expansion - Protection of Burrowing Owl.** The City will implement the following measures: ▸ Before construction activity, focused pre-construction surveys will be conducted for burrowing owls where suitable habitat is present within 75 meters of the construction areas. Surveys will be conducted no less than 14 days and no more than 30 days before construction activities begin and surveys will be conducted in accordance with CDFG protocol (CDFG 1995). ▸ If no occupied burrows are found in the survey area, a letter report documenting survey methods and findings will be submitted to CDFG for review and approval, and no further mitigation will be necessary. ▸ If occupied burrows are found, impacts to them will be avoided by providing a buffer of 50 meters during the non-breeding season (September 1 through January 31) or 75 meters during the breeding season (February 1 through August 31). In addition, a minimum	LTS

TABLE 1-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		of 6.5 acres of foraging habitat will be preserved contiguous with each occupied burrow. ▸ If impacts to occupied burrows are unavoidable, on-site passive relocation techniques approved by CDFG will be used to encourage owls to move to alternative burrows outside of the impact area. However, no occupied burrows will be disturbed during the nesting season unless a qualified biologist verifies through non-invasive methods that juveniles from the occupied burrows are foraging independently and are capable of independent survival. Mitigation for foraging habitat for relocated pairs will follow guidelines provided in the California Burrowing Owl Consortium Guidelines (1993), which specify ranges for habitat from 6.5 to 19.5 acres per pair.	
6-7 **First-Phase Expansion - Effects on Other Raptors.** Construction activities for the evaporation/percolation ponds and wastewater collection lines could result in disturbance and loss of active raptor nests. This would be a significant impact.	S	**First-Phase Expansion - Protection of Other Raptors.** The City will implement the following measures: ▸ If project activity would occur during the raptor nesting season (February 15 to September 15), preconstruction surveys will be conducted in areas of suitable nesting habitat	LTS

TABLE 1-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		within 500 feet of project activity. Surveys will be conducted no less than 14 days and no more than 30 days before project activity begins. If no active nests are found, no further mitigation will be required. ▸ If active nests are found, impacts will be avoided by establishment of appropriate buffers. No project activity within the buffer area will begin until a qualified biologist confirms that the nest is no longer active. CDFG guidelines recommend implementation of 500-foot buffers, but the size of the buffer may be adjusted if a qualified biologist and CDFG determine it would not be likely to adversely affect the nest. Monitoring of the nest by a qualified biologist may be required if the activity could adversely affect the nest.	
6-8 **First-Phase Expansion - Effects on Tricolored Blackbird.** Construction of the Diablo Grande pump station and sewer line could result in disturbance of nesting tricolored blackbirds. This is a potentially significant impact.	PS	**First-Phase Expansion - Protection of Tricolored Blackbird.** The City will implement the following measures: ▸ If construction of the Diablo Grande pump station and pipeline would occur during the tricolored blackbird nesting season (March 1 to August 31), within 500 feet of the freshwater marsh upstream of the concrete dam in Salado Creek, preconstruction surveys will be	LTS

TABLE 1-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

	Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
			conducted. The survey will be conducted within 14 days before project activity begins. If no colony is present, no further mitigation will be required. ▸ If a colony is found, impacts will be avoided by establishment of appropriate buffers. No project activity within the buffer area will begin until a qualified biologist confirms that the colony is no longer active. The appropriate size of the buffer will be determined in consultation with CDFG and is anticipated to range from 100 to 500 feet, depending on the extent of existing disturbance in the area and other relevant circumstances.	
6-9	**First-Phase Expansion - Effects on Other Special-status Wildlife.** Construction of the proposed project could affect suitable habitat for the remaining special-status species. However, similar habitat for these species is abundant in the region. This is a less-than-significant impact.	LTS	No mitigation measure is necessary.	LTS
6-10	**First-Phase Expansion - Effects on Sensitive Habitats.** Construction of the Diablo Grande pump station and sewer line could affect Salado Creek and other sensitive habitats. Construction of the proposed percolation ponds and effluent force main could affect riparian woodland and a biological mitigation site. This is a potentially significant	PS	**First-Phase Expansion - Protection of Sensitive Habitats.** The City will implement the following measures: ▸ Authorization for fill of jurisdictional areas will be secured from USACE via the Section 404 permitting process. It is anticipated that less	LTS

TABLE 1-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
impact.		than 0.5 acre of Salado Creek would be excavated for pipeline installation. ▸ A CDFG Streambed and Lakebed Alteration Agreement may also be required for trench excavation and pipeline installation across Salado Creek. ▸ The acreage of jurisdictional habitat removed will be rehabilitated on a "no-net-loss" basis in accordance with USACE and CDFG regulations. It is anticipated that restoration of the creek to pre-project conditions would be adequate to satisfy agency regulations. ▸ Riparian and oak woodland vegetation adjacent to the Diablo Grande pump station site will be fenced with high-visibility construction fencing to prevent access. No construction activities, vehicles, equipment, or staging activities may occur within the fenced area. The protective fencing will be maintained until all construction activities are complete. ▸ To protect the riparian woodland habitat located adjacent to the northeastern-most percolation pond site, a 100-foot setback will be established between the riparian woodland	

TABLE 1-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

	Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
			and the construction site. No construction activities, vehicles, equipment, or staging activities may occur within the setback area. During construction, the setback area will be fenced with high-visibility construction fencing to prevent access. The protective fencing will be maintained until all construction activities are complete. All grading plans will include appropriate runoff controls to avoid construction runoff into this area. ▸ The biological mitigation site at the north edge of the existing wastewater treatment plant will be avoided during construction, so its function as a mitigation site is not adversely affected. ▸ Implement Mitigation Measure 6-4.	
6-11	**First-Phase Expansion - Conflicts with Policies, Ordinances, or Habitat Conservation Plans.** There are no local, regional, or state policies, ordinances, or conservation plans that cover the project area. Therefore, the project would not conflict with any plans. This is a less-than-significant impact.	LTS	No mitigation measure is necessary.	LTS
6-12	**General Plan Buildout - Effects on Special-status Plants.** No special-status plants are expected to occur in the area affected by General Plan buildout. This is a less-than-significant impact.	LTS	No mitigation measure is necessary.	LTS

TABLE 1-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

	Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
6-13	**General Plan Buildout - Effects on San Joaquin Kit Fox.** San Joaquin Kit Fox is not expected to be affected by General Plan buildout. This is a less-than-significant impact.	LTS	No mitigation measure is necessary.	LTS
6-14	**General Plan Buildout - Effects on Swainson's Hawk.** Construction of additional evaporation/percolation ponds to serve the General Plan buildout areas could result in loss of Swainson's hawk foraging habitat. Construction activities for the ponds and additional pipelines could result in disturbance and loss of active Swainson's hawk nests. This would be considered a significant impact.	S	**General Plan Buildout - Protection of Swainson's Hawk.** The City will implement Mitigation Measure 6-3.	LTS
6-15	**General Plan Buildout - Effects on Special-status Amphibians.** California tiger salamander, California red-legged frog, foothill yellow-legged frog, and western spadefoot are not expected to be affected by General Plan buildout. This is a less-than-significant impact.	LTS	No mitigation measure is necessary.	LTS
6-16	**General Plan Buildout - Effects on Western Pond Turtle.** Expansion of the wastewater treatment plant to serve the General Plan buildout areas could affect western pond turtle. This is a potentially significant impact.	PS	**General Plan Buildout - Protection of Western Pond Turtle.** The City will implement Mitigation Measure 6-5.	LTS
6-17	**General Plan Buildout - Effects on Burrowing Owl.** Construction of additional evaporation/percolation ponds and pipelines to serve the General Plan buildout areas could result in loss of burrowing owl nests. This is a potentially significant impact.	PS	**General Plan Buildout - Protection of Burrowing Owl.** The City will implement Mitigation Measure 6-6.	LTS

TABLE 1-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

	Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
6-18	**General Plan Buildout - Effects on Other Raptors.** Construction of additional evaporation/percolation ponds and pipelines to serve the General Plan buildout areas could result in disturbance and loss of active raptor nests. This would be a significant impact.	S	**General Plan Buildout - Protection of Other Raptors.** The City will implement Mitigation Measure 6-7.	LTS
6-19	**General Plan Buildout - Effects on Tricolored Blackbird.** Tricolored blackbird is not expected to be affected by General Plan buildout. This is a less-than-significant impact.	LTS	No mitigation measure is necessary.	LTS
6-20	**General Plan Buildout - Effects on Other Special-status Wildlife.** The remaining special-status species are not expected to be affected by General Plan buildout. This is a less-than-significant impact.	LTS	No mitigation measure is necessary.	LTS
6-21	**General Plan Buildout - Effects on Sensitive Habitats.** Construction of additional evaporation/percolation ponds and pipelines to serve the General Plan buildout areas could result in fill of Salado Creek. This is a potentially significant impact.	PS	**General Plan Buildout - Protection of Sensitive Habitats.** The City will implement the following measures: ▸ Authorization for fill of jurisdictional areas will be secured from USACE via the Section 404 permitting process. ▸ A CDFG Streambed and Lakebed Alteration Agreement may also be required for trench excavation and pipeline installation across Salado Creek. ▸ The acreage of jurisdictional habitat removed will be rehabilitated on a "no-net-loss" basis in	LTS

TABLE 1-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

	Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
			accordance with USACE and CDFG regulations. It is anticipated that restoration of the creek to pre-project conditions would be adequate to satisfy agency regulations. ▸ Measures to minimize erosion and runoff into Salado Creek will be implemented. Appropriate runoff controls such as berms, filtration systems, and sediment traps will be implemented to control siltation and the potential discharge of pollutants.	
6-22	**General Plan Buildout - Conflicts with Policies, Ordinances, or Habitat Conservation Plans.** There are no local, regional, or state policies, ordinances, or conservation plans that cover the project area. Therefore, the project would not conflict with any plans. This is a less-than-significant impact.	LTS	No mitigation measure is necessary.	LTS
CULTURAL RESOURCES				
7-1	**First-Phase Expansion - Subsurface Cultural Resources.** No known significant archaeologic or historic sites occur within the proposed project site. However, construction activities related to implementation of the wastewater master plan project could result in the disturbance of previously unknown subsurface cultural resources. This is a potentially significant impact.	PS	**First-Phase Expansion - Construction Cessation If Resources Are Discovered During Ground Disturbing Activities.** In the event that previously unknown archaeological resources are discovered during any land alteration activities, the construction crew will immediately cease work in the immediate area. A qualified archaeologist approved by the City of Patterson will be consulted to evaluate the resource in accordance	LTS

TABLE 1-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		with state guidelines. Mitigation measures consistent with the State CEQA Guidelines will be devised and a mitigation plan submitted for approval by the City of Patterson. Any necessary archaeological excavation and monitoring activities will be conducted in accordance with prevailing professional standards. Mitigation, in accordance with a plan approved by the City, will be implemented before work within the area of the resource find begins. In the event that human remains are discovered, the County Coroner will be contacted in accordance with §7050.5 of the State Health and Safety Code. As cited in §15064.5 of the State CEQA Guidelines, if the coroner determines that the remains represent Native American interment, the Native American Heritage Commission in Sacramento will be consulted to identify the most likely descendant(s) and the appropriate disposition of the remains. Consultation with descendants will occur as directed by the Commission.	
7-2 **General Plan Buildout - Unidentified Cultural Resources.** Based on archival research conducted for the General Plan Buildout areas, no known significant archaeological or historic resource sites occur within the proposed project area. No field surveys have been conducted in the General	PS	**General Plan Buildout - Identify Cultural Resources Prior to and During Future Construction.** The City will implement the following measures:	LTS

TABLE 1-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

	Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
	Plan Buildout area. The City of Patterson may consider construction of future percolation ponds in an area that has not been surveyed for cultural resources. Therefore, future construction activities could result in the demolition of or substantial damage to significant cultural resources. This is a potentially significant impact.		▸ Conduct archival research and pedestrian field surveys in all areas not previously subjected to cultural resources inventory procedures. ▸ Implement Mitigation Measure 7-1.	
AIR QUALITY				
8-1	**First-Phase Expansion - Construction Related Short-Term Air Quality Impacts.** Construction activities associated with the first-phase expansion would result in the generation of NO_X, ROG, and PM_{10} emissions in addition to the potential airborne entrainment of asbestos associated with demolition of existing structures. This is a significant impact.	S	**First-Phase Expansion - Regional Criteria Pollutant Reduction Measures.** The following mitigation measures, including those recommended by the SJVAPCD, will be incorporated into the project to reduce short-term construction emissions: ▸ All disturbed areas, including storage piles, which are not being actively used for construction purposes, shall be effectively stabilized to limit dust emissions using water, chemical stabilizer/suppressant, or vegetative ground cover. ▸ All onsite unpaved roads and offsite unpaved access roads used for ongoing construction activities shall be effectively stabilized to limit dust emissions using water or chemical stabilizer/suppressant.	LTS

TABLE 1-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		▸ All land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activities shall be effectively controlled to limit fugitive dust emissions by applying water or by presoaking. ▸ With the demolition of buildings, all exterior surfaces of the building shall be wetted during demolition. ▸ When materials are transported offsite, all material shall be covered, effectively wetted to limit visible dust emissions, or at least six inches of freeboard space from the top of the container shall be maintained. ▸ All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at least once every 24 hours when operations are occurring. (The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. Use of blower devices is expressly forbidden.) ▸ Following the addition of materials to, or the removal of materials from, the surfaces of outdoor storage piles, said piles shall be effectively stabilized to limit fugitive dust	

TABLE 1-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		emissions using sufficient water or chemical stabilizer/suppresant. ▸ Onsite vehicle speeds on unpaved roads shall be limited to 15 mph. ▸ Sandbags or other erosion control measures shall be installed to prevent silt runoff to public roadways from adjacent project areas with a slope greater than 1%. ▸ Wheel washers shall be installed for all exiting trucks and equipment, or wheels shall be washed to remove accumulated dirt before leaving the site. ▸ Excavation and grading activities shall be suspended when winds exceed 20 mph. ▸ Areas subject to excavation and grading at any one time shall be limited to the fullest extent possible. ▸ Onsite equipment shall be maintained and properly tuned in accordance with manufacturers' specifications. ▸ When not in use, onsite equipment shall not be left idling. ▸ Alternative fueled or catalyst-equipped diesel construction equipment, or NO_X- or PM_{10}-	

TABLE 1-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

	Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
			controlled equipment shall be used, where possible. ▸ Before demolition of any existing structures, an asbestos survey shall be completed to identify any asbestos-containing building materials. Asbestos-containing materials shall be abated before and/or during demolition, in accordance with state and/or local regulatory requirements.	
8-2	**First-Phase Expansion - Regional Emissions Primarily Associated with Increased Vehicle Use.** The proposed project would generate increases in regional pollutants of ROG, NO_X, and PM_{10}, primarily associated with routine maintenance activities and employees commuting to and from the wastewater facility and the Diablo Grande pump station. To a lesser degree, regional increases in volatile organic compounds (VOCs) would occur due to the treatment process. Emissions produced by the proposed project would be below SJVAPCD significance thresholds. This is considered a less-than-significant impact.	LTS	No mitigation measure is necessary.	LTS
8-3	**First-Phase Expansion - Long-Term Odor Impacts.** The proposed project would result in increased odor-generating potential associated with the operation of the wastewater facility due to the increased area of proposed percolation ponds that could affect nearby residents and places of assembly. This is a potentially significant impact.	PS	**First-Phase Expansion - Airborne Odor Reduction Measures.** The following mitigation measures will be incorporated into the City's wastewater treatment expansion project to reduce potential emissions of airborne odors:	SU

TABLE 1-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		▸ Before final design, the City of Patterson will ensure that appropriate engineering controls have been incorporated into the design and construction of the proposed wastewater treatment and conveyance facilities to minimize the production of unpleasant odors. Engineering controls to diminish odors could include, but would not be limited to, covering the headworks and/or prechlorinating at the headworks use of chemical additives to mask odors, or installing systems to collect odiferous air and remove unpleasant odors (e.g., air scrubber). ▸ During operation of the expanded wastewater treatment and conveyance facilities, the City of Patterson will ensure that engineering controls designed to suppress odors are functioning properly by periodically evaluating odor levels adjacent to the facilities. Should offensive odors be present, the City will take appropriate action to correct them to the extent practical.	
8-4 **General Plan Buildout - Construction-Related Short-Term Air Quality Impacts.** Construction activities associated with future wastewater treatment facility expansions to serve General Plan buildout would result in the generation of NO_X, ROG, and PM_{10} emissions in addition to the potential	S	**General Plan Buildout - Regional Criteria Pollutant Reduction Measures.** The City will implement Mitigation Measure 8-1.	LTS

TABLE 1-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

	Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
	airborne entrainment of asbestos associated with demolition of existing structures. This is a significant impact.			
8-5	**General Plan Buildout - Regional Emissions Primarily Associated with Increased Vehicle Use.** Expansion of the City's wastewater treatment facilities to accommodate General Plan buildout would generate increases in regional pollutants of ROG, NO_X, and PM_{10}, primarily associated with routine maintenance activities and employees commuting to and from the wastewater facility. To a lesser degree, regional increases in VOCs would occur due to the treatment process. Emissions produced by the proposed project would be below SJVAPCD significance thresholds. This is considered a less-than-significant impact.	LTS	No mitigation measure is necessary.	LTS
8-6	**General Plan Buildout - Long-Term Odor Impacts.** Expansion of the wastewater treatment facilities to serve buildout of the General Plan would result in increased odor-generating potential due to the increased area of proposed percolation ponds that could affect nearby residents and places of assembly. This is a potentially significant impact.	PS	**General Plan Buildout - Airborne Odor Reduction Measures.** The City will implement Mitigation Measure 8-3.	SU
GROUNDWATER QUALITY				
9-1	**First-Phase Expansion - Effects on Groundwater Quality.** The City's existing effluent does not adversely affect groundwater quality. Treated effluent generated by the expanded wastewater treatment plant is expected to be	LTS	No mitigation measure is necessary.	LTS

TABLE 1-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

	Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
	similar to the plant's existing treated effluent, except that Diablo Grande wastewater would further dilute salinity concentrations. Expansion of the City's wastewater treatment plant, therefore, would have a less-than-significant impact on groundwater quality.			
9-2	**First-Phase Expansion - Effects on Surface Water Quality.** Increased effluent disposal would not adversely affect the quality of groundwater inflow to the San Joaquin River. The existing effluent-effected groundwater inflow to the San Joaquin River is similar to or better in quality than the background groundwater with regard to salinity, nitrate, total coliform organisms, and trace mineral concentrations. Pathogens would not be expected to affect the water quality of the river, and nitrate loading would continue to be less than background nitrate loading conditions. Expansion of the City's wastewater treatment plant, therefore, would have a less-than-significant impact on surface water quality.	LTS	No mitigation measure is necessary.	LTS
9-3	**First-Phase Expansion - Changes in Floodplain Hydraulics.** Reducing the floodplain area under post-project conditions by constructing new percolation ponds within the 100-year floodplain would result in no substantial change to water surface elevations or velocities and, thus, would have no substantial effect on river or floodplain hydrology. The project, therefore, would result in a less-than-significant impact related to changes in floodplain hydraulics.	LTS	No mitigation measure is necessary.	LTS

TABLE 1-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

	Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
9-4	**General Plan Buildout - Effects on Groundwater Quality.** The City's existing effluent does not adversely affect groundwater quality. Treated effluent generated by future expansion phases of the wastewater treatment plant is expected to be similar to the plant's existing treated effluent, except that Diablo Grande wastewater would further dilute salinity concentrations. Expansion of the City's wastewater treatment plant to serve General Plan buildout, therefore, would have a less-than-significant impact on groundwater quality.	LTS	No mitigation measure is necessary.	LTS
9-5	**General Plan Buildout - Effects on Surface Water Quality.** Increased effluent disposal for Phase 2 expansion and General Plan buildout would not adversely affect the quality of groundwater inflow to the San Joaquin River. The existing effluent-effected groundwater inflow to the San Joaquin River is similar to or better in quality than the background groundwater with regard to salinity, nitrate, total coliform organisms, and trace mineral concentrations. Pathogens would not be expected to affect the water quality of the river, and nitrate loading would continue to be less than background nitrate loading conditions. Expansion of the City's wastewater treatment plant to serve General Plan buildout, therefore, would have a less-than-significant impact on surface water quality.	LTS	No mitigation measure is necessary.	LTS
9-6	**General Plan Buildout - Changes in Floodplain Hydraulics.** Reducing the floodplain area under post-project conditions by constructing new percolation ponds	LTS	No mitigation measure is necessary.	LTS

TABLE 1-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

	Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
	within the 100-year floodplain would result in no substantial change to water surface elevations or velocities and, thus, would have no substantial effect on river or floodplain hydrology. If new ponds are constructed within the floodplain study areas for future expansion phases, the project would result in a less-than-significant impact related to floodplain hydraulics.			
POPULATION AND HOUSING				
10-1	**First-Phase Expansion - Population Growth During Construction.** Construction of Phase 1 of the proposed project would generate approximately 15 to 20 construction jobs in and near the City during the peak construction period. This temporary increase in employment would not be expected to generate any substantial new population in the area or generate the need for substantial additional housing for construction workers. Project construction would thus result in a less-than-significant impact.	LTS	No mitigation measure is necessary.	LTS
10-2	**First-Phase Expansion - Induce Permanent Population Growth.** Construction of the first-phase of the proposed project would not develop new homes or businesses or generate new jobs that would result in a substantial direct increase in population. The population impacts of the proposed project would thus be less than significant.	LTS	No mitigation measure is necessary.	LTS

TABLE 1-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

	Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
10-3	**First-Phase Expansion - Displace Existing Housing.** Construction of Phase 1 of the proposed project could result in the displacement of a small number (less than 5) of existing homes. This number of displaced homes is not considered substantial and the impact is considered less than significant.	LTS	No mitigation measure is necessary.	LTS
10-4	**General Plan Buildout - Population Growth During Construction.** Construction of the General Plan buildout portion of the proposed project would generate approximately 15 to 20 construction jobs in and near the City during the peak construction period. This temporary increase in employment would not be expected to generate any substantial new population in the area or generate the need for substantial additional housing for construction workers. Project construction would result in a less-than-significant impact.	LTS	No mitigation measure is necessary.	LTS
10-5	**General Plan Buildout - Induce Permanent Population Growth.** Construction of the General Plan Buildout portion of the proposed project would not develop new homes or businesses or generate new jobs that would result in a substantial direct increase in population. The population impacts of the proposed project would thus be less than significant.	LTS	No mitigation measure is necessary.	LTS
10-6	**General Plan Buildout - Displace Existing Housing.** Construction of the General Plan Buildout portion of the proposed project could result in the displacement of a small	LTS	No mitigation measure is necessary.	LTS

TABLE 1-1 SUMMARY OF IMPACTS AND MITIGATION MEASURES			
Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
number (less than five) of existing homes. This number of displaced homes is not considered substantial and the impact is considered less than significant.			
CUMULATIVE IMPACTS			
11-1 **Cumulative - Loss of Prime Agricultural Land.** Implementation of the proposed Wastewater Master Plan would contribute to the cumulative loss of prime agricultural land in Stanislaus County. This is a significant cumulative impact.	S	**Cumulative - Contribute to the California Farmland Conservancy Fund.** The City will implement Mitigation Measure 5-1.	SU
11-2 **Cumulative - Impacts to San Joaquin Kit Fox.** The proposed project and related cumulative projects would result in disturbance of San Joaquin kit fox habitat and could result in injury or death of individual kit foxes. This is considered a significant cumulative impact.	S	**Cumulative - Reduction of Cumulatively Considerable Impacts to San Joaquin Kit Fox.** WHWD will implement Mitigation Measure 6-2.	LTS
11-3 **Cumulative - Impacts to Swainson's Hawk.** The proposed project and related projects would result in loss of foraging habitat for Swainson's hawks, and could also result in disturbance and loss of active Swainson's hawk nests. This is considered a significant cumulative impact.	S	**Cumulative - Reduction of Cumulatively Considerable Impacts to Swainson's Hawk.** The City will implement Mitigation Measure 6-3.	LTS
11-4 **Cumulative - Impacts to Other Nesting Birds.** The proposed project and related projects could result in disturbance and loss of active raptor nests and tricolored blackbird colonies. This is considered a significant cumulative impact.	S	**Cumulative - Reduction of Cumulatively Considerable Impacts to Other Nesting Birds.** The City and WHWD will implement Mitigation Measures 6-6, 6-7, and 6-8.	LTS

TABLE 1-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

	Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
11-5	**Cumulative - Impacts to Aquatic Habitats and Associated Species.** The proposed project and related projects would result in disturbance of Salado Creek and the wastewater treatment ponds and could affect special-status species supported by these habitats. This is considered a significant cumulative impact.	S	**Cumulative - Reduction of Cumulatively Considerable Impacts to Aquatic Habitats and Associated Species.** The City and WHWD will implement Mitigation Measures 6-4, 6-5, and 6-10.	LTS
11-6	**Cumulative - Impacts to Other Special-status Species.** Related projects could substantially affect other special-status species, but the proposed project would not result in such impacts. Therefore, this impact would be considered less than significant.	LTS	No mitigation measure is necessary.	LTS
11-7	**Cumulative - Increases in Regional Criteria Pollutants.** The proposed Wastewater Master Plan would serve growth already planned for in the City of Patterson and the Diablo Grande Specific Plan area. Therefore, the proposed project would not be anticipated to result in an increase in regional emissions that would conflict with the emissions inventories used for air quality attainment planning purposes. However, because the region is already designated non-attainment for various pollutants, including ozone and PM_{10}, even minor increases in these emissions of these pollutants and/or precursors could contribute on a cumulative basis to the region's overall non-attainment conditions. As a result, this cumulative impact would be considered potentially significant.	PS	**Cumulative - Regional Criteria Pollutant Reduction Measures.** The City will implement Mitigation Measure 8-1.	SU

NI = No Impact LTS = Less-than-Significant S = Significant PS = Potentially Significant SU = Significant Unavoidable

2 PROJECT DESCRIPTION

This chapter provides descriptions of the location, objectives, and characteristics of the proposed project's primary components: the City of Patterson's proposed Wastewater Master Plan and the Diablo Grande Sewer Line. The proposed Wastewater Master Plan includes expansion of the City's wastewater collection, treatment, and disposal system to serve approved and planned growth in the City's sphere of influence through buildout of its General Plan in 2020 and Phase One of the Diablo Grande Specific Plan area in western Stanislaus County.

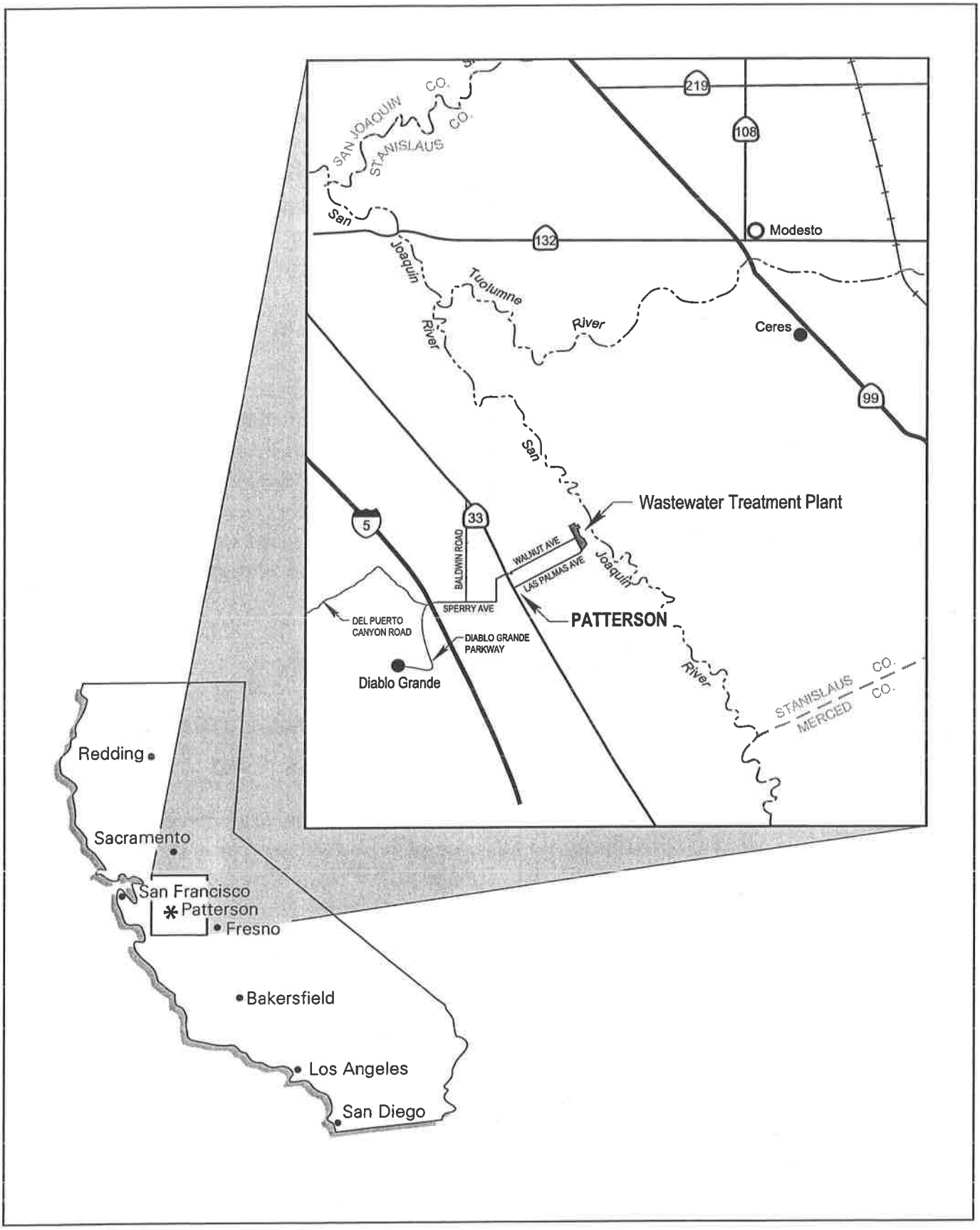
2.1 PROJECT VICINITY

The City of Patterson is located in western Stanislaus County, approximately 15 miles west of the City of Modesto, approximately 80 miles south of Sacramento, and about 80 miles southeast of San Francisco (Exhibit 2-1). The San Joaquin River lies three miles to the east of the City center. Interstate 5 (I-5), the California Aqueduct, and the Delta-Mendota Canal lie about three miles to the west of the City center and just west of the City's westerly boundary (Exhibit 2-2). The foothills of the Diablo Mountain Range lie farther to the west, just beyond I-5. The Diablo Grande Specific Plan Area lies about 7 miles southwest of Patterson in the Diablo Range.

2.2 PLANNED AND APPROVED GROWTH IN THE PATTERSON AREA

The City of Patterson is expecting rapid growth over the next two decades. The City's current population (approximately 13,050) is projected to grow by 6% annually through 2010, adding approximately 7,800 residents to a total exceeding 20,000 during that period. The City's population is projected to grow to 30,000 by the year 2020, which is the projected holding capacity of the current General Plan. Much of this growth is planned to occur in the western portion of the City. The unincorporated portion of Stanislaus County west of Patterson is also projected to grow over the next decade. The City's proposed Wastewater Master Plan includes expansion of the City's wastewater facilities to collect, treat, and dispose of wastewater generated by this approved and planned growth.

In January 2003, the City approved the Patterson Gardens mixed-use development in the western portion of the City; this development would add 987 residences and approximately 302,500 square feet of commercial, retail, and office uses to the City. Patterson Gardens is expected to generate approximately 318,500 gallons per day (gpd) of wastewater (Table 2-1).



Source: EDAW Inc. 2002

Regional Location

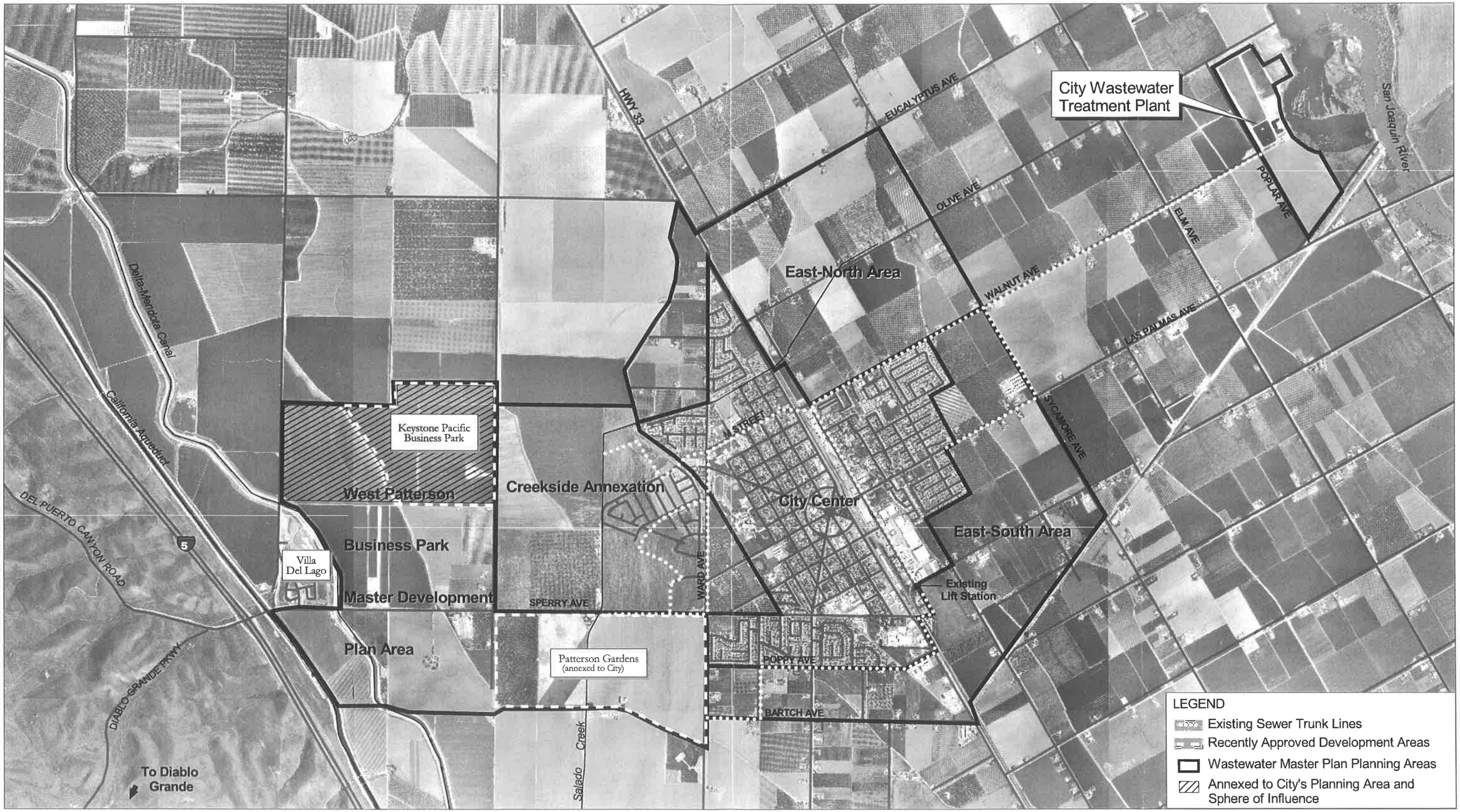
EXHIBIT 2-1

City of Patterson Wastewater Master Plan EIR
G 2T008.01 1/03

0 2.5 5 MILES

NORTH

EDAW



Patterson Wastewater Master Plan Area

City of Patterson Wastewater Master Plan EIR

X 2T008.01 2/03

EXHIBIT 2-2

0 0.25 0.5 MILES

NORTH

EDAW

Table 2-1
Projected City of Patterson Flowrates (By Year 2020)

Land Uses	Homes	Buildings (square feet)	Population (living & working)	Unit Value	Flow gal/unit/d	Flowrates gal/d
Gateway Development						70,000
Heartland Ranch (KB Homes)						
Residential Home Remaining	350[1]		1,050	Person	100	105,000
Creekside Development						
Walker Ranch I	500		1,500	Person	100	150,000
Walker Ranch II/Creekside Meadows	823		2,470	Person	100	247,000
Casciaro	25		75	Person	100	7,500
West Patterson Projects						
Patterson Gardens						
Residential	987		2,960		100	296,000
Commercial/Retail		302,500	740	Employee/Customer	30	22,500
Keystone Pacific Business Park		1,911,195	2,550	Employee/Customer	30	76,500
Warehouse		582,830	1,165	Employee/Customer	30	34,950
Manufacturing/Assembly		263,320	840	Employee/Customer	30	25,200
Offices/ Retail						
West Patterson Business Park						
Warehouse		3,223,230	4,300	Employee/Customer	30	129,000
Manufacturing/ Assembly		1,366,920	2,735	Employee/Customer	30	82,050
Office/Retail		1,157,170	3,780	Employee/Customer	30	113,400
Hotel/Motel		80,000	85	Employee/Customer	30	2,550
Highway Commercial		393,935	790	Employee/Customer	30	23,700
Diablo Grande Development						
Residential	2,100		6,300	Person	100	630,000
Commercial			1,656	Employee/Customer	30	49,680
Industrial			1,005	Employee/Customer	30	30,150
East Area Development						
Bright Development	130		390	Person	100	39,000
Future Development	1,375		4,125	Person	100	412,500
Institutional Development (Schools, Hospitals, Retirement)				Student/Bed		750,000
TOTALS			**38,516**			**3.3 mgd**

[1] As of December 2002.
Source: Lee & Ro, Inc. 2002

The City of Patterson also approved a General Plan amendment to annex the Keystone Pacific Business Park site and a portion of the West Patterson Business Park Master Development Plan area into the City's sphere of influence, adding approximately 343 acres of light industrial, warehouse, commercial, retail, and office uses to its sphere of influence (Exhibit 2-2). On February 26, 2003, the Local Agency Formation Commission approved the

annexation and on March 20, 2003, the Stanislaus County Planning Commission voted to recommend County Board of Supervisors approval. On April 15, 2003, the Board of Supervisors voted to approve the annexation.

The *West Patterson Projects EIR* (City of Patterson 2003) addresses all of the environmental impacts of the Patterson Gardens and Keystone Pacific Business Park developments and the proposed business park plan area, including expansion of the City's wastewater collection, treatment, and disposal facilities to serve the proposed developments and plan area. The *West Patterson Projects EIR* conservatively assumed complete buildout of the business park plan area by 2025, but also stated it is unlikely that this level of development would be realized within the 2025 planning horizon (City of Patterson 2003).

Phase One of Diablo Grande is an approved planned residential and resort community consisting of approximately 2,100 residences, six golf courses, resort hotel and conference facilities, a Town Center, a research campus, commercial centers, open space, and agricultural land uses (Exhibit 2-3). Diablo Grande Phase One would be developed over a 10-year period. Two golf courses (i.e., the Ranch Golf Course and the Legends West Golf Course), including a clubhouse, two snack shacks, and two restrooms, are currently operating at Diablo Grande. At full buildout, Diablo Grande (Phase One) is currently projected to generate about 710,000 gpd of wastewater (Table 2-1).

2.3 EXISTING WASTEWATER FACILITIES

2.3.1 CITY'S EXISTING WASTEWATER SYSTEM

The City of Patterson provides wastewater collection, treatment, and disposal service for all residents, schools, commercial and industrial establishments in the City, except for Patterson Frozen Foods, which has its own onsite treatment system and a few residences, which are served by their own onsite septic tank treatment systems. The City's wastewater system also serves the Villa Del Lago commercial development located outside the westerly City limits near the I-5/Sperry Avenue interchange (Exhibit 2-2). The City's wastewater system can be categorized into three basic elements: collection, treatment, and disposal.

WASTEWATER COLLECTION

The City's wastewater collection system consists of gravity flow pipelines ranging in size from 6 inches to 33 inches in diameter, typically located in City and County street rights-of-way.

Diablo Grande Sewer Line

City of Patterson Wastewater Master Plan EIR

X 2T008.01 2/03

EXHIBIT 2-3

0 0.5 1 MILE

NORTH

EDAW

Older portions of the system, which generally serve the downtown core residential and commercial areas, were constructed before 1960. Newer developments have been connected to the system over time.

WASTEWATER TREATMENT AND DISPOSAL

The City's wastewater treatment plant is located on a 100-acre site situated between Walnut Avenue and Las Palmas Avenue, east of Poplar Avenue and about a half-mile west of the San Joaquin River (Exhibit 2-2). Operation of the plant is permitted by Waste Discharge Requirements (WDRs) issued by the Central Valley Regional Water Quality Control Board (RWQCB) pursuant to Order No. 5-00-146. The plant's currently permitted capacity is 1.3 million gallons per day (mgd), and the average current volume of wastewater produced by the City is approximately 0.8 mgd. The remaining capacity (0.5 mgd) is available to provide service for previously approved development (i.e., Creekside) and to accommodate unanticipated high flow conditions. Wastewater is treated using two types of treatment processes, each principally an aerated biological treatment system. The older system, with a permitted capacity of 0.8 mgd, consists of an activated sludge process followed by clarification. The newer system is an advanced integrated pond system (AIPS), with a permitted capacity of 0.5 mgd.

The treatment facilities include a lift station, metering structure, headworks, comminuter, oxidation ditch, settling clarifiers, AIPS ponds, and sludge drying beds (Exhibit 2-4). The lift station is located at the terminus of Walnut Avenue where the influent (i.e., untreated wastewater) is received from the Walnut Avenue trunk sewer line into the plant. The metering structure and headworks are located downstream of the lift station. In general, the lift station consists of a wet well with five submersible lift pumps with a total capacity of approximately 6 mgd, and a 16-inch discharge force main (a pipe that transmits pumped, rather then gravity, flows). The flow is measured by two magnetic flow meters before entering the headworks (one operating and one standby). The headworks contains a comminuter to grind rags, plastics, and other solids, and a bypass barscreen, diversion structures, and gates to direct flow to secondary treatment systems.

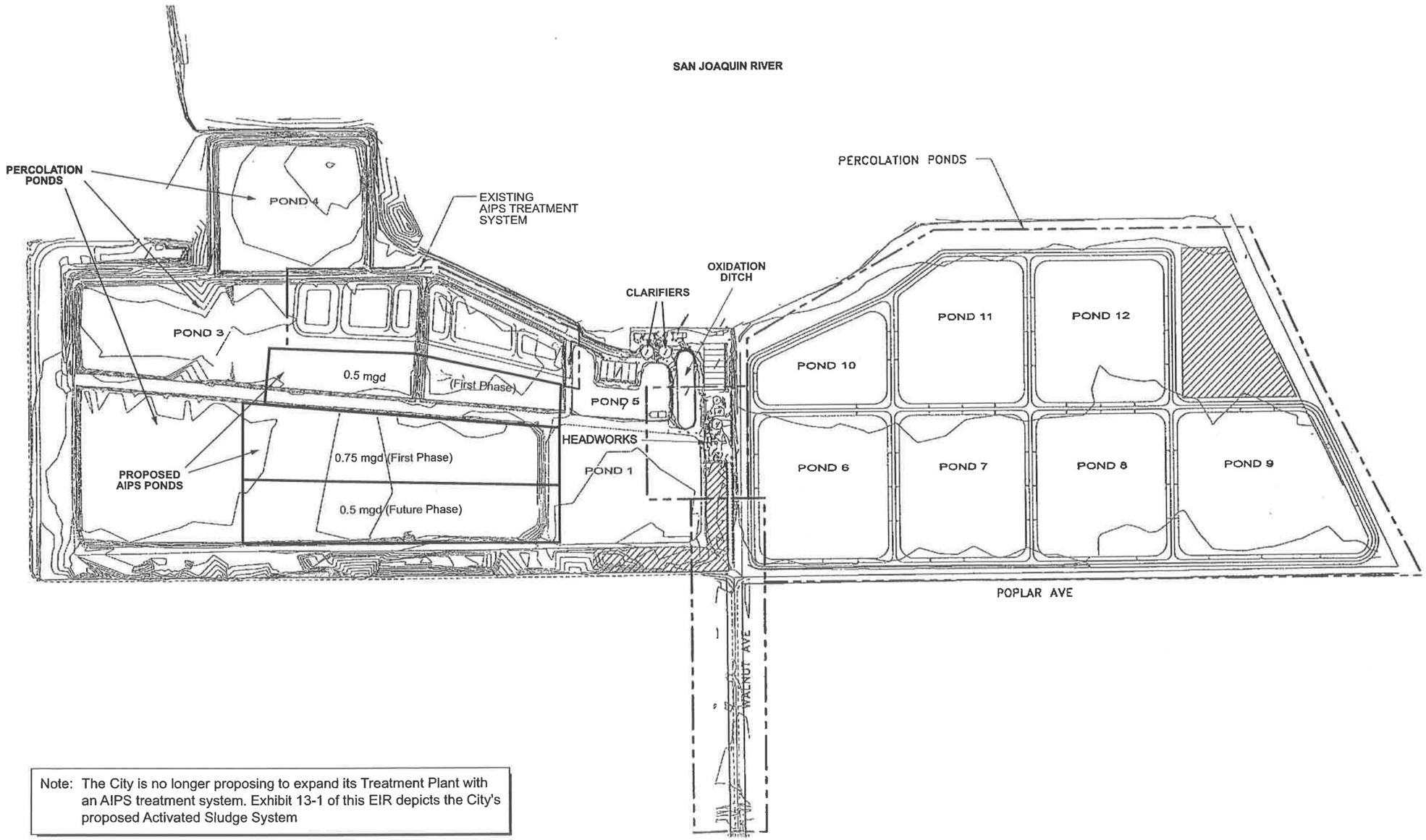
Secondary treatment is provided by two types of processes. The activated sludge system is a process where, under aerobic (i.e., oxygenated) conditions, a community of microorganisms (i.e., activated sludge), including non-pathogenic bacteria, consume biodegradable materials such as proteins, carbohydrates, fats and other compounds, are nourished by organic material in the wastewater, and reproduce. The activated sludge metabolizes and transforms the organic and inorganic substances into environmentally acceptable forms. This process occurs in an 8-foot-deep oxidation ditch with two surface brushes used to enhance aeration and

mixing capacity. Following secondary treatment in the oxidation ditch, the mixed liquor (i.e., treated wastewater and activated sludge) is settled in two secondary clarifiers. Some of the settled sludge (bacterial organisms) is returned to the oxidation ditch to continue the process, and the rest is wasted (i.e., removed) to sludge drying beds. Once the waste activated sludge is dried, it is hauled offsite to an approved disposal site. Three sludge pumps facilitate the process. The secondarily treated wastewater is pumped to the open air disposal ponds where the treated effluent percolates into the ground or evaporates. The City currently does not chlorinate its treated effluent. No river discharge is currently permitted.

Under the AIPS, wastewater from the headworks is pumped directly into the AIPS ponds. The AIPS consists of a series of ponds that use facultative bacteria, which can adapt to grow and metabolize in both aerobic and anaerobic (i.e., without oxygen) conditions. By using facultative bacteria, both aerobic and anaerobic biological processes occur simultaneously. The upper portion of the water column (i.e., supernatant) is aerobic and the lower portion is anaerobic. This process provides secondary treatment with greater energy efficiency because energy-consumptive mixing devices are not required. The AIPS also results in less odor than traditional treatment processes. Most odors are generated in the anaerobic zone. The aerobic zone of the facultative ponds can create a cap that inhibits odors from the anaerobic zone from escaping to the atmosphere. Each AIPS consists of a series of three facultative ponds. The treated effluent is then pumped to the open air disposal ponds where it percolates into the ground or evaporates. No river discharge is currently permitted.

Twelve disposal ponds (i.e., percolation ponds) are located on 80 acres of land within the existing wastewater treatment plant (Exhibit 2-4). Ponds located on the north side of the plant are used more frequently and have a higher percolation rate than the newer ponds located on the south side of the plant. The current design of the plant limits the use of the southern ponds (ponds 6 through 12) because there is no method of transporting effluent from the existing clarifiers to the south ponds. Only effluent from the AIPS ponds can be disposed of in the southern ponds.

The WDRs include groundwater limitations such that, "the discharge, in combination with other sources, shall not cause the underlying groundwater to contain waste constituents in concentrations greater than the background water quality at or beyond the point of compliance. Any incremental increase in waste constituent concentrations within the point of compliance, when compared to background, shall not exceed the increase typically caused by the percolation discharge of domestic wastewater and shall not violate water quality objectives, unreasonably impact beneficial uses, or cause pollution or nuisance." To monitor compliance with these groundwater limitations and with the State Water Resources Control Board 's



Note: The City is no longer proposing to expand its Treatment Plant with an AIPS treatment system. Exhibit 13-1 of this EIR depicts the City's proposed Activated Sludge System

Source: Lee & Ro, Inc. 2002

EXHIBIT 2-4

City Wastewater Treatment Plant

City of Patterson Wastewater Master Plan EIR
G 2T008.01 3/03

0 400 800 FEET NORTH

(SWRCB) groundwater antidegradation policy (State Board Resolution No. 68-16), the WDRs require the City to develop and implement a groundwater monitoring program, and to provide quarterly monitoring reports to the RWQCB.

2.3.2 Existing Diablo Grande Wastewater System

The Western Hills Water District (WHWD) provides sewer collection and treatment services to the Diablo Grande project. Two golf courses (i.e., the Ranch Golf Course and the Legends West Golf Course), including a clubhouse, two snack shacks, and two restrooms, are currently operating at Diablo Grande. Wastewater from the clubhouse is treated by a temporary septic system located on the site of the future hotel and conference facility. The snack shack and golf course restrooms are also served by a septic system near the golf course. The WHWD has acquired WDRs from the RWQCB for the construction of a 200,000-gpd wastewater treatment facility (Order No. R5-2002-0011). The WDRs allows WHWD to provide tertiary treatment of wastewater generated by the golf courses, a future hotel and conference center, and the first 324 residences of the development, and to discharge the disinfected effluent on the Ranch Golf Course as recycled irrigation water.

Subsequent to issuance of the WDRs, WHWD requested a reduction of the permitted capacity of the Diablo Grande wastewater treatment plant to 100,000 gpd, and a modification to allow discharge of treated effluent to irrigate silage crops (i.e., livestock feed) that would be grown within the Diablo Grande Specific Plan area. This 100,000-gpd treatment plant is currently being constructed to serve Phase One of Unit 1 of Diablo Grande. Stanislaus County is currently processing the proposed final map for this phase, which would include approximately 187 single-family residential lots, the hotel and conference center lot, a lot for a temporary water treatment plant, and a lot for the 100,000-gpd wastewater treatment plant.

2.4 Wastewater System Planning Activities

2.4.1 Previous Wastewater Planning Documents

In 1992, the City of Patterson prepared the *Wastewater System Master Plan* (City of Patterson 1992b) to provide guidance for future expansion of its existing wastewater collection, treatment, and disposal system to accommodate expected development in the City General Plan Area. The Master Plan found:

> The existing collection system is considered adequate to serve the existing service area including infill. For planning purposes, capacity is not available other than on an

interim case by case basis for new development in the General Plan growth area (City of Patterson, 1992a; page 2-2).

The Master Plan also included a staged implementation program to meet the City's future treatment capacity needs, but recommended periodic review of the Master Plan to incorporate revisions that may be appropriate due to changing future conditions.

Over the last several years, substantial development has occurred in the western part of Patterson. The sewer collection pipe sizes constructed for the new developments generally followed the recommendations set forth in the Master Plan, and some of the pipes were oversized to assist in providing sewage collection service for future development on the western side of the City. In 1994, the City approved the Creekside Annexation, which required the applicant to fund construction of a 27-inch diameter trunk line within M Street and Walnut Avenue to convey wastewater from the western portion of the City to the wastewater treatment facility. This trunk line was addressed in the *Creekside Annexation to the City of Patterson EIR* (City of Patterson 1994), but has not yet been constructed. In 2001, the City prepared the *Western Expansion Area Sanitary Sewer Collection System* report (City of Patterson 2001) to determine the most cost-effective way of providing sewage collection to the west side of the City's General Plan Area using the oversized sewer lines constructed since the 1992 Master Plan was developed. This report recommended an expansion of the sewer collection system. Under this system, the existing 15-inch and 21-inch sewer lines running through the Heartland Ranch (formerly Patterson Ranch) development would be loaded to near maximum capacity, and the 27-inch line in M Street would be loaded slightly above capacity. Therefore, a new collection pipeline would be required to serve the West Patterson projects.

2.4.2 WEST PATTERSON EIR

The *West Patterson Projects EIR* (certified in January 2003) analyzed expansion of the City's collection, treatment, and disposal facilities to serve approved and planned growth in the City and its sphere of influence west of the City. The West Patterson EIR analyzed a two-phase, 1.0-mgd expansion of approximately 0.5 mgd per phase. The first-phase expansion is intended to serve residential development that is approved or under construction in the Creekside development area, including Creekside Meadows, Walker Ranch I and II, and Shire Place residential projects. It would provide additional capacity to serve the Patterson Gardens proposal and a portion of the Keystone Pacific Business Park. The second-phase expansion is intended to serve the balance of the Keystone Pacific Business Park, and future development within the West Patterson Business Park Plan Area. The *West Patterson Project EIR* also analyzed construction of all sewer collection lines to serve Patterson Gardens and the Keystone

Pacific Business Park, and the percolation ponds required for the proposed expansion (City of Patterson 2003).

2.4.3 Diablo Grande Specific Plan Area

Through recent discussions, the City of Patterson and the WHWD have determined that it would be beneficial to both parties to proceed with a sewer treatment alternative whereby the City of Patterson would treat WHWD sewer influent generated from Phase One of the Diablo Grande project. This would be done at the existing Patterson wastewater treatment facility. This approach is beneficial to both parties for many reasons. First, the RWQCB has expressed an interest in reducing the number of plants through regionalization. This proposal would result in wastewater from the City and the WHWD being collected and conveyed to one central facility thereby making its management, disposal, and permitting easier. Secondly, the City of Patterson currently has much of the required maintenance and treatment infrastructure to serve a portion of Diablo Grande wastewater, and the service can be provided much more cost effectively and efficiently. Third, this approach will avoid the need for construction of additional onsite facilities or expansion of the plant now under construction at the Diablo Grande project. Fourth, Diablo Grande's conveyance of wastewater to the City of Patterson wastewater treatment plant allows the WHWD to participate in costs of City of Patterson collection facility improvements, thereby reducing the cost of the entire project to the City of Patterson.

2.5 Project Objectives

The primary objectives of the proposed Wastewater Master Plan and Diablo Grande Sewer Line project are to:

- continue to provide wastewater services at a reasonable rate for approved and planned growth in the City and its sphere of influence through the General Plan buildout year of 2020;
- provide wastewater services at a reasonable rate to Phase One of the approved Diablo Grande Specific Plan project in Stanislaus County;
- minimize the number of wastewater treatment plants serving the Diablo Grande Specific Plan project to consolidate management, disposal and permitting of the facilities; and
- reduce the cost of wastewater facility improvements needed to serve the City and the Diablo Grande Specific Plan project by WHWD's participation in the combined facility

improvements and by using the City's existing maintenance and facility infrastructure to serve the Diablo Grande Specific Plan project.

2.6 PROJECT CHARACTERISTICS

The proposed project includes expansion of the City's wastewater facilities to serve approved and planned growth in the City and its sphere of influence, including the Creekside development area, Patterson Gardens, the Keystone Pacific Business Park, and buildout of the West Patterson Business Park Master Development Plan area. The proposed expansion would also accommodate wastewater generated by Phase One of Diablo Grande. The City is also requesting the RWQCB to revise the permitted capacity of its existing treatment and disposal facilities by 0.2 mgd.

2.6.1 PHYSICAL CHARACTERISTICS

PROPOSED WASTEWATER INFRASTRUCTURE IMPROVEMENTS

The proposed project would include construction of a sewer line from the Diablo Grande Specific Plan area to an existing City sewer trunk line near the intersection of Sperry and American Eagle avenues (described further below). The City's existing wastewater treatment plant would treat a portion of the wastewater generated by Diablo Grande (approximately 0.18 mgd), using a portion of the remaining capacity of the plant (approximately 0.5 mgd).

The proposed project also includes a first-phase expansion of the City's wastewater treatment facility (1.25 mgd) to serve: the portion of the previously approved Creekside residential development that cannot be accommodated with the plant's current remaining capacity; the Patterson Gardens development; and the first phases (about 150 acres) of the Keystone Pacific Business Park (a total of 0.5 mgd) (see Table 2-2). The remaining capacity of the first-phase expansion (0.75 mgd) would replace the existing capacity that would be used to accommodate the initial 0.18 mgd of Diablo Grande wastewater, and the remaining wastewater generated by Phase One of Diablo Grande. Wastewater generated by Phase One of Diablo Grande is currently projected to total approximately 0.71 mgd. If actual flows are higher, the City would accommodate up to 0.75 mgd of wastewater from Diablo Grande Phase One.

Under this proposal, WHWD would bypass its wastewater treatment plant when the City's wastewater treatment facility begins treating Diablo Grande wastewater. The WHWD wastewater treatment facility would remain on site, and might be used occasionally to pretreat wastewater sent to the City's wastewater treatment plant from the onsite winery.

Table 2-2 Patterson Wastewater Treatment Facility First-Phase Expansion	
Development	**Average Flow Rate (gpd)**
Creekside Development [1]	90,000
Patterson Gardens	318,500
Keystone Pacific Business Park [2]	91,500
Diablo Grande (Phase One) [3]	750,000
Total Projected Flows	**1.25 mgd**

[1] Flows not already served by plant's remaining capacity.
[2] Based on 150 of 224 total acres (67%) built during Phase 1
[3] Projected Diablo Grande flows are 0.71 mgd. The City would treat up to 0.75 mgd of actual flows from Phase One of Diablo Grande.

Source: Lee & Ro, Inc., 2002

Although not a physical improvement, the City is currently requesting the RWQCB to revise (i.e., re-rate) the permitted capacity of the activated sludge system at its existing treatment plant by 0.2 mgd without additional modifications to the plant.

City Infrastructure Improvements

During preparation of this EIR, the City of Patterson submitted a Report of Waste Discharge (RWD) to the Regional Water Quality Control Board (RWQCB) to request authorization for expansion of the City's wastewater treatment facilities. During the subsequent consultation process, the RWQCB requested the City to consider expanding their wastewater treatment capacity using an activated sludge treatment process rather than an advanced integrated pond system (AIPS) process. In response to the RWQCB's request, the City evaluated the environmental effects of an Activated Sludge Alternative at a level of detail sufficient for the City Council to approve this alternative, if desired. The City has now selected the Activated Sludge Alternative as the proposed project. The following text describes the AIPS treatment system proposed by the City in the DEIR. The Activated Sludge Alternative is described in detail in Section 13.2.1 (Page 13-5) of this EIR, and is fully evaluated in Section 13.2.2 of this EIR.

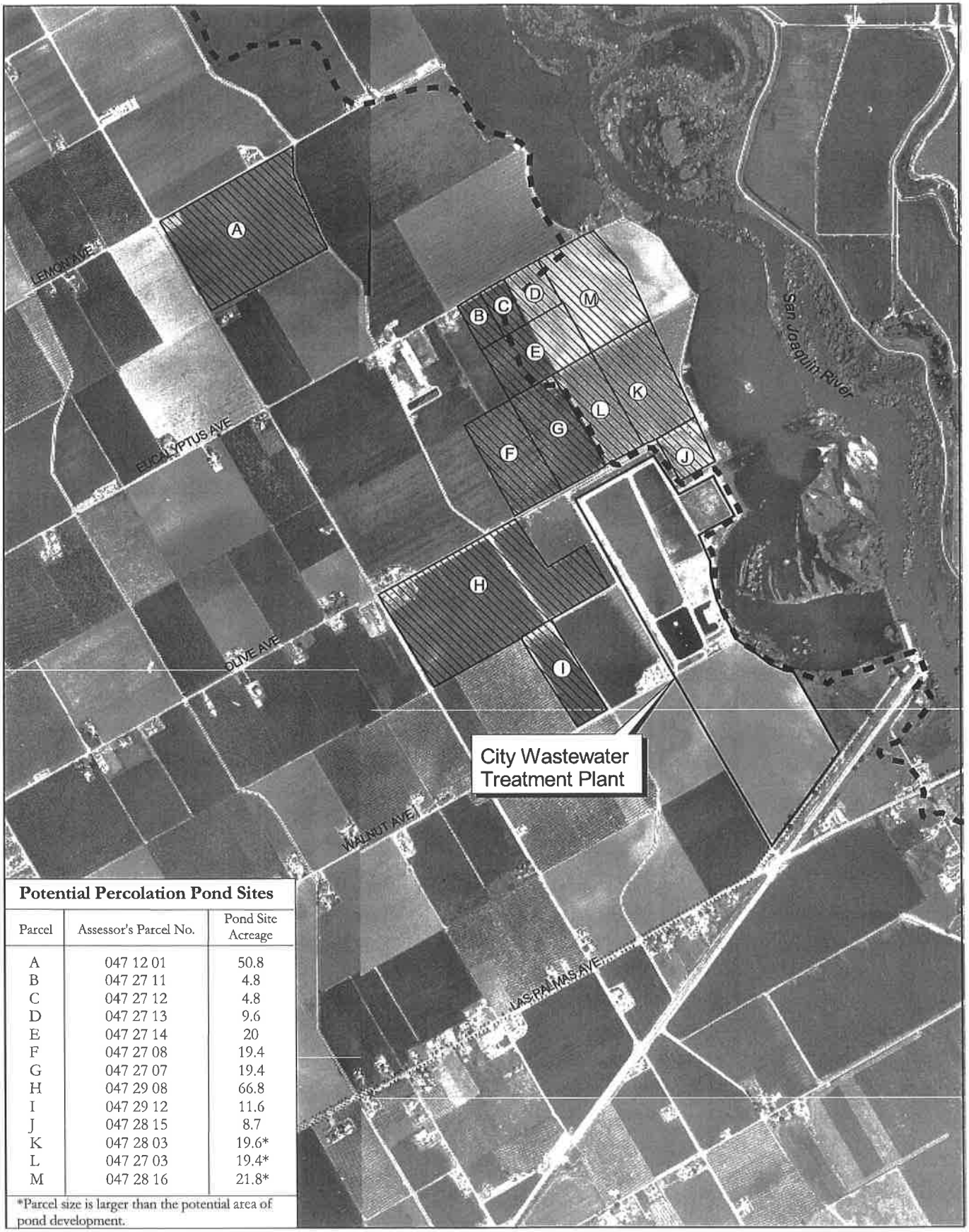
Improvements required for the first-phase expansion include two new AIPS with 1.25 mgd of total treatment capacity on about 19 acres of land in the 100-acre treatment plant site. The new AIPS would be constructed where percolation ponds now exist. The City is also proposing to construct two sludge stabilization basins where percolation ponds and the sludge

drying beds now exist. Other improvements would include an additional screen, grinder, and diversion gates for the existing headworks, two additional effluent pumps, an effluent flow meter, additional effluent piping (including a force main from the effluent lift station to the new percolation ponds), and landscaping at the plant. Other proposed improvements to upgrade the plant include a new maintenance and storage building, a concrete erosion skirt for the existing AIPS finishing ponds, and replacement of the existing 200-kW diesel-powered backup generator with a 500-kW diesel-powered backup generator.Future facility upgrades might also include disinfection of treated effluent with sodium hypochlorite, the active ingredient in liquid bleach. Sodium hypochlorite would be used in a 12% solution. Facilities might include on-site storage tanks with spill containment structures, a double-walled metering pump, and double-walled piping.

It is estimated that the first phase wastewater treatment plant expansion (1.25 mgd) would include up to 125 acres of land for the percolation/evaporation ponds, including replacement ponds for the area to be used for new AIPS. Because the City is examining several potential alternative locations for the first phase ponds (and for future phases), this EIR discusses and analyzes approximately 277 acres of alternative pond sites at an equal, project-level of detail (Exhibit 2-5). The City has entered into agreements with land owners to purchase approximately 174 acres north of the City's treatment plant, approximately 100 acres of which are suitable for percolation ponds. The 174 acres included in the purchase agreement include parcels B, C, D, E, K, L, and M shown on Exhibit 2-5, and a 22.3-acre parcel northeast of parcel M that would not be used for pond construction. The purchase agreement is currently in escrow (G. Lambert, pers. comm., 2003). No river discharge is proposed.

All of the alternative pond sites are located in unincorporated Stanislaus County, approximately 2 miles east of downtown Patterson. The topography of the pond sites is flat, and current land use is irrigated agricultural production. The most northeastern pond site is located adjacent to the 100-year floodplain of the San Joaquin River (Exhibit 2-5). Some portions of the alternative percolation pond sites are located within the 100-year flood zone as mapped by the Flood Emergency Management Agency (FEMA) in March 1996. The City is currently evaluating various locations and designs for the percolation ponds. Ponds that might be located within the 100-year flood zone would be bermed to protect them from innundation by a 100-year flood event. Use of the pond sites would be subject to agreement by the existing land owners. Structures that are located on some of the pond sites would be demolished. The City will consider annexation of the percolation pond sites in the future, but is not currently proposing annexation as part of the Wastewater Master Plan.

The City would manage the percolation ponds in a manner calculated to minimize mosquito breeding, while balancing other environmental and operational concerns.



Potential Percolation Pond Sites

Parcel	Assessor's Parcel No.	Pond Site Acreage
A	047 12 01	50.8
B	047 27 11	4.8
C	047 27 12	4.8
D	047 27 13	9.6
E	047 27 14	20
F	047 27 08	19.4
G	047 27 07	19.4
H	047 29 08	66.8
I	047 29 12	11.6
J	047 28 15	8.7
K	047 28 03	19.6*
L	047 27 03	19.4*
M	047 28 16	21.8*

*Parcel size is larger than the potential area of pond development.

Potential Percolation Pond Sites — 100-Yr Flood Zone Boundary

Alternative Percolation Pond Locations

EXHIBIT 2-5

City of Patterson Wastewater Master Plan EIR
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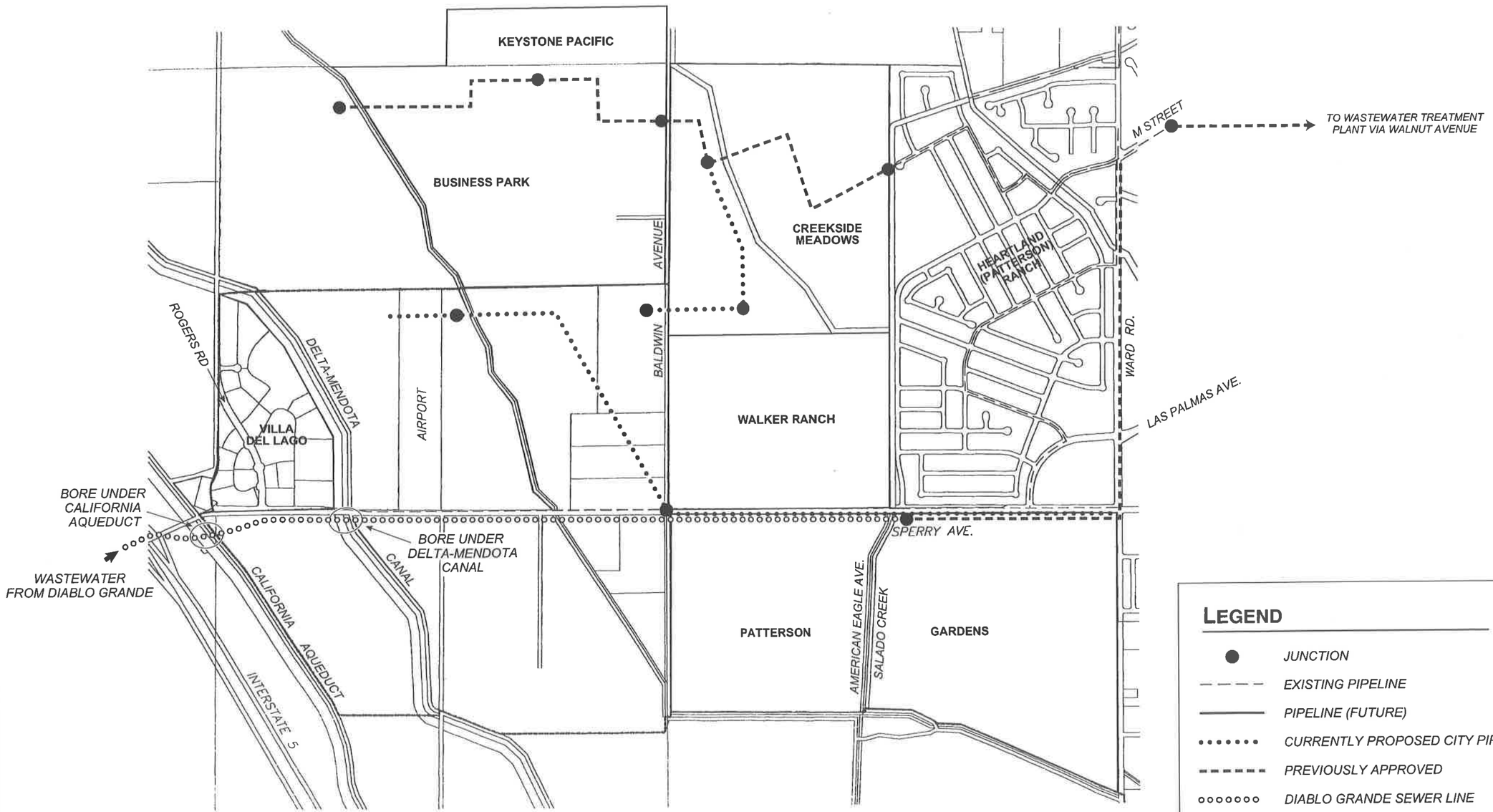
Mosquito management may include use of mosquito fish, minimizing the length of time that water stands in certain percolation ponds, and weed control. The City would continue to coordinate with the Turlock Mosquito Abatement District, and provide access to the district for inspection and treatment.

The *West Patterson Projects EIR* (certified in January 2003) analyzed potential environmental effects of constructing the collection lines needed to serve Patterson Gardens and the Keystone Pacific Business Park. The Wastewater Master Plan includes the collection lines required to serve the remainder of the West Patterson Business Park plan area (Exhibit 2-6).

Diablo Grande Sewer Line and Lift Station

Under the proposed project, the WHWD would construct a sewer trunk line extending from within the Diablo Grande Specific Plan area, down Diablo Grande Parkway to Del Puerto Canyon Road (Exhibit 2-3). This portion of the Diablo Grande sewer trunk line would be a force main, pressurized by a lift station constructed near the entrance of Diablo Grande. The precise location of the lift station has not yet been determined, but would consist of 2 or 3 pumps constructed within a fenced area of approximately 100 feet by 100 feet within the Diablo Grande Specific Plan area. It would also be sited in a location downhill from all wastewater-generating sources within Diablo Grande. The Diablo Grande lift station would include a propane-powered backup emergency-use generator. The size has not yet been determined. From Del Puerto Canyon Road, the Diablo Grande sewer line would run east along Sperry Avenue to the connection with the City's approved sewer trunk line in Sperry Avenue at American Eagle Avenue. This portion of the Diablo Grande sewer line would flow via gravity.

The section of the Diablo Grande sewer line west of I-5 would be constructed entirely within the shoulder of the existing Diablo Grande Parkway and Del Puerto Canyon Road. These roads have previously undergone CEQA review in the *Diablo Grande Specific Plan EIR* (Stanislaus County, June 15, 1993). East of I-5, the Diablo Grande sewer line would run eastward, parallel to Sperry Avenue. The sewer line would be located approximately 200 feet south of Sperry Avenue between I-5 and Rogers Road, and approximately 20 feet south of Sperry Road until it joins a City sewer line on the east side of Salado Creek. The sewer line would be bored beneath the California Aqueduct and the Delta-Mendota Canal, but would be trenched within the area between them. The sewer line is expected to be trenched across Salado Creek.



Source: Stoddard & Associates 2001; EDAW, Inc. From: *Western Expansion Area Sanitary Sewer Collection System (Patterson 2001)*

EXHIBIT 2-6

Proposed Sanitary Sewer Trunk Improvements

City of Patterson Wastewater Master Plan EIR

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NORTH

GENERAL PLAN BUILDOUT

Buildout of the City's General Plan and Diablo Grande Phase One would generate approximately 4.1 mgd of wastewater, including the wastewater currently treated by the City. As discussed above, the City's plant capacity is currently permitted at 1.3 mgd. Re-rating the plant's capacity could provide another 0.2 mgd, for a total of 1.5 mgd. The first-phase expansion would accommodate another 1.25 mgd. The City would then need an additional 1.35 mgd of capacity to accommodate buildout of its General Plan (Table 2-3).

Table 2-3
Patterson Wastewater Treatment Facility
Existing Capacity and Proposed Demand Through General Plan Buildout

Projected Flows through General Plan Buildout	**4.1**
Authorized Plant Capacity	1.3 mgd
Proposed Re-Rating of Plant Capacity	0.2 mgd
First-Phase Expansion	1.25 mgd
Remaining Capacity Needed for General Plan Buildout	**1.35 mgd**

Source: Lee & Ro, Inc., 2002

As with the proposed first-phase expansion, subsequent expansion phases of the treatment system would be accommodated by converting existing percolation ponds within the 100-acre plant to treatment ponds. Disposal of 4.1 mgd of wastewater would require up to 400 acres of land for percolation ponds, including the 125 acres currently proposed by the City for its first-phase expansion. The City will also need to construct sewer trunk lines in the East-North and East-South buildout areas and remove an existing lift station at the corner of Orange Avenue and First Avenue when that portion of the City is developed. The approximate locations of these trunk lines have been tentatively identified, and are shown in Exhibit 2-7. The exact locations of these sewer trunk lines have not be identified, however, because buildout of the East-North and East-South areas would not occur for at least 5 to 10 years.

2.6.2 LAND USE APPROVALS

Implementation of the Wastewater Master Plan would require the following approvals by the City Council.

- Approval of the Wastewater Master Plan components.
- Approval of an agreement between the City and WHWD for the City to collect, treat, and dispose of wastewater generated by Diablo Grande.

General Plan Buildout Area Collection System Improvements

EXHIBIT 2-7

City of Patterson Wastewater Master Plan EIR

X 2T008.01 2/03

EDAW

- Approval of purchase agreements for acquisition of the percolation pond sites.
- Certification of this EIR.
- Implementation of the Wastewater Master Plan would require the following approvals by the Stanislaus County Board of Supervisors.
- Approval of an amendment to the Diablo Grande Specific Plan to revise the method for wastewater collection, treatment, and disposal.
- Issuance of a Special Use Permit for construction and operation of the percolation ponds within parcels zoned as General Agriculture.
- Issuance of encroachment permits for: construction of the Diablo Grande sewer line within County road rights-of-way; any City collection lines constructed within County rights-of-way; and for the effluent force main between the treatment plant and the percolation ponds if it passes through County rights-of-way.

Implementation of the Wastewater Master Plan would require the following approval by the WHWD.

- Approval of an agreement between the City and WHWD for the City to collect, treat, and dispose of wastewater generated by Diablo Grande.

2.7 USES OF THIS EIR

As previously discussed, the *West Patterson Projects EIR* (certified in January 2003) analyzed expansion of the City's collection, treatment, and disposal facilities to serve approved and planned growth in the City and its sphere of influence west of the City. The West Patterson EIR analyzed a two-phase, 1.0-mgd expansion of approximately 0.5 mgd per phase. The *West Patterson EIR* also analyzed construction of all sewer collection lines and percolation ponds required for that expansion (City of Patterson 2003).

Pursuant to Section 15161 of the State CEQA Guidelines, this EIR is intended to serve as a Project EIR for a 1.25-mgd first-phase expansion that would accommodate wastewater from Phase One of Diablo Grande; construction of the percolation ponds on sites not previously analyzed in the *West Patterson EIR*; construction of sewer collection lines required to serve the remainder of the West Patterson Business Park plan area; and construction of the Diablo Grande sewer line and lift station.

Pursuant to Section 15168 of the State CEQA Guidelines, this EIR is also intended to serve as a Program EIR for future expansion of the City's wastewater treatment and disposal system to serve buildout of the West Patterson area, and expansion of the City's wastewater collection, treatment, and disposal system to serve buildout of the East-North and East-South area in accordance with the City's General Plan.

2.8 LEAD, TRUSTEE , AND RESPONSIBLE AGENCY ACTIONS

Section 15050(a) of the State CEQA Guidelines state, "where a project is to be carried out or approved by more than one public agency, one public agency shall be responsible for preparing an EIR or Negative Declaration for the project. This agency shall be called the Lead Agency." The State CEQA Guidelines provides the following criteria for identifying the Lead Agency: "If the project will be carried out by a public agency, that agency shall be the Lead Agency even if the project would be located within the jurisdiction of another public agency"(State CEQA Guidelines §15051[a]). Also, "the Lead Agency will normally be the agency with general governmental powers, such as a city or county, rather than an agency with a single or limited purpose such as an air pollution control district or a district which will provide a public service or public utility to the project" (State CEQA Guidelines §15051[b][1]).

In addition to the Lead Agency, a number of other agencies would have discretionary approvals related to the proposed project. A responsible agency includes "all public agencies other than the lead agency that have discretionary approval power over the project" (State CEQA Guidelines §15381). A trustee agency is a "state agency having jurisdiction by law over resources affected by the project which are held in trust for the people of the State of California" (State CEQA Guidelines §15386).

2.8.1 CITY OF PATTERSON

The City will serve as the lead agency for CEQA compliance and will coordinate as necessary with CEQA responsible and trustee agencies. The City is the lead agency for CEQA purposes because it has overall responsibility for approving the project and for providing wastewater treatment in the City. Also, the City will take the lead in securing funding for and implementing the proposed project. As lead agency under CEQA, the City is principally responsible for conducting the environmental review process, including scoping, preparing appropriate environmental documentation (i.e., this EIR), and obtaining required permits and other regulatory approvals.

2.8.2 STANISLAUS COUNTY

The proposed project would require an amendment to the Diablo Grande Specific Plan to revise the method for wastewater collection, treatment, and disposal. Stanislaus County would serve as a responsible agency for approval of the specific plan amendment. The percolation ponds would be located within Stanislaus County jurisdiction, and would require County approval of a Special Use Permit. Construction of utility lines within County road rights-of-way require encroachment permits. The WHWD will require an encroachment permit for construction of the Diablo Grande sewer line within the rights-of-way of Del Puerto Canyon Road, the County portion of Sperry Avenue, and Diablo Grande Parkway if the parkway is dedicated to the County before construction of the sewer line. The City would also require a County encroachment permit for any City collection lines constructed within County rights-of-way, and for the effluent force main between the treatment plant and the percolation ponds if it passes through County rights-of-way. Stanislaus County would also serve as a responsible agency for approval of the Special Use Permit and the encroachment permits.

2.8.3 WESTERN HILLS WATER DISTRICT

Implementation of the Wastewater Master Plan would require WHWD approval of an agreement between the City and WHWD for the City to collect, treat, and dispose of wastewater generated by Diablo Grande. WHWD would serve as a responsible agency for this approval.

2.8.4 OTHER RESPONSIBLE AND TRUSTEE AGENCIES

Other responsible and trustee agencies would also have discretionary approvals related to the Patterson Wastewater Master Plan project. Their related areas of review/discretionary authority are as follows (in alphabetical order):

- **California Department of Fish and Game (CDFG).** The project may affect fish and wildlife under the jurisdiction of CDFG as a trustee agency. CDFG would comment on the EIR and on any required U.S. Army of Engineers (USACE) permits to seek actions that avoid or mitigate impacts to resources under its jurisdiction. Pursuant to Section 1600 of the California Fish and Game Code, CDFG also maintains jurisdiction over rivers, streams, and lakes. Because the Diablo Grande sewer line would need to be trenched across Salado Creek in the vicinity of American Eagle Avenue, the project would require a 1601 Streambed Alteration Agreement with CDFG. CDFG also regulates the take of state-listed Threatened and Endangered species.

- **California Department of Transportation (Caltrans).** As a responsible agency, Caltrans maintains review and approval authority over activities affecting state highway facilities. The WHWD will be required to obtain an encroachment permit from Caltrans for the portion of the Diablo Grande sewer line passing beneath I-5.

- **California Department of Water Resources (DWR).** DWR is the responsible agency that maintains review and approval authority over projects encroaching within the right-of-way of a State Water Project facility. The Diablo Grande sewer line is proposed to be bored (i.e., tunneled) beneath the California Aqueduct, requiring WHWD to secure an Encroachment Permit from DWR.

- **Regional Water Quality Control Board (RWQCB).** Before implementation of the City's proposed wastewater treatment plant expansion, the City would be required to obtain revisions to its current WDRs from the RWQCB. Projects that include discharges of dredged or fill material into Waters of the U.S. also require a 401 water quality certification, or a waiver thereof, from the RWQCB. Because the Diablo Grande sewer line would need to be trenched across Salado Creek in the vicinity of American Eagle Avenue, the project would require 401 water quality certification or a waiver.

- **San Joaquin Valley Air Pollution Control District (SJVAPCD).** The expanded wastewater treatment plant will need to comply with provisions identified in Rule 4001, New Source Performance Standards, which incorporates the New Source Performance Standards from Part 60, Chapter 1, Title 40, Code of Federal Regulations (CFR). Also, new stationary sources of emissions, such as the proposed backup generator at the Diablo Grande lift station, and the proposed treated effluent pump at the treatment plant, will also be subject to the SJVAPCD's permitting rules, including Rule 2201, New and Modified Stationary Source Review Rule.

- **San Luis & Delta-Mendota Water Authority (SLDMWA).** SLDMWA under a Transfer Agreement with the USBR has the responsibility to operate and maintain the Delta-Mendota Canal, pipelines, and facilities. As the responsible District authority, the SLDMWA processes all applications for encroachment permits, leases, licenses or easements for use of any portion of USBR canal rights-of-way. The Diablo Grande sewer line is proposed to be bored (i.e., tunneled) beneath the Delta-Mendota Canal, requiring WHWD to secure an Encroachment Permit from the USBR through concurrence with the SLDMWA.

- **U.S. Army Corps of Engineers.** Under Section 404 of the federal Clean Water Act, the USACE regulates discharges of dredged or fill material within waters of the U.S., which include wetlands. Because the Diablo Grande sewer line would need to be trenched across Salado Creek in the vicinity of American Eagle Avenue, the project would require Section 404 authorization, most likely via the Nationwide Permit process.

- **U.S. Bureau of Reclamation.** The United States, Department of the Interior, through the Regional Director of the USBR, owns the canals, pipelines, structures, appurtenances, reservoirs, and facilities of the Central Valley Project. SLDMWA is the entity, under agreement with the USBR, with the responsibility to operate and maintain the Delta-Mendota Canal, pipelines, and facilities. The USBR is the responsible agency that maintains review and approval authority over projects encroaching within the right-of-way of a canal, pipeline, or related facility. The Diablo Grande sewer line is proposed to be bored (i.e., tunneled) beneath the Delta-Mendota Canal, requiring WHWD to secure an Encroachment Permit to be reviewed and authorized by the USBR through the SLDMWA.

- **U.S. Fish and Wildlife Service (USFWS):** USFWS has authority over projects that may affect the continued existence of a federally listed (Threatened or Endangered) species.

2.8.5 Construction Activities and Schedule

First-Phase Expansion

Construction of the Diablo Grande sewer line and lift station is scheduled to occur over a 4- to 5-month period, beginning shortly after certification of this EIR (i.e., from November 2003 through March 2004). Construction of the first-phase expansion is expected to occur between November 2003 and October 2004.

General Plan Buildout

Additional expansion phases to serve the remaining portions of the West Patterson area would occur within 5 to 10 years. Development of the East-North and East-South areas is not expected to occur for at least 5 to 10 years. Full buildout of this area is planned to occur by about 2020. Therefore, the construction schedule for future expansion of the wastewater treatment facility to serve General Plan buildout cannot be accurately determined at this time.

3 APPROACH TO THE ENVIRONMENTAL ANALYSIS

3.1 CONTENTS OF ENVIRONMENTAL ANALYSIS CHAPTERS

Chapters 4 through 11 contain a discussion of the environmental setting, thresholds of significance, project and cumulative environmental impacts that would result from approval and implementation of the proposed Patterson Wastewater Master Plan and the Diablo Grande Sewer Line, mitigation measures, and level of significance after mitigation. Issues evaluated in these sections consist of a full range of potential environmental topics originally identified for review in the Draft Environmental Impact Report's (EIR) Notice of Preparation (NOP). Appendix A contains the NOP. Chapters 4 through 10 of this Draft EIR are organized into the following major components:

- **Existing Conditions:** This section presents the existing regional and local environmental conditions, in accordance with the State CEQA Guidelines §15125. The discussions of environmental setting focus on information relevant to the issue under evaluation. The applicable regulatory framework and regional plan context, if any, under which the proposed project would be implemented are also discussed in the Existing Conditions component of each chapter. One of the elements of §15125 requirements, the consistency with the local general plan (i.e., the City of Patterson General Plan and the Stanislaus County General Plan), is discussed in Chapter 4 (Land Use and Planning).

- **Environmental Impacts:** This section presents thresholds of significance used in the Draft EIR and discusses potential significant effects of the proposed project on the existing environment, including the environment beyond the project boundaries, in accordance with State CEQA Guidelines §15143. The thresholds of significance are shown at the beginning of each environmental impact section. Project impacts are numbered sequentially throughout this section. Therefore, impacts in Chapter 4 are numbered 4-1, 4-2, 4-3, etc. Impacts identified in Chapter 5 are numbered 5-1, 5-2, and so on. A **bold** font impact statement precedes the discussion of each impact and provides a summary of each impact and its level of significance. The discussion that follows the impact statement includes the substantial evidence upon which a conclusion is made as to whether the impact would be significant or less than significant.

- **Mitigation Measures:** This section provides mitigation measures to reduce potentially significant effects of the proposed project to the extent feasible, in accordance with CCR §15002(a)(3), §15021(a)(2), and §15091(a)(1). The mitigation measures are

registered numerically to the corresponding impact being reduced. For example, impact 4-1 would be mitigated with measure 4-1.

- **Level of Significance After Mitigation:** This section describes whether mitigation measures would reduce impacts to a less-than-significant level. This section is presented in accordance with State CEQA Guidelines §15126.2(b), which requires identification of significant unavoidable impacts.

3.2 CUMULATIVE IMPACT ANALYSIS

This EIR also provides an analysis of cumulative impacts of the proposed project, as required by State CEQA Guidelines §15130. Cumulative impacts are defined in State CEQA Guidelines §15355 as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts." A cumulative impact occurs from "the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time" (State CEQA Guidelines §15335[b]).

The cumulative impact analysis is included in Chapter 11, separate from the project-specific impact analysis contained in Chapters 4 through 10.

4 LAND USE AND PLANNING

This chapter evaluates the consistency of the Patterson Wastewater Master Plan (WWMP), including the Diablo Grande sewer line and lift station, with relevant regulatory and policy objectives of the following:

- City of Patterson General Plan
- Stanislaus County General Plan
- Diablo Grande Specific Plan

The determinations of policy consistency as discussed in this EIR chapter represent the EIR authors' best judgment (in consultation with City and County staff) based on their interpretation of policies. However, this EIR does not determine policy consistency. The formal policy consistency determinations must be made by the City and County decision-makers.

The consistency analysis is presented to assist decision-makers in their formal determinations of the proposed project's consistency. When the possibility of inconsistency is identified in the EIR, it is described as an "inconsistency" to focus attention on that policy issue. It is the responsibility of the Patterson Planning Commission and City Council and the Stanislaus County Planning Commission and Board of Supervisors to make the definitive decisions about policy consistency when the merits of the project are considered. The decision-makers have the sole authority to determine whether and how relevant policies apply to a specific project.

Section 15358(b) of the CEQA Guidelines states, "effects analyzed under CEQA must be related to a physical change." Therefore, only those policies that relate to potential changes in the physical environment are considered herein. Consistency with other applicable policies will be considered when the merits of the project are considered.

4.1 EXISTING CONDITIONS

4.1.1 EXISTING LAND USES IN PROJECT AREA

The project area extends from the Diablo Grande Specific Plan area in the foothills of the Diablo Range eastward across the floor of the Central Valley, through the City of Patterson, and to the City's wastewater treatment plant near the San Joaquin River. The Diablo Range is characterized by grassland and oak woodland, and is primarily used for cattle grazing. The project area near the City of Patterson is characterized by farms, rural residences, suburban residences, and urban land uses. The project area near the wastewater treatment plant is

characterized by farms, rural residences, the flood plain of the San Joaquin River, and the wastewater treatment plant. The potential percolation pond sites are currently used for agriculture. The Diablo Grande lift station site is characterized by non-native grassland, and is not used for agriculture.

4.1.2 Local Plans, Policies, and Regulations

This subsection provides an introduction and overview of the applicable land use plans and policies adopted for the purpose of avoiding or mitigating an environmental effect. This discussion is followed by Table 4-1, which lists the applicable land use policies of the City and County General Plans and the Diablo Grande Specific Plan governing use of the potential percolation pond sites and other aspects of construction and implementation of the Patterson Wastewater Master Plan.

City of Patterson General Plan

The Planning and Zoning Law of the California Government Code mandates that each city and county planning agency prepare and adopt a general plan for the physical development of the lands within that city's or county's jurisdictional boundaries. The general plan is required to address and establish policies for seven specific planning issues or elements. By establishing these policies, codes, and ordinances, the local governing body is provided a tool by which to measure and regulate the future development and planning decisions that face the community.

The City of Patterson General Plan (CPGP) was adopted on June 11, 1992 after a process that began in January 1988 to revise the 1978 General Plan. The policies related to land use that are relevant to the wastewater expansion project are discussed further and a consistency determination is provided in Table 4-1.

Stanislaus County General Plan

The Stanislaus County General Plan (SCGP) was adopted in October 1994 and, except for the housing and agricultural elements, was updated from the previous general plan. The general plan mandates for the housing and agricultural elements were adopted in 1992. Stanislaus County has been a predominantly agricultural county but has been experiencing a steady rate of urban growth. The cities located across the county have been steadily increasing in population due to economic growth and are thus growing in size. One goal of the SCGP is to address agricultural land use issues such as farmland conversion and the urbanization of unincorporated areas of the city.

Land Use Designations - Percolation Pond Sites

The proposed percolation pond expansion sites are located within unincorporated Stanislaus County and are designated as General Agricultural District. All of the land uses surrounding the percolation pond sites are also designated as General Agricultural District. This land use designation is defined in the SCGP as follows (Stanislaus County 1994):

> "General Agriculture District designation recognizes the value and importance of agriculture by acting to preclude incompatible urban development within agricultural areas. It is intended for areas of land which are presently or potentially desirable for agricultural usage. These are typically areas which possess characteristics with respect to location, topography, parcel size, soil classification, water availability and adjacent usage which, in proper combination, provide a favorable agricultural environment. This designation establishes agriculture as the primary use in land so designated, but allows dwelling units, limited agriculturally related commercial services, agriculturally related light industrial uses, and other uses which by their unique nature are not compatible with urban uses, provided they do not conflict with the primary use. The General Agriculture designation is also consistent with areas the overall General Plan has identified as suitable for open space or recreational use for ranchettes."

Land Use Designations - Diablo Grande Lift Station

The proposed Diablo Grande lift station site is located within the Diablo Grande Specific Plan (DGSP) area in unincorporated Stanislaus County. The entire DGSP, including the lift station site, is designated as Specific Plan 1 (SP1) in the SCGP. This General Plan land use designation has been added to the SCGP land use map. The SP1 designation refers the reader to the DGSP for additional information on how to implement the SCGP. The SP1 designation presupposes that appropriate infrastructure will be provided to support development within the boundaries of a specific plan.

DIABLO GRANDE SPECIFIC PLAN-PHASE ONE

DGSP) was developed and prepared for Stanislaus County Planning Department. The original DGSP was adopted by the Stanislaus County Board of Supervisors in October 1993. The revised DGSP (dated July 1998) was approved by the County Board of Supervisors on December 7, 1999 insofar as it relates to development of Phase One. This specific plan was prepared in compliance with Stanislaus County Specific Plan Guidelines and in accordance with the SCGP. The DGSP has become the governing document for the specific plan area and governs the implementation of the SCGP goals and policies for Diablo Grande.

Table 4-1 Patterson Wastewater Master Plan Land Use Policy Consistency Analysis
City of Patterson General Plan Policies
Public Services
Policy IV.I.1. Public facilities, such as utility substations, water storage or treatment plants, pumping stations, and sewer treatment plants, shall be located, designed, and maintained so that noise, light, glare, or odors associated with these facilities will not adversely affect nearby land uses. Building and landscaping materials that make these facilities compatible with neighboring properties shall be used.
Consistent. The proposed percolation ponds would be located in an agricultural area near the existing wastewater treatment plant. This area supports relatively sparse development compared to other portions of the Patterson vicinity. As discussed in the Initial Study (see Appendix A), the project would not result in significant impacts related to noise, light, or glare. As discussed in Chapter 8 of this EIR (Air Quality), the City's wastewater treatment facility has not received an odor complaint in at least six years. There is a potential that odors could potentially be detectable at some nearby residences, but this is unlikely given the plant's recent performance and its location.
Cultural Resources
Policy V.D.1. The City shall set as a high priority the protection and enhancement of Patterson's historically and architecturally significant building.
Consistent. The proposed Wastewater Master Plan area does not include any known significant cultural resources that may include historically and/or architecturally significant buildings. Chapter 7 (Cultural Resources) of this EIR discusses the results of the cultural resources inventory conducted for the Wastewater Master Plan project and concludes that the mitigated project would not result in significant adverse environmental effects.
Policy V.F.2. The City shall not knowingly approve any public or private project that may adversely affect an archaeological site without first consulting the California Archaeological Inventory, Central California Information Center, conducting a site evaluation as may be indicated, and attempting to mitigate any adverse impacts according to the recommendations of a qualified archaeologist. City implementation of this policy shall be guided by Appendix K of the State CEQA Guidelines. **[Appendix K has been superceded by Section 15064.5 of the State CEQA Guidelines.]**
Consistent. The proposed Wastewater Master Plan area does not include any known significant cultural resources that can include archaeological sites. Chapter 7 (Cultural Resources) of this EIR discusses the results of the cultural resources inventory conducted for the Wastewater Master Plan project and concludes that the mitigated project would not result in significant adverse environmental effects.
Natural Resources
Policy VI.A.5. The City shall utilize the CEQA process to identify and avoid or mitigate potential groundwater pollution problems resulting from new commercial and industrial development.

Table 4-1 Patterson Wastewater Master Plan Land Use Policy Consistency Analysis
Consistent. As discussed in Chapter 9 of this EIR (Water Quality and Surface Hydrology), the proposed Wastewater Master Plan would not result in significant adverse effects on groundwater quality.
Policy VI.A.7. The City shall implement measures to minimize the discharge of sediment into Salado Creek and the San Joaquin River.
Consistent. The project does not involve any discharges into the San Joaquin River. As discussed in the Initial Study (see Appendix A), the City and Western Hills Water District would prepare a Stormwater Pollution Prevention Plan designed to protect Salado Creek from inadvertent discharges of sediment and other pollutants into Salado Creek.
Policy VI.B.5. The City shall allow cancellation of Williamson Act contracts only if the City Council finds that cancellation is consistent with state law.
Consistent. As discussed in Chapter 5 (Agricultural Conversion) of this EIR, the City would follow the cancellation and notification procedures in compliance with state law if the percolation ponds are constructed on Williamson Act lands.
Policy VI.C.2. The City shall support state and federal laws and policies to preserve populations of rare, threatened, and endangered species by ensuring that development does not adversely affect such species or by fully mitigating adverse effects.
Consistent. Chapter 6 (Biological Resources) of this EIR evaluates the project's effects on populations of rare, threatened, and endangered species. It concludes that implementing mitigation measures would reduce significant adverse effects on biological resources to a less-than-significant level.
Policy VI.C.3. Unless there are significant, overriding considerations, the City shall not approve projects that would cause unmitigatible impacts on rare, threatened, or endangered wildlife or plant species.
Consistent. See discussion above.
Policy VI.D.2. The City shall utilize the CEQA process to identify and avoid or mitigate potentially significant air quality impacts of new development. The CEQA process shall also be utilized to ensure early consultation with the APCD concerning air quality issues associated with specific development proposals.
Consistent. Chapter 8 (Air Quality) of this EIR analyzes potential effects of the project on air quality and provides measures to mitigate impacts to less than significant, except, possibly, odors. See Policy VI.D.5.
Policy VI.D.5. The City shall, to the extent practicable, separate sensitive land uses from significant sources of air pollutants or odor emissions.

Table 4-1 Patterson Wastewater Master Plan Land Use Policy Consistency Analysis
Consistent. The proposed percolation ponds would be located in an agricultural area near the existing wastewater treatment plant. This area supports relatively sparse development compared to other portions of the Patterson vicinity. This is the most suitable area in or adjacent to the City for this essential use.
Policy VI.D.6. The City shall promote expansion of employment opportunities within Patterson to reduce commuting to areas outside Patterson.
Consistent. Expansion of the City's wastewater treatment facilities would accommodate the expanded employment opportunities afforded by the approved West Patterson projects. The proposed project would also directly generate approximately 2 new jobs at the wastewater treatment plant for the first-phase expansion, and approximately 2 more jobs at full buildout.
Health and Safety
Policy VII.A.2. Underground utilities, particularly water and natural gas mains, shall be designed to withstand seismic forces in accordance with state requirements.
Consistent. All underground sewer collection lines would be designed to withstand seismic forces in accordance with state requirements.
Policy VII.B.3. Non-residential development shall be anchored and flood proofed to prevent damage from the 100-year flood or, alternatively, elevated to at least 12 inches above the 100-year flood level.
Consistent. If the proposed percolation ponds are constructed in the 100-year floodplain, they would be designed to prevent damage from the 100-year flood. As discussed in Chapter 9 of this EIR (Water Quality and Surface Hydrology), the ponds would not result in significant adverse effects related to the 100-year flood.
Policy VII.E.2. Noise created by new proposed non-transportation noise sources shall be mitigated so as not to exceed the noise level standards of Table II-3 as measured immediately within the property line of lands designated for noise-sensitive uses. This policy does not apply to noise sources associated with agricultural operations on lands zoned for agricultural uses.
Consistent. As discussed in the Initial Study (see Appendix A), the project does not include any new major stationary sources of noise that would adversely affect nearby residences.
Stanislaus County General Plan Policies
Land Use
Policy Two. Land designated Agriculture shall be restricted to uses that are compatible with agricultural practices, including natural resources management, open space, outdoor recreation and enjoyment of scenic beauty.
Consistent. The project would include uses that are compatible with agricultural practices. Similar to the existing percolation ponds at the City's wastewater treatment plant, the proposed percolation ponds would not conflict with nearby agricultural uses.

Table 4-1 Patterson Wastewater Master Plan Land Use Policy Consistency Analysis
Policy Fourteen. Uses shall not be permitted to intrude into or be located adjacent to an agricultural area if they are detrimental to continued agricultural usage of the surrounding area.
Consistent. The proposed percolation ponds would not restrict, or be detrimental to, continued agricultural usage of the surrounding area.
Conservation/Open Space
Policy Three. Areas of sensitive wildlife habitat and plant life (e.g., vernal pools, riparian habitats, flyways and other waterfowl habitats, etc.) including those habitats and plant species listed in the General Plan Support Document or by state or federal agencies shall be protected from development.
Consistent. Chapter 6 (Biological Resources) of this EIR evaluates the project's effects on populations of rare, threatened, and endangered species. It concludes that implementing the project (with mitigation) would not result in significant adverse effects on biological resources.
Policy Eleven. In areas designated "Agriculture" on the Land Use Element, discourage land uses which are incompatible with agriculture.
Consistent. The project would include uses that are compatible with agricultural practices. Similar to the existing percolation ponds at the City's wastewater treatment plant, the proposed percolation ponds would not conflict with nearby agricultural uses.
Policy Nineteen. The County will strive to accurately determine and fairly mitigate the local and regional air quality impacts of proposed projects.
Consistent. Chapter 8 (Air Quality) of this EIR analyzes potential effects of the project on air quality, and includes mitigation measures to reduce the project's air quality impacts to a less-than-significant level where feasible.
Policy Twenty-four. The County will support the preservation of Stanislaus County's cultural legacy of historical and archaeological resources for future generations.
Consistent. The proposed Wastewater Master Plan area does not include any known significant cultural resources. Chapter 7 (Cultural Resources) of this EIR discusses the results of the cultural resources inventory conducted for the Wastewater Master Plan project and concludes that the mitigated project would not result in significant adverse environmental effects.
Policy Thirty. Habitats of rare and endangered fish and wildlife species shall be protected. Information on rare and endangered species and habitats is constantly being updated in response to a 1982 state law by the California State Department of Fish and Game through various sources which include the Stanislaus Audubon Society, California Native Plant Society, and the Sierra Club.
Consistent. Chapter 6 (Biological Resources) of this EIR evaluates the project's effects on populations of rare, threatened, and endangered species. It concludes that the project (with mitigation) would not result in significant adverse effects on biological resources.

Table 4-1 Patterson Wastewater Master Plan Land Use Policy Consistency Analysis	
Diablo Grande Specific Plan Policies	
Policy 2.05.5.A. Significant natural features including creekways, tree cover, rock outcroppings and major peaks and ridgelines will be protected as each phase of development occurs.	
Consistent. As discussed in Chapter 6 (Biological Resources), oak woodland, Salado Creek, and other natural features would be protected during construction of the Diablo Grande sewer line and lift station.	

4.2 ENVIRONMENTAL IMPACTS

4.2.1 THRESHOLDS OF SIGNIFICANCE

Appendix G of the State CEQA Guidelines asks the following question for determining significant effects related to land use:

- Would the project conflict with any applicable land use plan, policy, or regulations of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

4.2.2 FIRST-PHASE EXPANSION

Impact 4-1

First-Phase Expansion - Consistency with City General Plan Policies. *The proposed WWMP would be consistent with the applicable policies of the City of Patterson General Plan. The project would have* ***no impact*** *related to consistency with this land use plan.*

As shown in Table 4-1, the proposed WWMP would be consistent with the applicable policies of the CPGP. The project would have no impact related to consistency with this land use plan.

Impact 4-2

First-Phase Expansion - Consistency with County General Plan Policies. *The proposed WWMP would be consistent with the applicable policies of the Stanislaus County General Plan. The project would have* ***no impact*** *related to consistency with this land use plan.*

As shown in Table 4-1, the proposed WWMP would be consistent with the applicable policies of the SCGP. The project would have no impact related to consistency with this land use plan.

Impact 4-3

First-Phase Expansion - Consistency with Diablo Grande Specific Plan Policies. *The proposed WWMP, would be consistent with all applicable policies of the Diablo Grande Specific Plan. The project would have* ***no impact*** *related to consistency with this land use plan.*

As shown in Table 4-1, the proposed would be consistent with all applicable policies of the Diablo Grande Specific Plan. The project would have no impact related to consistency with this land use plan.

Impact 4-4

First-Phase Expansion - Consistency with County General Plan Land Use Designation. *Neither the proposed percolation ponds nor the Diablo Grande lift station would conflict with the County's General Plan land use designations for their respective sites. The percolation pond sites would be located within the County's General Agriculture District. Similar to the existing percolation ponds at the City's wastewater treatment plant, operation of the proposed percolation ponds would not conflict with agricultural uses on surrounding or nearby land. The Diablo Grande lift station site would be located within the County's Specific Plan 1 land use designation. This designation presupposes that appropriate infrastructure will be provided to support development within the boundaries of a specific plan. The project, therefore, would be consistent with County General Plan Land Use designations, and would have* ***no impact*** *related to land use designation consistency.*

Neither the proposed percolation ponds nor the Diablo Grande lift station would conflict with the County's General Plan land use designations for their respective sites. The percolation pond sites would be located within the County's General Agriculture District. This designation establishes agriculture as the primary use and allows non-agricultural uses, provided they do not conflict with the primary use. This designation is intended to preclude incompatible urban development within agricultural areas. Similar to the existing percolation ponds at the City's wastewater treatment plant, operation of the proposed percolation ponds would not conflict with agricultural uses on surrounding or nearby land. The percolation ponds, therefore, would be consistent with this County General Plan Land Use designation, and would have no impact related to land use designation consistency.

The Diablo Grande lift station would be located within the DGSP area. The entire DGSP area is designated as Specific Plan 1 in the County General Plan. The SP1 land use designation presupposes that appropriate infrastructure will be provided to support development within the boundaries of a specific plan. The Diablo Grande lift station, therefore, would be consistent with the SP1 County General Plan Land Use designation, and would have no impact related to land use designation consistency.

4.2.3 GENERAL PLAN BUILDOUT

Impact 4-5

General Plan Buildout - Consistency with City General Plan Policies. *The proposed WWMP would be consistent with the policies of the City of Patterson General Plan. The project would have* ***no impact*** *related to consistency with this land use plan.*

As shown in Table 4-1, the proposed WWMP would be consistent with the policies of the CPGP. The project would have no impact related to consistency with this land use plan.

Impact 4-6

General Plan Buildout - Consistency with County General Plan Policies. *The proposed WWMP would be consistent with the policies of the Stanislaus County General Plan. The project would have* ***no impact*** *related to consistency with this land use plan.*

As shown in Table 4-1, the proposed WWMP would be consistent with the policies of the SCGP. The project would have no impact related to consistency with this land use plan.

Impact 4-7

General Plan Buildout - Consistency with Diablo Grande Specific Plan Policies. *The proposed project includes an amendment to the DGSP to revise the method for wastewater collection, treatment, and disposal. The proposed WWMP, therefore, would be consistent with all applicable policies of the Diablo Grande Specific Plan. The project would have* ***no impact*** *related to consistency with this land use plan.*

The proposed project includes an amendment to the DGSP to revise the method for wastewater collection, treatment, and disposal. As shown in Table 4-1, the proposed would be consistent with all applicable policies of the Diablo Grande Specific Plan. The project would have no impact related to consistency with this land use plan.

Impact 4-8

General Plan Buildout - Consistency with County General Plan Land Use Designation. *The proposed percolation ponds for General Plan buildout would not conflict with the County's General Agricultural District land use designation. Similar to the existing percolation ponds at the City's wastewater treatment plant, operation of the proposed percolation ponds would not conflict with agricultural uses on surrounding or nearby land. The project, therefore, would be consistent with the County General Plan Land Use designation, and would have* ***no impact*** *related to land use designation consistency.*

The proposed percolation ponds for General Plan buildout would not conflict with the County's General Agricultural District land use designation. This designation establishes agriculture as the primary use and allows non-agricultural uses, provided they do not conflict with the primary use. This designation is intended to preclude incompatible urban development within agricultural areas. Similar to the existing percolation ponds at the City's

wastewater treatment plant, operation of the proposed percolation ponds would not conflict with agricultural uses on surrounding or nearby land. The project, therefore, would be consistent with the County General Plan Land Use designation, and would have no impact related to land use designation consistency.

4.3 Mitigation Measures

No mitigation measures are necessary for the following less-than-significant impacts.

- 4.1 First-Phase Expansion - Consistency with City General Plan Policies
- 4.2 First-Phase Expansion - Consistency with County General Plan Policies
- 4.3 First-Phase Expansion - Consistency with Diablo Grande Specific Plan Policies
- 4.4 First-Phase Expansion - Consistency with County General Plan Land Use Designation
- 4.5 General Plan Buildout - Consistency with City General Plan Policies
- 4.6 General Plan Buildout - Consistency with County General Plan Policies
- 4.7 General Plan Buildout - Consistency with Diablo Grande Specific Plan Policies
- 4.8 General Plan Buildout - Consistency with County General Plan Land Use Designation

4.4 Level of Significance After Mitigation

The project would not result in a significant impact related to land use and planning.

5 AGRICULTURAL CONVERSION

This chapter describes the existing agricultural resources of the Patterson Wastewater Master Plan (WWMP) and Diablo Grande Sewer Line (DGSL) area to establish a baseline against which impacts of the project may be compared, evaluates the impact of the Patterson WWMP project on agricultural resources, and describes mitigation measures that would lessen the projects' potentially significant impacts.

5.1 EXISTING CONDITIONS

The WWMP area is located primarily within California's San Joaquin Valley; the DGSL and lift station components are located in the eastern foothills of the Diablo Range. Fertile soils, availability of water, and a nearly year-round growing season make the San Joaquin Valley among the most productive farmland in the nation, supporting a diverse assortment of crops sold in markets around the world. In 1997, Stanislaus County ranked 10th in the nation for net cash return from its agricultural products (USDA 1997). In 2000, Stanislaus County's gross cash receipts for its agricultural products totaled $1.2 billion, ranking 8th among California's 58 counties (Cal Food and Agriculture 2001).

The first influx of immigrants to the San Joaquin Valley occurred in the mid-19th century. Grazing operations spread through the San Joaquin Valley in the early phase of agricultural development. Grain was an important crop during the 1860s, resulting in the establishment of many claims and homesteads. Expansion of grain cultivation was aided by an 1870 California law requiring livestock owners to fence their livestock or pay damages to farmers for injured crops. Stanislaus County was once known as the state's banner wheat county (City of Patterson 1992a, p. VII-4).

In 1920, the West Stanislaus Irrigation District was organized; this district allows West Stanislaus to appropriate water from the San Joaquin River. The District also diverts water from White Lake Mutual Water Company under an agreement entered into in 1928. In the late 1940s, the District looked to the Central Valley Water Project as a supplemental source of water. Access to irrigation water has greatly expanded the variety of crops produced. Field, fruit, nut, and vegetable crops are currently the leading crop commodities in Stanislaus County (USDA 2001).

5.1.1 AGRICULTURAL USE IN AND AROUND PATTERSON

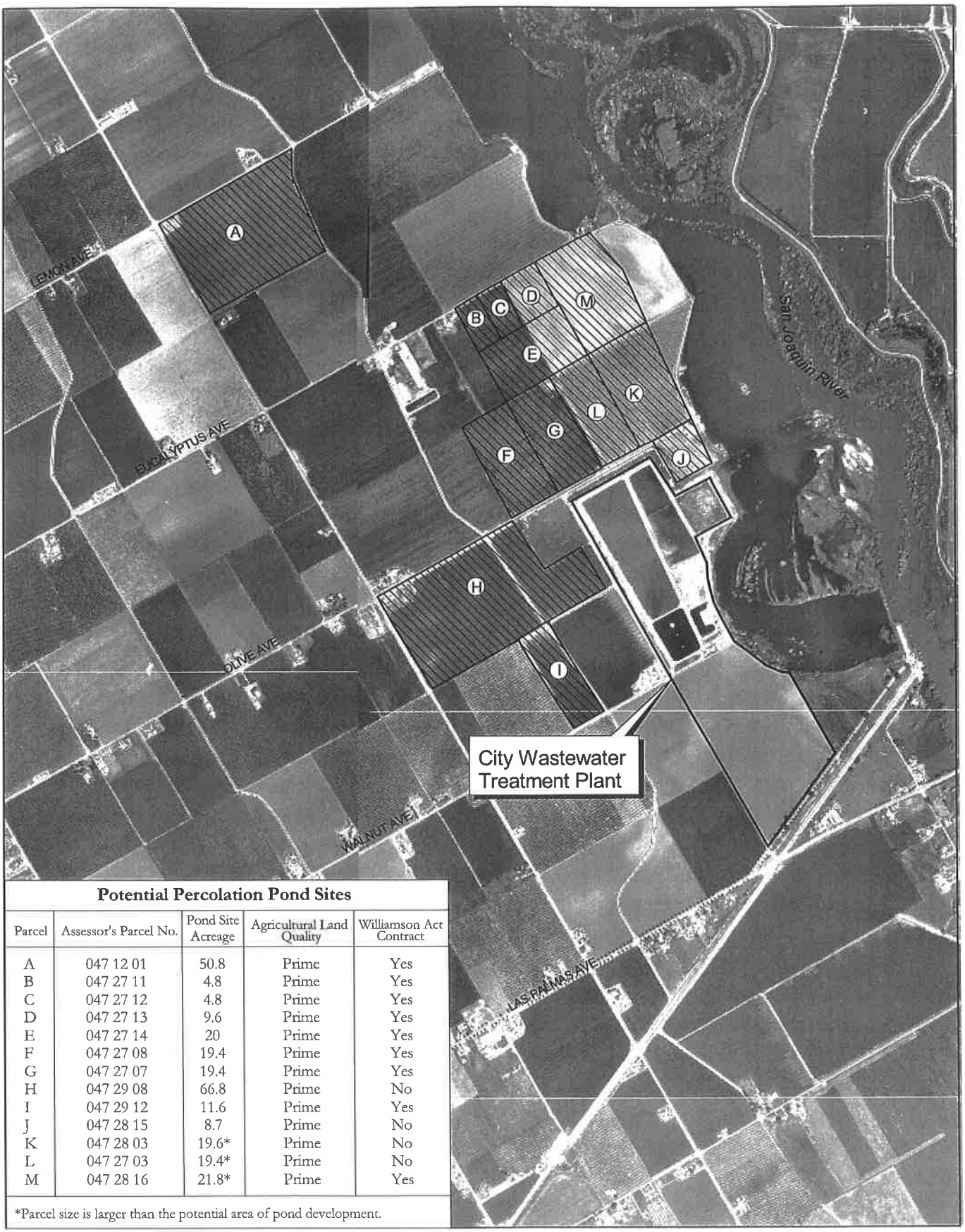
The City of Patterson has a current population of approximately 13,050 (as of January 2002), and is surrounded by agricultural land (DOF 2003a). Ranches and city lots began to be

parceled in Patterson as early as December 1909, and the founding of Patterson, as a city, took place 10 years later on December 22, 1919 (City of Patterson 2002). Early in the 1900s, Patterson and the surrounding Stanislaus County became well known for its expansive wheat fields, but the region's wheat productivity began to decline as smaller more diverse agricultural endeavors took root. With agriculture as the region's primary economic base, orchards of apricots and row crops of dry bean, tomato, spinach, pea, and melon, play an important role in the history of Patterson and the neighboring area (City of Patterson 1992a).

5.1.2 Agricultural Use on Percolation Pond Sites

The proposed project includes expansion of the City's wastewater collection, treatment, and disposal system to serve planned City growth and the Diablo Grande Specific Plan area in western Stanislaus County. This expansion would include construction of new percolation ponds near the existing wastewater treatment plant east of the City. The expansion would also include a force main pipeline to convey treated effluent from the plant to the new percolation ponds. The City is considering a variety of alternative sites on 13 parcels for the first-phase expansion (Exhibit 5-1). Some of these parcels might also be considered by the City for future expansion phases. The topography of the pond sites is flat, and the current land use of all of the sites is irrigated agriculture. Soils at the percolation pond sites include Capay clay, wet, 0 to 2% slopes; Capay clay, wet, 0 to 2% slopes; Capa clay, loamy substratum, 0 to 2% slopes; and Vernalis clay loam, wet, 0 to 2% slopes.

Agricultural land uses of the proposed percolation pond sites are typical of uses throughout the Patterson area and vary based on the season. Warm weather crops grown in the proposed percolation pond areas include silage corn, alfalfa, tomatoes, and beans (A. Scheuber, pers. comm. 2003). Cold weather crops include oats and sugar beets. The Scheuber and Eplin properties, which are currently leased by Scheuber Farms, have been in the current owner's possessions for 25 and 18 years, respectively. These properties are currently in alfalfa production. The land has been in agricultural use for more than 75 years, and has historically been farmed for a variety of agricultural products including tomatoes, oats, clover, and dry beans (B. Scheuber, pers. comm. 2002). The Bowers property has been in its current owner's possession for approximately 2 years, during which time the land has been farmed to produce alfalfa. Before the Bowers purchased the property the land was used to produce silage corn (Bowers, pers. comm. 2002). The Garcia, Fardley, and Enamorado properties are currently all producing alfalfa. The Andrada property is currently producing tomatoes. The Ferry parcel produces hay, corn, tomatoes, and alfalfa throughout the year.



Potential Percolation Pond Sites

Parcel	Assessor's Parcel No.	Pond Site Acreage	Agricultural Land Quality	Williamson Act Contract
A	047 12 01	50.8	Prime	Yes
B	047 27 11	4.8	Prime	Yes
C	047 27 12	4.8	Prime	Yes
D	047 27 13	9.6	Prime	Yes
E	047 27 14	20	Prime	Yes
F	047 27 08	19.4	Prime	Yes
G	047 27 07	19.4	Prime	Yes
H	047 29 08	66.8	Prime	No
I	047 29 12	11.6	Prime	Yes
J	047 28 15	8.7	Prime	No
K	047 28 03	19.6*	Prime	No
L	047 27 03	19.4*	Prime	No
M	047 28 16	21.8*	Prime	Yes

*Parcel size is larger than the potential area of pond development.

Potential Percolation Pond Sites

Farmland Map - Percolation Pond Sites

EXHIBIT 5-1

City of Patterson Wastewater Master Plan EIR
2T008.01 2/03

0 2000 FEET

NORTH

EDAW

5.1.3 Agricultural Use Along Proposed Collection Lines

Much of the wastewater collection system proposed for the West Patterson area would be constructed in farmland currently supporting orchards, such as walnut and apricot in various stages of maturity, and row crops such as cabbage.

The foothills of the Diablo Range are used for grazing and vineyards, but neither the Diablo Grande sewer line nor the lift station would be located on land currently used for agriculture.

5.2 Regulatory Framework

5.2.1 Important Farmland

The California Department of Conservation (CDC) sponsors the Important Farmland Mapping and Monitoring Program that delineates important farmland resources in the state. The program delineates important farmland based on a particular set of criteria related primarily to soil type and the availability of water. Farmland that meets these criteria is placed in one of four main categories: Prime Farmland, which is the most productive; Farmland of Statewide Importance; Unique Farmland; and Farmland of Local Importance.

The CDC is in the process of mapping western Stanislaus County under the Farmland Mapping and Monitoring Program and, therefore, no state farmland maps are currently available. Until the state farmland maps are prepared, CDC relies on the preliminary *Soil Candidate Listing for Prime Farmland and Farmland of Statewide Importance: Stanislaus County* (CDC 2001). CDC's final farmland classifications generally reflect the classifications listed in the soil candidate listing (Vink, pers. comm., 2002). CDC's preliminary soil candidate listings for Prime Farmland and Farmland of Statewide Importance in western Stanislaus County include the same soil units classified by the U.S. Department of Agriculture Natural Resources Conservation Service (NRCS) as Prime Farmland and Farmland of Statewide Importance. All of the soil units underlying the potential percolation pond sites, the City's proposed wastewater collection lines, and the Diablo Grande lift station are classified by the NRCS as Prime Farmland where irrigated (NRCS 2002). Diablo Grande Parkway runs through soil units classified as Prime Farmland (NRCS 2002). However, the DGSP would be constructed in the graded shoulder of Diablo Grande Parkway and would not be placed in areas of native soil.

5.2.2 Williamson Act

The California Land Conservation Act, also known as the Williamson Act, was adopted by the State of California in 1965 as a means of encouraging the preservation of the State's

agricultural lands. To implement the act, a land contract is established, whereby the County Board of Supervisors stabilizes taxes on qualifying lands in return for an owner's guarantee to keep the land in agricultural preserve status for 10 years. Each year, on its anniversary date, the contract is automatically renewed unless a Notice of Non-Renewal is filed.

The Williamson Act allows for cancellation of a contract, pursuant to Section 51280 *et. seq.* of the Government Code. Cancellation procedures for a public agency acquiring land for a public improvement project as outlined in Government Code Section 51290 *et.seq*, require the agency to advise the Director of the California Department of Conservation and the County Board of Supervisors of its need to acquire the lands currently under Williamson Act contracts for a public use. The public agency must also take into consideration comments made by these agencies before cancellation of the Williamson Act contracts. Section 51295 of the Government Code allows for contract cancellation when a public agency acquires land for a public improvement project. Under this circumstance, the Williamson Act contract becomes null and void on completion of the notification procedure. The public agency, however, must make the following findings: "(a) [t]he location is not based primarily on a consideration of the lower cost of acquiring land in an agricultural preserve;" and (b), "that there is no other land within or outside the preserve on which it is reasonably feasible to locate the public improvement" (Government Code Section 51292).

Nine of the thirteen potential pond sites are currently under Williamson Act contract (see Table 5-1 and Exhibit 5-1). If the City were to select pond sites that carry Williamson Act contracts, the parcels would be acquired by the City in lieu of eminent domain and the cancellation procedure and the required findings described above would apply.

5.2.3 California Farmland Conservancy Fund

The California Farmland Conservancy Program (CFCP) is a statewide grant funding program that supports local efforts to establish agricultural conservation easements and planning projects for the purpose of preserving important agricultural land resources. The CFCP provides grants to local governments and qualified non-profit organizations for voluntary acquisition of conservation easements on agricultural lands that are under pressure of being converted to non-agricultural uses; temporary purchase of agricultural lands that are under pressure of being converted to non-agricultural uses, as a phase in the process of placing an agricultural conservation easement; restoration of and improvements to agricultural land already under easement; and agricultural land conservation policy and planning projects. Use of funding from the CFCP requires an appropriation from the Legislature.

Table 5-1
Potential Percolation Pond Sites

Parcel (See Exhibit 5-1)	Assessor's Parcel No./ Owner's Name	Parcel Acreage	Pond Site Acreage	Agricultural Land Quality	Williamson Act Contract
A	047-12-01 Andrada	50.8	50.8	Prime	Yes
B	047-27-11 Eplin	4.8	4.8	Prime	Yes
C	047-27-12 Eplin	4.8	4.8	Prime	Yes
D	047-27-13 Eplin	9.6	9.6	Prime	Yes
E	047-27-14 Eplin	20	20	Prime	Yes
F	047-27-08 Bowers	19.4	19.4	Prime	Yes
G	047-27-07 Fardley	19.4	19.4	Prime	Yes
H	047-29-08 Garcia	66.8	66.8	Prime	No
I	047-29-12 Enamorado	11.6	11.6	Prime	Yes
J	047-28-15 Ferry	26.1	8.7	Prime	No
K	047-28-03 Scheuber	62.3	19.6	Prime	No
L	047-27-03 Scheuber	19.4	19.4	Prime	No
M	047-28-16 Eplin	30.8	21.8	Prime	Yes

Property Owners A-I and M contacted June 2002.
Property Owners J-L contacted January 2003.

Source: Stanislaus County 2002; EDAW 2002, 2003

5.2.4 FARMLAND CONVERSION IN STANISLAUS COUNTY

In the decades after World War II, rapid urbanization of the Los Angeles and San Francisco Bay regions converted several hundred thousand acres of farmland in these rich coastal areas. Some of this farm production was relocated to the Central Valley aided by the Central Valley Project. The conversion of agricultural land in the San Joaquin Valley to urban and industrial uses has increased over time. Among all of the regions of California, the San Joaquin Valley region led the state in conversion of irrigated farmland to urban uses from 1996-1998 (CDC 1998).

CDC monitors the conversion of California agricultural land in two-year increments (CDC 2001). Over the last decade, Stanislaus County has seen a continuing increase in the conversion of prime farmland to urban development. In 1992-1994, 588 acres of prime

farmland were lost to urban development, 695 acres in 1994-1996, and 1,648 acres in 1996-1998. Data on farmland conversion in Stanislaus County from 1998-2000 are not yet published. The amount of known countywide losses of prime farmland between 1992 and 1998 totals about 2,900 acres. Other significant losses of prime farmland were due to construction of ranchettes (low-density rural residences), agricultural processing facilities and reclassification of land due to corrections in soil classification. It is anticipated that urban development on prime farmland will continue. The California Department of Finance estimated Stanislaus County's population in January of 2002 to be 469,500 and the City of Patterson's population to be 13,050 (DOF 2003a). The Stanislaus County General Plan projects the County's population to grow to about 549,400 by 2005 and to 709,100 by 2015. Population projections developed by the City in February 2002 indicate a population of 21,592 in 2011 and 30,000 in 2020. Most of the undeveloped portions of the Central Valley in Stanislaus County, including the City's sphere of influence, is classified Prime Farmland by the NRCS (NRCS 2002). New housing and urban land uses needed to accommodate the projected population increases in Stanislaus County and Patterson, therefore, would be expected to result in continued conversion of Prime Farmland. For example, the Salida Community Plan, located approximately 15 miles north of Patterson, reclassified 2,868 acres of prime farmland to urban uses in July 2000.

Since 1994, City of Patterson approvals of urban development on prime farmland include: the Heartland Ranch residential development, about 264 acres; Walker Ranch residential development, about 122 acres; Creekside Meadows, about 185 acres; and Shire Place, about 6 acres. Thus, a total of 577 acres of prime agricultural land have been lost in Patterson in the past decade.

5.3 ENVIRONMENTAL IMPACTS

5.3.1 THRESHOLDS OF SIGNIFICANCE

Appendix G of the State CEQA Guidelines asks the following questions for determining significant effects related to agricultural resources. Would the project:

a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural uses?

b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?

c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural uses?

5.3.2 First-Phase Expansion

Impact 5-1

First-Phase Expansion - Conversion of Farmland to Non-Agricultural Uses. *Construction of the City's percolation ponds for the first-phase expansion would result in the conversion of up to 125 acres of state and federally classified Prime Farmland to non-agricultural uses. This is considered a* ***significant*** *impact.*

All of the percolation pond sites are located on soil units listed by CDC and NRCS as Prime Farmland (Exhibit 5-1). Therefore, construction of the City's first-phase percolation ponds would result in conversion of up to 125 acres of state and federally classified Prime Farmland to non-agricultural uses. Conversion of Prime Farmland is considered a significant impact.

Impact 5-2

First-Phase Expansion - Cancellation of Williamson Act Contracts. *Construction of the City's percolation ponds for the first-phase expansion would convert up to 125 acres of land currently under Williamson Act contracts to non-agricultural uses. This is considered a* ***significant*** *impact.*

Construction of the City's percolation ponds for the first-phase expansion would convert up to 125 acres of land currently under Williamson Act contracts to non-agricultural uses. As of November 2002, no Notices of Nonrenewal have been filed for any of these properties. Exhibit 5-1 shows the parcels currently under Williamson Act contracts. Conversion of the Williamson Act parcels to non-agricultural uses is considered a significant impact.

Impact 5-3

First-Phase Expansion - Short-Term Impairment of Agricultural Productivity. *Construction activities related to expansion of the City's wastewater treatment facilities could substantially impair agricultural productivity of farmland. Substantial impairment of farmland productivity would be a* ***significant*** *impact.*

Construction of new percolation ponds, trunk lines, and a new force main to carry treated effluent from the City's plant to the percolation ponds could temporarily impair agricultural productivity of farmland. Depending on the selected percolation pond sites, construction of the force main and the sewer trunk lines could involve excavation of trenches that pass through farmland. After the pipe is laid, the trenches would be backfilled. During construction, however, linear areas of farmland would not be available for production. Also, construction of the percolation ponds may require safety setbacks from the work area during the construction period. If construction activities were to inhibit farming activities on farmland

during the planting, growing, and harvesting season; or if farmland topsoil were removed but not replaced, the project could impair farmland productivity.

Substantial impairment would result if one or more of the following were to occur: 1) construction activities were to occur on active fields during the planting, growing, and harvesting season rather than when fields are fallow; 2) for agricultural fields where production is year-round (i.e., no fallow period), construction activities were to occur over an extended period with substantial disruption of agricultural activities; or 3) construction activities would remove and not replace farmland topsoil resources. Substantial impairment of farmland productivity would be a significant impact.

5.3.3 General Plan Buildout

Impact 5-4

General Plan Buildout - Conversion of Farmland to Non-Agricultural Uses. *Construction of additional percolation ponds to serve General Plan buildout would result in the conversion of up to 275 acres of state and federally classified Prime Farmland to non-agricultural uses. This is considered a* ***significant*** *impact.*

Virtually all of the land near the City's wastewater treatment facility is composed of soil units listed by CDC and NRCS as Prime Farmland. Therefore, construction of additional percolation ponds to serve General Plan buildout would result in the conversion of up to 275 acres of state and federally classified Prime Farmland to non-agricultural uses. Conversion of Prime Farmland is considered a significant impact.

Impact 5-5

General Plan Buildout - Cancellation of Williamson Act Contracts. *Construction of additional percolation ponds to serve General Plan buildout could convert up to 275 acres of land currently under Williamson Act contracts to non-agricultural uses. This is considered a* ***significant*** *impact.*

Many of the farm parcels near the City's wastewater treatment facility are under Williamson Act contracts. It is reasonable to assume, therefore, that construction of additional percolation ponds to serve General Plan buildout could convert up to 275 acres of land currently under Williamson Act contracts to non-agricultural uses. Conversion of Williamson Act parcels to non-agricultural uses would be a significant impact.

Impact 5-6

General Plan Buildout - Short-Term Impairment of Agricultural Productivity. *Construction activities related to expansion of the City's wastewater treatment facilities to serve General Plan buildout could substantially impair agricultural productivity of farmland. Substantial impairment of farmland productivity would be a* ***significant*** *impact.*

As discussed in Impact 5-3, construction of new percolation ponds, trunk lines, and a new force main to carry treated effluent from the City's plant to the percolation ponds could temporarily impair agricultural productivity of farmland. Substantial impairment of farmland productivity related to expansion of the City's wastewater treatment facilities to serve General Plan buildout would be a significant impact.

5.4 MITIGATION MEASURES

5.4.1 FIRST-PHASE EXPANSION

Mitigation measures for significant and potentially significant impacts are provided .

5-1 **First-Phase Expansion - Contribute to the California Farmland Conservancy Fund.** The City of Patterson is considering contribution to the California Farmland Conservancy Fund pursuant to Public Resources Code Section 10231.5 for the purposes of funding projects in Stanislaus County under the California Farmland Conservation Program. Such projects might include the purchase of agricultural conservation easements, land improvement and planning grants, technical assistance, or other authorized activities under the California Farmland Conservation Program. Use of funding from the Farmland Conservation Program Fund requires an appropriation by the Legislature.

The amount of such contribution would, at minimum, reflect the then-current value of an agricultural conservation easement on comparable Prime agricultural land in the project vicinity equal in size to the acreage of the converted farmland, and a 10% increment for program administration under the Farmland Conservation Program. The per-acre valuation of such easement would be jointly developed in consultation with CDC.

The City of Patterson is researching the cost of contributing to the California Farmland Conservancy Fund. If the contribution is considered to be cost prohibitive for the proposed project, this mitigation measure would be considered infeasible and would not be implemented.

5-2 **First-Phase Expansion - Comply with Williamson Act Contract Cancellation Procedures.** The City will follow the cancellation and notification procedures as outlined in Government Code Section 51280, and other applicable sections of the Government Code, to advise the Director of CDC and the Stanislaus County Board of Supervisors of its need to acquire the lands currently under Williamson Act contracts for a public use. The City will also take into consideration comments made by these

agencies before cancellation of the Williamson Act contracts. Pursuant to Government Code Section 51292, the City will also be required to make the following findings: "(a) [t]he location is not based primarily on a consideration of the lower cost of acquiring land in an agricultural preserve"; and (b) "that there is no other land within or outside the preserve on which it is reasonably feasible to locate the public improvement."

5-3 First-Phase Expansion - Minimize Impacts to Farmland During Construction. The City will implement the following mitigation measures:

- To the degree possible, all pipelines will be routed within public roads or farm roads to minimize impacts on farmland.

- Where it is not possible to avoid construction on farmland, construction activities on or adjacent to farmland to be retained in agricultural production following project implementation will be restricted to periods when specific fields in which construction activities are proposed to occur are in a fallow condition (i.e., construction activities in a specific field are not permitted during the planting, growing, and harvesting seasons of the field). The City will contact farmers of potentially affected farmland before development of the construction schedule to time construction activities to coincide with fallow periods. If it is not feasible for construction to occur during fallow periods, the City will provide monetary compensation to the affected farmer(s) in the amount of the production lost due to project construction.

- Topsoil removed during construction activities on important farmland that is to be retained in agricultural production will be properly salvaged, stockpiled, and protected from wind and water erosion, and will be redistributed in its previous location by the construction contractor(s).

5.4.2 General Plan Buildout

Mitigation measures for significant and potentially significant impacts are provided below.

5-4 General Plan Buildout - Contribute to the California Farmland Conservancy Fund. The City will implement Mitigation Measure 5-1.

5-5 General Plan Buildout - Comply with Williamson Act Contract Cancellation Procedures. The City will implement Mitigation Measure 5-2.

5-6 General Plan Buildout - Minimize Impacts to Farmland During Construction. The City will implement Mitigation Measure 5-3.

5.5 LEVEL OF SIGNIFICANCE AFTER MITIGATION

Implementing Mitigation Measures 5-2, 5-3, 5-5, and 5-6 would reduce farmland impacts related to Williamson Act contract cancellation and temporary construction activities to a less-than-significant level. Mitigation Measures 5-1 and 5-4 would encourage the preservation of prime farmland in Stanislaus County, but would not reduce farmland conversion impacts to a less-than-significant level because net loss of farmland would still result . Impacts 5-1 and 5-4, therefore, would remain significant and unavoidable. It should be noted that the City of Patterson is researching the cost of contributing to the California Farmland Conservancy Fund. If the contribution is considered to be cost prohibitive for the proposed project, this mitigation measure would be considered infeasible and would not be implemented.

6 BIOLOGICAL RESOURCES

This chapter addresses general and sensitive biological resources that could be affected by implementation of the Patterson Wastewater Master Plan. Potential effects of the proposed project on biological resources are evaluated and mitigation measures to reduce impacts to less-than-significant levels are provided.

A number of previously completed documents address biological resources in the vicinity of the Wastewater Master Plan area. EDAW biologists reviewed all previous biological resource studies and EIRs prepared for projects related to the Wastewater Master Plan. The *West Patterson Projects EIR* (City of Patterson 2003) provided information regarding biological resources in the West Patterson Business Park Master Development Plan area and the vicinity of the Patterson Wastewater Treatment Facility. This chapter also incorporates results of surveys conducted by EDAW biologists for the West Patterson EIR. The certified *Diablo Grande Specific Plan EIR* (Stanislaus County 1993) provided information regarding biological resources in the vicinity of the proposed Diablo Grande sewer trunk line and lift station. EDAW biologists conducted reconnaissance-level field surveys of the Wastewater Master Plan area, including the Diablo Grande sewer line alignment and lift station location, on January 16 and January 31, 2003 to determine whether any biological resources exist within the study areas that were not identified in the previous environmental documents.

6.1 EXISTING CONDITIONS

6.1.1 STUDY AREA

The biological resources study area is primarily comprised of areas subject to direct project disturbance, such as corridors for installation of pipelines to serve the West Patterson Business Park Master Development Plan area and Diablo Grande; the proposed Diablo Grande lift station site; the area proposed for the first-phase expansion of the city's wastewater collection, treatment, and disposal system; and areas of potential future expansion to serve General Plan buildout. In addition, the study area includes adjacent areas that could be indirectly affected by project construction (e.g., adjacent creeks).

6.1.2 General Biological Resources

Vegetation Communities

Agricultural land, non-native grassland, riparian, and blue oak woodland are the primary vegetation types present in the study area. Representative plants and animals found in each of these community types are discussed below.

The study area east of I-5 is dominated by agricultural lands, including agricultural/row crop, agricultural/fallow, agricultural/disced, and agricultural/orchard vegetation types. A few ruderal areas can also be found adjacent to these agricultural lands. Ruderal land consists of areas that are covered with non-native herbaceous vegetation.

The predominant vegetation of the hillsides and valley floors in the study area west of I-5 is non-native grassland. This vegetation type is characterized by a dense cover of herbaceous annuals dominated by non-native grasses, such as wild oats and brome.

Riparian habitat is located along Salado Creek, which is an intermittent stream. Water is present in the creek in the winter and spring, during and after the rainy season. At the western end of the study area, near the Diablo Grande development and along the Diablo Grande Parkway, Salado Creek meanders through a narrow floodplain in the foothills. In this area, there is a fringe of riparian vegetation along the creek. A few tall mature oaks, cottonwoods, willows, and other smaller tree species occur along the banks. Downstream of this area, Salado Creek continues to meander through similiar terrain with the riparian vegetation varying slightly in composition and density.

Freshwater marsh is present at the western end of the study area, adjacent to the potential Diablo Grande lift station site. Marsh vegetation is dominated by cattails, which occur within the Salado Creek channel, immediately upstream of the concrete dam, and around the artificial pond on the south side of the creek.

The blue oak woodland is composed almost exclusively of blue oaks. Blue oak woodland is found on most hillside in the project vicinity, but in the study area, it is limited to the banks of Salado Creek. Blue oak, although not a riparian species, is the most common tree species found in the riparian zone along the creek in the western portion of the study area.

WILDLIFE

Agricultural and ruderal habitats support a relatively low diversity of wildlife species. Wildlife abundance and diversity in agricultural areas often varies with changing crop patterns. Species common in agricultural and ruderal habitats include: western fence lizard, gopher snake, California ground squirrel, black-tailed jackrabbit, mourning dove, yellow-billed magpie, American crow, and American robin. Some field crops can provide important foraging habitat for raptors, geese, and waterbirds (e.g., cranes and ibis). Species like coyote and red fox may use orchards and the edges of annually cropped fields for movement between suitable foraging and denning habitat and as a dispersal corridor.

Grasslands typically provide higher quality habitat, but diversity can be relatively low. Grassland species likely to occur in the study area include: black-tailed jackrabbit, California ground squirrel, coyote, American badger, turkey vulture, horned lark, loggerhead shrike, savannah sparrow, and western meadowlark. The study area can also support a variety of wintering and nesting raptors, such as red-tailed hawk, golden eagle, American kestrel, and merlin, which require large areas of open grassland habitat for foraging.

Wildlife diversity and abundance is expected to be highest in the riparian habitat along Salado Creek and adjacent blue oak woodland habitats. Wildlife species expected to occur in these habitats include Pacific tree frog, western toad, northern flicker, black phoebe, oak titmouse, white-breasted nuthatch, western bluebird, yellow-rumped warbler, red-winged blackbird, song sparrow, house finch, racoon, and bobcat.

6.1.3 REGULATORY BACKGROUND

Many biological resources in California are protected and impacts to these resources are regulated by a variety of laws and policies. Important regulations that protect biological resources and are applicable to the proposed project are discussed below.

FEDERAL REGULATORY ISSUES

Federal Endangered Species Act

The U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) has authority over projects that may affect the continued existence of a federally listed (Threatened or Endangered) species. Section 9 of the Federal Endangered Species Act (ESA) prohibits the take of federally listed species; take is defined under ESA, in part, as killing, harming, or harassment. Under federal regulations, take is further defined to include habitat

modification or degradation where it actually results in death or injury to wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Only species listed as "Threatened" or "Endangered" are legally protected. Species listed as "Species of Concern" are being considered for possible listing under the ESA, but they are not listed or protected by the ESA.

Section 7 of ESA outlines procedures for federal interagency cooperation to conserve federally listed species and designated critical habitat. Critical habitat identifies specific areas that have the physical and biological features that are essential to the conservation of a listed species, and that may require special management considerations or protection. Section 7(a)(2) requires federal agencies to consult with USFWS to ensure that they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat.

For projects where federal action is not involved and take of a listed species may occur, the project proponent may seek to obtain an incidental take permit under Section 10(a) of the ESA. Section 10(a) of ESA allows USFWS to permit the incidental take of listed species if such take is accompanied by a Habitat Conservation Plan (HCP) that includes components to minimize and mitigate impacts associated with the take.

Clean Water Act

The U.S. Army Corps of Engineers (USACE) regulates the placement of fill into Waters of the U.S. under Section 404 of the Clean Water Act (CWA). Waters of the U.S. include lakes, rivers, streams, and their tributaries, and wetlands. Wetlands are defined under Section 404 as areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support (and do support, under normal circumstances) a prevalence of vegetation typically adapted for life in saturated soil conditions. Activities that require a permit under Section 404 include placing fill or riprap, grading, mechanized land clearing, and dredging. Any activity that results in the deposit of dredged or fill material in the "Ordinary High Water Mark" (OHWM) of Waters of the U.S. usually requires a permit, even if the area is dry at the time the activity takes place.

State Regulatory Issues

California Endangered Species Act

The California Department of Fish and Game (CDFG) regulates the take of state-listed Threatened and Endangered species. The take of state-listed species incidental to otherwise

lawful activities requires a permit, pursuant to Section 2081(b) of the California Endangered Species Act (CESA). The state has the authority to issue an incidental take permit under Section 2081 of the Fish and Game Code, or to coordinate with USFWS during the Section 10(a) process to make the federal permit also apply to state-listed species. Species of Special Concern are under consideration for possible listing but they are not protected by CESA until (if) they are considered threatened or endangered.

Section 1600 of the California Fish and Game Code

All diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream or lake in California that supports wildlife resources is subject to regulation by CDFG, pursuant to Sections 1600 through 1603 of the California Fish and Game Code. Section 1603 states that it is unlawful for any person to substantially divert or obstruct the natural flow or substantially change the bed, channel or bank of any river, stream or lake designated by CDFG, or use any material from the streambeds, without first notifying CDFG of the activity. The regulatory definition of a stream is a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation. CDFG's jurisdiction in altered or artificial waterways is based on the value of those waterways to fish and wildlife. A CDFG Streambed Alteration Agreement must be obtained for any project that would result in impact to a river, stream, or lake.

Section 3503.5 of the California Fish and Game Code

Section 3503.5 of the Fish and Game Code states that it is "unlawful to take, possess, or destroy any birds-of-prey in the orders Falconiformes or Strigiformes" (i.e., raptors). Destruction of an active raptor nest is considered a violation of Section 3503.5. This statute does not provide for the issuance of any type of incidental take permit.

Local Regulatory or Other Issues to Consider

Oak Woodlands

Currently, no comprehensive statewide regulations protecting oaks exist. However, recent studies suggest that oak and other hardwood habitats are indeed at risk throughout California (California Oak Foundation 2002). Concerns regarding the loss of these habitats resulted in the creation of the University of California's Integrated Hardwood Range Management Program (IHRMP) in 1986. In 1993, the State Board of Forestry delegated Range to the

IHRMP the responsibility of assisting counties in the development of locally based conservation strategies for oak woodlands in lieu of a statewide regulatory program (Giusti and Merenlender 2002). In the absence of statewide regulations, conservation and protection fall to county and city governments. Neither Stanislaus County nor the City of Patterson have policies relating to the protection of oaks or other trees.

Habitat Conservation Plans

The Wastewater Master Plan area is not in the area covered by any HCP, Natural Community Conservation Plan (NCCP), or other approved local, regional, or state habitat conservation plan.

6.1.4 Sensitive Biological Resources

Sensitive biological resources include those that are afforded special protection through the following: CEQA, California Fish and Game Code, ESA, CESA, and federal CWA.

Special-status Species

Special-status species include plants and animals in the following categories:

- species listed or proposed for listing as Threatened or Endangered under ESA or CESA,
- species considered as candidates for listing as Threatened or Endangered under ESA or CESA,
- wildlife species identified by CDFG as California Species of Special Concern and by USFWS as Federal Species of Concern,
- animals fully protected in California under the California Fish and Game Code, and
- plants on the California Native Plant Society's (CNPS) List 1B (plants rare, threatened or endangered in California and elsewhere) or List 2 (plants rare, threatened or endangered in California but more common elsewhere). Plants included on this list are not protected by any state or federal regulations.

Special-status species known or with potential to occur in the vicinity of the study area were identified through a search of the California Natural Diversity Database (CNDDB 2002) (USGS 7.5-minute quadrangles: Brush Lake, Copper Mountain, Crow's Landing, Patterson, and Westley) and review of previous biological studies conducted in the vicinity of the study area.

These species were then evaluated for their potential to occur in the study area. Table 6-1 lists special-status species known or expected to occur in the study area. Exhibits 6-1 and 6-2 depict CNDDB and other known special-status species occurrences in the project vicinity.

Table 6-1
Special-Status Species with Potential to Occur in the Study Area

SPECIES	USFWS	CDFG	CNPS	HABITAT	POTENTIAL FOR OCCURRENCE
PLANTS					
Round-leaved filaree *Erodium macrophyllum*	--	--	2	Cismontane woodland valley and foothill grassland with clay soils	Unlikely to occur; no suitable habitat in study area.
Delta button-celery *Eryngium racemosum*	FSC	E	1B	Vernally mesic clay depressions in riparian scrub	Unlikely to occur; no suitable habitat in study area.
Red-flowered lotus *Lotus rubriflorus*	FSC	--	1B	Grasslands, oak woodland	Unlikely to occur; no suitable habitat in study area.
Mount Diablo phacelia *Phacelia phaceloides*	FSC	--	1B	Chaparral, cismontane woodland with rocky soils	Unlikely to occur; no suitable habitat in study area.
INVERTEBRATES					
Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	FT	--	--	Elderberry shrubs	Unlikely to occur; no elderberry shrubs observed in the study area.
AMPHIBIANS					
California tiger salamander *Ambystoma californiense*	C	CSC	--	Vernal pools and permanent waters in grasslands	Could occur; suitable aquatic habitat present in the pond at the western end of the study area.
California red-legged frog *Rana aurora draytonii*	T	CSC	--	Deep, still or slow-moving water with dense shrubby riparian and/or emergent vegetation.	Could occur; Salado Creek and adjacent pond in western portion of the study area provide suitable aquatic habitat.
Foothill yellow-legged frog *Rana boylii*	FSC	CSC	--	Streams with cobble-sized substrate.	Could occur; Salado Creek in western portion of the study area may provide suitable aquatic habitat.

Table 6-1
Special-Status Species with Potential to Occur in the Study Area

SPECIES	USFWS	CDFG	CNPS	HABITAT	POTENTIAL FOR OCCURRENCE
Western spadefoot *Scaphiopus hammondii*	FSC	CSC	--	Vernal pools and other seasonal ponds in valley and foothill grasslands	Could occur; Salado Creek and adjacent pond in western portion of the study area provide suitable aquatic habitat.
REPTILES					
San Joaquin whipsnake *Masticophis flagellum ruddocki*	--	CSC	--	Sparse grasslands and saltbush scrub	Could occur in grasslands in the western portion of the study area.
Western pond turtle *Clemmys marmorata*	FSC	CSC	--	Ponds, marshes, rivers, streams, and irrigation ditches with aquatic vegetation.	Known to occur in percolation ponds at the wastewater treatment plant and Salado Creek provides marginally suitable habitat.
BIRDS					
Double-crested cormorant *Phalacrocorax auritus*	--	CSC	--	Isolated islets or tall waterside trees near fish-bearing waters	Known to forage in study area, but no suitable nesting habitat present.
White-tailed kite *Elanus leucurus*	FSC	FP	--	Grasslands, agricultural land, and open woodlands	Known to occur; suitable nesting and foraging habitat present in study area.
Northern harrier *Circus cyaneus*	--	CSC	--	Grasslands, marshes, agricultural land, and open woodlands	Could occur; suitable nesting and foraging habitat present in study area.
Sharp-shinned hawk *Accipiter striatus*	--	CSC	--	Forest and woodlands for foraging, dense coniferous and deciduous forest for nesting.	Known to occur; could forage in study area, but no suitable nesting habitat present.
Cooper's hawk *Accipiter cooperii*	--	CSC	--	Forest and woodlands for foraging, dense mixed evergreen and riparian forest for nesting.	Could occur; could forage in study area, but no suitable nesting habitat present.

Table 6-1
Special-Status Species with Potential to Occur in the Study Area

SPECIES	USFWS	CDFG	CNPS	HABITAT	POTENTIAL FOR OCCURRENCE
Swainson's hawk *Buteo swainsoni*	FSC	T	--	Forages in grasslands and agricultural land, nests in riparian and isolated trees	Known to nest and forage in study area.
Ferruginous hawk *Buteo regalis*	FSC	CSC	--	Forages in grasslands, agricultural fields, and other open habitats; does not nest in California	Could occur; suitable foraging habitat present in study area.
Golden eagle *Aquila chrysaetos*	--	CSC FP	--	Forages in grasslands and other open habitats; nests on cliffs and in tall trees.	Could occur; suitable foraging habitat present in study area, but no suitable nesting habitat present.
Merlin *Falco columbarius*	--	CSC	--	Forages in a variety of open habitats; does not nest in California	Could occur; suitable foraging habitat present in study area.
American peregrine falcon *Falco peregrinus anatum*	--	E	--	Forages in a variety of open habitats, particularly marshes and other wetlands; nests on cliffs and ledges.	Could occur; suitable foraging habitat present in study area, but no suitable nesting habitat present.
Prairie falcon *Falco mexicanus*	--	CSC	--	Forages in grasslands and other open dry open habitats, nests on cliffs	Could occur; suitable foraging habitat present in study area, but no suitable nesting habitat present.
Mountain plover *Charadrius montanus*	PT	CSC	--	Grasslands and recently plowed or sprouting agricultural fields	Could occur; suitable foraging habitat present in study area.
Western burrowing owl *Athene cunicularia hypugea*	FSC	CSC	--	Grasslands, agricultural land, and open woodlands	Could occur; suitable foraging and nesting habitat present in study area.
Loggerhead shrike *Lanius ludovicianus*	FSC	CSC	--	Grasslands, shrublands, and open woodlands	Known to occur; suitable foraging and nesting habitat present in study area.

Table 6-1
Special-Status Species with Potential to Occur in the Study Area

SPECIES	USFWS	CDFG	CNPS	HABITAT	POTENTIAL FOR OCCURRENCE
California horned lark *Eremophila alpestris actia*	--	CSC	--	Open habitats, such as grasslands and agricultural fields, with little or no vegetation	Expected to occur; Suitable foraging and nesting habitat present in study area.
Tricolored blackbird *Agelaius tricolor*	FSC	CSC	--	Forages in agricultural land and grasslands; nests in marshes and other areas that support cattails or dense thickets	Could occur; suitable foraging habitat present in study area, and Salado Creek and adjacent pond in western portion of study area provide suitable nesting habitat.
MAMMALS					
San Joaquin pocket mouse *Perognathus inornatus inornatus*	FSC	--	--	Grasslands and blue oak woodlands with friable soils	Could occur; potentially suitable habitat present in study area.
San Joaquin kit fox *Vulpes macrotis mutica*	E	T	--	Grasslands and other open habitats.	Could occur; known to use movement corridors in vicinity of I-5 and California Aqueduct.

U.S. Fish and Wildlife Service (USFWS) Federal Listing Categories:

E Federal Endangered
T Federal Threatened
PT Proposed for listing as Threatened
FSC Federal Species of Concern

California Department of Fish and Game (CDFG) State Listing Categories:

E State Endangered
T State Threatened
CSC California Species of Special Concern

California Native Plant Society (CNPS) Categories:

1B Plant rare or endangered in California and elsewhere
2 Plants rare and endangered in California but more common elsewhere

Source: EDAW 2003

Source: CNDDB 2002, EDAW 2002

Sensitive Biological Resources - Patterson Wastewater Master Plan Area

EXHIBIT 6-1

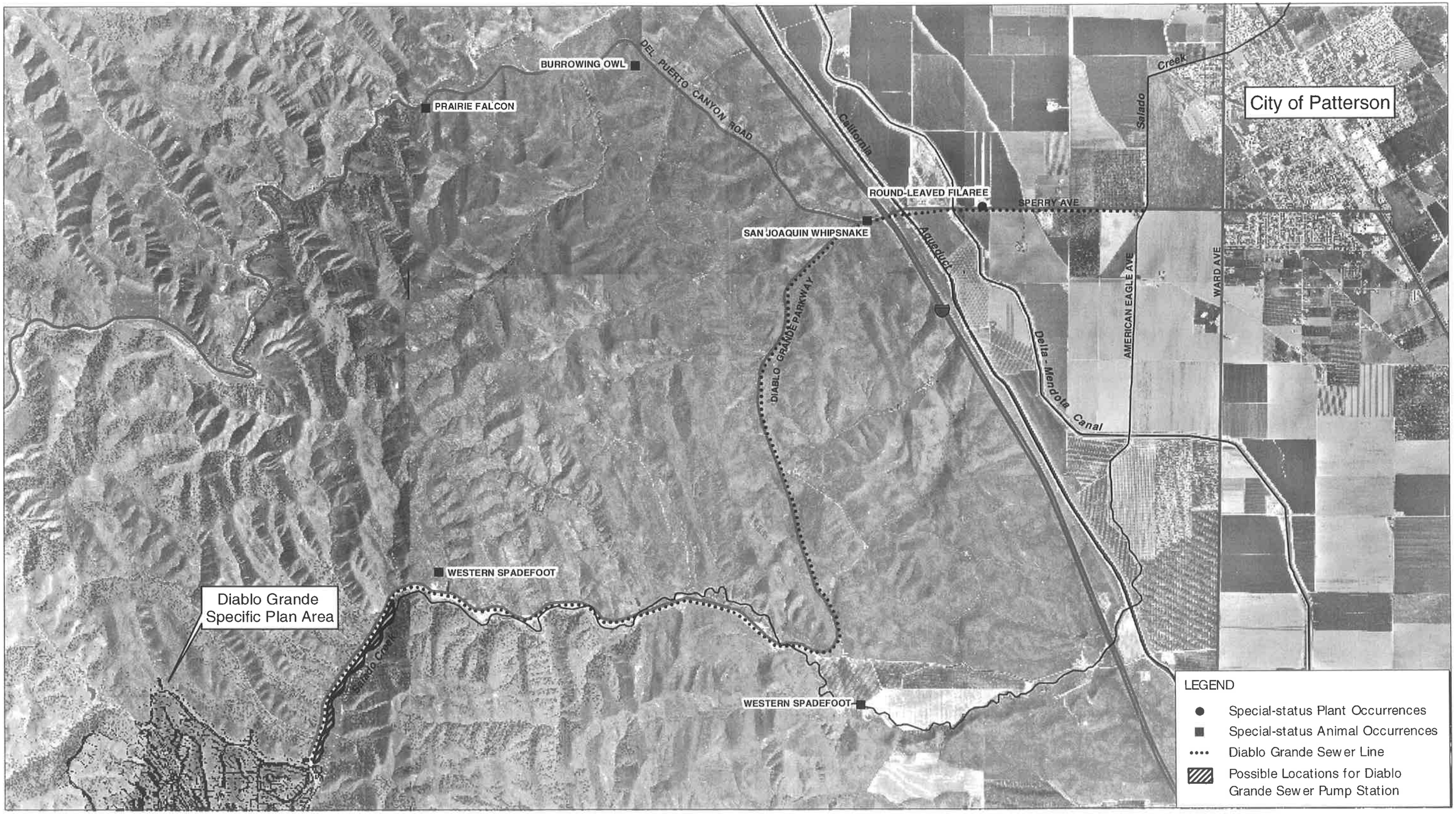
City of Patterson Wastewater Master Plan EIR

X 2T008.01 2/03

0 0.5 1 MILE

NORTH

EDAW



Source: CNDDB 2002, EDAW 2002

Sensitive Biological Resources - Diablo Grande

City of Patterson Wastewater Master Plan EIR

X 2T008.01 2/03

EXHIBIT 6-2

0 0.5 1 MILE

NORTH

EDAW

Special-Status Plants

Four special-status plants have potential to occur in the study area: round-leaved filaree, delta button-celery, red-flowered lotus, and Mount Diablo phacelia (Table 6-1). None of these species are listed as state and/or federal Threatened or Endangered species, but all of them are on the CNPS 1B or 2 list. Round-leaved filaree was recorded in 1940, approximately 2 miles west of Patterson along Sperry Avenue. Although this location is in the study area, round-leaved filaree is not expected to occur due to lack of suitable habitat. This area has been significantly modified since 1940, and Sperry Avenue is completely bordered by agricultural fields or development. Delta button-celery was recorded in 1965 in riparian scrub near the San Joaquin river, approximately 3 miles south of the study area, but this species is not expected to occur in the study area due to the lack of suitable natural habitat. The other two special-status plants, red-flowered lotus and Mount Diablo phacelia, could occur adjacent to the study area west of I-5, but there is no suitable habitat for them within the Diablo Grande sewer line corridor or at the proposed lift station site.

Special-Status Wildlife

A total of 25 special-status wildlife species are known or have potential to occur in the study area (Table 6-1). Of these, five are listed as state and/or federal Threatened or Endangered species: valley elderberry longhorn beetle, California red-legged frog, Swainson's hawk, American peregrine falcon, and San Joaquin kit fox. In addition, mountain plover is proposed for federal listing as Threatened and California tiger salamander is currently considered a Candidate for listing as Threatened or Endangered. The remaining 19 wildlife species are considered Species of Special Concern by CDFG and/or Federal Species of Concern by USFWS. Each of these special-status wildlife species is discussed in further detail below, with federally and/or state listed species discussed first.

Valley Elderberry Longhorn Beetle

The valley elderberry longhorn beetle is federally listed as Threatened. This species is dependent on blue elderberry shrubs for both food and reproduction. Valley elderberry longhorn beetle is not expected to occur in the study area, because no elderberry shrubs were observed during surveys of the study area, including focused surveys conducted in support of the *West Patterson Projects EIR* (City of Patterson 2003).

California Red-legged Frog

The California red-legged frog is listed as a federally Threatened subspecies. California red-legged frogs occur in ponds and streams. The key to the presence of California red-legged frog is perennial, or near perennial, water and the general lack of introduced aquatic predators such as crayfish, bullfrogs, and centrarchid (sunfish) fishes. The are no known occurrences of red-legged frogs in the project vicinity, but they are known to occur in nearby watersheds. In addition, the portion of Salado Creek west of I-5 provides suitable habitat for red-legged frogs, particularly the pond and marsh adjacent to the proposed Diablo Grande lift station site. As a result, California red-legged frog could occur in this portion of the study area, but they are not expected to occur east of I-5 because this species is thought to have been extirpated from the Central Valley floor before 1960 (USFWS 2002).

The USFWS designated Critical Habitat for the California red-legged frog in 2001 (USFWS 2001). However, in 2002, all but 200,000 of the 4 million acres of Critical Habitat was removed from this designation as part of a settlement because the designation did not include an economic analysis as required by ESA. Under the settlement, the USFWS agreed to redraw the boundaries by 2005. No portion of the study area was included in the original designation, and it is not expected to be included in the revised one to be developed by 2005. The USFWS released the Recovery Plan for the California red-legged frog in 2002 (USFWS 2002). Core areas identified in the plan are distributed throughout portions of the historic and current range and represent a system of areas that when protected and managed for California red-legged frogs will allow for the long-term viability of existing populations and reestablishment of populations in the historic range. The East San Francisco Bay core area includes a portion of western Stanislaus County, but the study area is not in its boundary.

Swainson's Hawk

The Swainson's hawk is state listed as a Threatened species. Swainson's hawks typically nest in riparian habitats or isolated trees bordered by suitable foraging habitat (i.e., grasslands and agricultural fields). Agricultural fields provide important foraging habitat for Swainson's hawks. Alfalfa, fallow fields, dry and irrigated pastures, and other low-growing row crops are preferred by Swainson's hawk for this purpose, and represent high-quality foraging habitat (CDFG 1994). A group of approximately 12 Swainson's hawks were observed foraging in an irrigated alfalfa field in the study area in 2002. Loss of high-quality foraging habitat has been identified as one of the prime management issues facing Swainson's hawks in the Central Valley (CDFG 1994, Woodbridge 1998). This species is known to nest in several locations along the San Joaquin River in the vicinity of the study area (CNDDB 2002), and an active

Swainson's hawk nest was observed near the southern edge of the wastewater treatment plant in 2002 (City of Patterson 2003).

American Peregrine Falcon

The American peregrine falcon is state listed as Endangered. It was formerly federally listed as Endangered but was removed from the list in 1999. Peregrine falcons are found in a wide variety of open habitats, and they typically forage in marshes and other wetlands. This species could occasionally forage in the study area. Peregrine falcons nest on natural and artificial cliffs and ledges. Suitable nesting habitat could be present in canyons in the vicinity of the western portion of the study area, but no suitable nesting cliffs are present near the proposed lift station site or along the Diablo Grande sewer line corridor.

San Joaquin Kit Fox

The San Joaquin kit fox is federally listed as Endangered and state listed as Threatened. Kit foxes prefer open, gently sloped, grassland or scrubland habitat. Stanislaus County is thought to be used by San Joaquin kit fox primarily as a movement corridor, connecting suitable habitat and known populations to the north (e.g., Tracy Triangle sub-population) and south (e.g., Santa Nella sub-population and Ciervo/Panoche core population) (USFWS 1998). Almost all recent sightings of San Joaquin kit fox in Stanislaus County have been near the I-5 and California Aqueduct corridors in the western portion of the county (USFWS unpublished files). The *Recovery Plan for Upland Species of the San Joaquin Valley* (USFWS 1998) identifies areas along the valley's edges, including the portion of the study area between I-5 and the Delta-Mendota Canal, where a contiguous band of natural lands and wildlife compatible farmlands should be maintained as linkages for kit fox and other listed and sensitive species.

San Joaquin kit fox could occur in the western portion of the study area, but are unlikely to occur east of the Delta-Mendota Canal. No evidence of San Joaquin kit fox was detected during protocol-level surveys conducted east of I-5 in 2002 (City of Patterson 2003). Most of this area has been extensively farmed for row crops and orchards, which provide very low-quality kit fox habitat. Suitable kit fox habitat east of I-5 is primarily restricted to the area between the interstate and the Delta-Mendota Canal. The area between the California Aqueduct and the Delta-Mendota Canal is a mix of intermittent non-native grasslands and agriculture that could allow safe north-south movement by kit fox.

Mountain Plover

Mountain plover is a California Species of Special Concern and is proposed for federal listing as a Threatened species. This species is a winter resident of the Central Valley, the foothill valleys west of the San Joaquin Valley, and the Imperial Valley. Mountain plovers forage in open habitats such as sparse and/or short grasslands and recently plowed or sprouting agricultural fields. There is limited potential for this species to occur in the study area as a winter migrant or occasional transient. A flock of six mountain plovers was reported near I-5 and the San Joaquin/Stanislaus county lines in 2000 (Edson 2001). However, mountain plover is considered rare in Stanislaus County (Edson 2001), and suitable habitat is present throughout the surrounding region.

California Tiger Salamander

The California tiger salamander is a candidate for federal listing as Threatened or Endangered and is a California Species of Special Concern. Tiger salamanders typically breed in long-lasting rain ponds, but they may also use permanent ponds if aquatic predators are absent (Jennings and Hayes 1994). Burrows excavated by small mammals, such as California ground squirrels, provide upland habitat for salamanders during the non-breeding season.

There are no known occurrences of California tiger salamander in the vicinity of the study area, but the pond adjacent to the proposed Diablo Grande lift station site provides potentially suitable habitat. In addition, mammals burrows in surrounding grasslands provide suitable upland habitat. As a result, California tiger salamander could occur in this portion of the study area. The portion of the study area east of I-5 is heavily disturbed from agricultural activities and tiger salamanders are unlikely to occur there.

Foothill Yellow-Legged Frog

The foothill yellow-legged frog is a federal Species of Concern and California Species of Special Concern. This species occurs throughout much of the Coast Range and Sierra Nevada. The Foothill yellow-legged frog is found in or near rocky streams in a variety of habitats and are rarely encountered far from permanent water. Suitable habitat for foothill yellow-legged frog is absent from the portion of the study area east of I-5, but suitable habitat is present in and adjacent to Salado Creek, west of I-5. The CNDDB (2002) lists a site in Del Puerto Canyon Creek where as many as 35 adult foothill yellow-legged frogs have been observed between 1993 and 1999. The site is located near the north fork of Del Puerto Creek, approximately 10 miles west of Patterson.

Western Spadefoot

Western spadefoot is a California Species of Special Concern and federal Species of Concern. Western spadefoots are found throughout the Central Valley and adjacent foothills. Grasslands with shallow temporary rain pools provide optimal aquatic habitat, though they spend most of the year in self-made or mammal burrows. Western spadefoots are not expected to occur in the study area east of I-5 because suitable habitat is absent. However, there are three 1994 occurrences of western spadefoot in the CNDDB (2002) from Salado Creek, west of I-5.

San Joaquin Whipsnake

San Joaquin whipsnake is a California Species of Special Concern. They occur on the west side of the San Joaquin Valley and on the valley floor in Kern County in sparse grasslands and saltbush scrub communities with little or no trees. They require the presence of mammal burrows for refuge, temperature regulation, and possibly egg-laying. Suitable habitat for the San Joaquin whipsnake is absent from the study area east of I-5. However, suitable habitat for the San Joaquin whipsnake exists in the study area west of I-5. The CNDDB (2002) lists one 1999 record for San Joaquin whipsnake along Del Puerto Canyon Road, 1/4-mile west of I-5. San Joaquin whipsnake may potentially occur in the study area west of I-5.

Western Pond Turtle

Western pond turtle is a California Species of Special Concern and federal Species of Concern. Pond turtles are found in slow-moving aquatic habitats, such as ponds, marshes, streams, and irrigation ditches. They use submerged or emergent vegetation for foraging and require logs or other objects for basking. During the spring and summer, pond turtles nest in upland habitats adjacent to aquatic sites that provide suitable thermal and hydric environment for incubation of the eggs. Two western pond turtles were observed in a pond at the wastewater treatment plant during a site visit on May 31, 2002 (City of Patterson 2003). It is unlikely that they would nest in the wastewater ponds because the overall habitat quality is too poor to support this species. However, they may use ponds in the study area for foraging and basking habitat. Suitable habitat for western pond turtle is also provided by the pond adjacent to Salado Creek at the western end of the study area.

Double-crested Cormorant

Double-crested cormorant is a California Species of Concern. This species nests in trees and snags on isolated inlets, islands, and lake and river margins. Cormorants forage in a variety of

aquatic habitats, such as lakes and rivers, and they have been observed near the California Aqueduct (City of Patterson 2003). They are expected to forage in the canals in the study area, but the nearest potential nesting habitat is along the San Joaquin River.

Burrowing Owl

Burrowing owl is a California Species of Special Concern and federal Species of Concern. Burrowing owl habitat is characterized by low-growing vegetation and may include annual and perennial grasslands and arid scrublands. Burrows are the essential component of burrowing owl habitat. Burrowing owls typically use burrows made by fossorial mammals, such as ground squirrels or badgers, but may also use artificial structures such as cement culverts; cement, asphalt, or wood debris piles; or openings beneath cement or asphalt pavement. Although a burrowing owl was observed within 1,500 feet of the West Patterson Business Park Master Development Plan area boundary during reconnaissance-level surveys in 2002, no burrowing owls were observed during focused surveys of this area and the wastewater treatment plant expansion area (City of Patterson 2003). However, suitable burrowing owl habitat is present in this portion of the Wastewater Master Plan study area. No burrowing owls were observed during reconnaissance-level surveys west of I-5, but California ground squirrel burrows and suitable foraging habitat are present near the proposed lift station site and along the Diablo Grande sewer line corridor. Therefore, there is potential for burrowing owls to occur in uncultivated fields, grasslands, and along roadways and levees in the study area.

Other Raptors

A number of special-status raptor species have potential to occur in the study area: golden eagle, prairie falcon, white-tailed kite, northern harrier, sharp-shinned hawk, Cooper's hawk, ferruginous hawk, and merlin. All of these are California Species of Special Concern and/or federal Species of Concern. Sharp-shinned and Cooper's hawks are primarily associated with woodland and forest habitats, which are absent from the study area, though a sharp-shinned hawk was observed along Salado Creek during the reconnaissance survey of the proposed lift station site. The remaining species primarily occur in grasslands, agricultural fields, and other open habitats. All of these species could use the study area as foraging habitat and may nest nearby, but white-tailed kite and northern harrier are the only species expected to nest in or immediately adjacent to the study area. Kites could nest in isolated trees or small woodland patches and harriers could nest in fallow fields or tall grasslands. Adult and immature golden eagles have been observed in the foothills west of I-5 (LSA 1992), and prairie falcon nests have been documented at the rock outcrop at the south end of Oak Flat Valley (LSA 1992) and in the Del Puerto Canyon cliff complex, two miles southwest of I-5 (CNDDB 2002). However, no

suitable nesting cliffs are present near the proposed lift station site or along the Diablo Grande sewer line corridor.

A number of common raptor species could also nest and/or forage in the study area, such as American kestrel, red-shouldered hawk, red-tailed hawk, and great horned owl. Although these are not considered special-status species, they are protected under Section 3503.5 of California Fish and Game Code, which prohibits take or destruction of raptors, including their nests and eggs. A pair of red-tailed hawks was found nesting immediately east of the wastewater treatment plant and a pair of American kestrels was found nesting along Las Palmas Avenue during site visits on May 31 and June 7, 2002 (City of Patterson 2003). Scattered trees found throughout the study area and in the riparian vegetation along Salado Creek provide suitable raptor nest sites. Agricultural fields and grasslands throughout the study area provide suitable foraging habitat.

Loggerhead Shrike

Loggerhead shrike is a California Species of Special Concern and a federal Species of Concern. Shrikes prefer open habitats interspersed with shrubs and trees. Adult and immature shrikes were observed at several locations in the study area between I-5 and the City during project surveys in 2002 (City of Patterson 2003). In addition, an active nest was found in this part of the study area. Loggerhead shrikes were also observed in the study area west of I-5 during the EDAW reconnaissance survey.

California Horned Lark

California horned lark is a California Species of Special Concern. Horned larks occur in grasslands and other open habitats with low, sparse vegetation. Disked fields, low growth stages of fallow fields and/or row crops, and barren areas along the Delta-Mendota Canal and Salado Creek provide suitable breeding and foraging habitat for this species. California horned larks were observed in a disked field in the eastern potion of the study area during 2002 surveys (City of Patterson 2003). Suitable breeding and foraging habitat is also present west of I-5. The CNDDB has a 1993 record of California horned lark approximately five miles south of Patterson.

Tricolored Blackbird

Tricolored blackbird is a California Species of Special Concern and federal Species of Concern. Tricolored blackbirds are colonial nesting birds that nest in emergent or riparian vegetation and forage primarily in grasslands, pastures, and agricultural fields. There are several known

nesting colonies in areas near the San Joaquin River in Stanislaus County. The only suitable nesting habitat in the study area is provided by Salado Creek and the adjacent pond near the proposed Diablo Grande lift station site. Suitable foraging habitat is present throughout the study area.

San Joaquin Pocket Mouse

San Joaquin Pocket Mouse is a federal Species of Concern. These pocket mice typically occur in grasslands and blue oak woodlands and require friable soils. They are known to occur near Oristemba Creek, approximately 10 miles south of the study area. They are not expected to occur in the study area east of I-5 because there is no suitable habitat. There is limited potential for pocket mice to occur in the western portion study area, but the soil conditions are only marginally suitable.

SENSITIVE HABITATS

Sensitive habitats are plant communities that are especially diverse, regionally uncommon, or of special concern to local, state and federal agencies. Elimination or substantial degradation of these communities would constitute a significant impact. Sensitive habitats were identified through a search of the sensitive natural plant communities identified in the CNDDB, through review of prior biological studies conducted in the study area, and field surveys. Sensitive habitats in the study area include freshwater marsh, riparian habitat, blue oak woodland, and the biological mitigation area adjacent to the wastewater treatment plant.

6.2 ENVIRONMENTAL IMPACTS

6.2.1 THRESHOLDS OF SIGNIFICANCE

The potential for the proposed project to result in significant environmental effects was analyzed using information provided in the State CEQA Guidelines. Pursuant to the suggested thresholds in Appendix G, the proposed project would have a significant impact on biological resources if it would:

- have a substantial adverse effect, either directly or indirectly through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFG or USFWS;
- have a substantial adverse effect on any riparian or other sensitive natural community identified in local or regional plans, policies, regulations or by CDFG or USFWS;

- have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pools, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
- interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
- conflict with the provisions of an adopted HCP, NCCP, or other approved local, regional, or state habitat conservation plan.

6.2.2 First-Phase Expansion

Impact 6-1

First-Phase Expansion - Effects on Special-Status Plants. *No special-status plants are expected to occur in any of the construction areas. This is a* ***less-than-significant*** *impact.*

Mount Diablo phacelia is the only special-status plant species with potentially suitable habitat in the study area. However, this habitat is restricted to grasslands and oak woodland in the western portion of the study area. Although this plant could occur in this area, it is not expected to occur within the sewer line construction corridor, which is restricted to the existing road shoulder. This species is also unlikely to occur on the potential lift station site, because it is adjacent to the road and relatively disturbed. Therefore, impacts to special-status plants would be less than significant.

Impact 6-2

First-Phase Expansion - Effects on San Joaquin Kit Fox. *Construction of the Diablo Grande sewer line could affect San Joaquin Kit Fox. This is a* ***potentially significant*** *impact.*

San Joaquin kit fox could use the study area as a movement corridor. Potential movement areas are primarily restricted to the portion of the study area between I-5 and the Delta-Mendota Canal. The Diablo Grande sewer line is not expected to result in loss or disturbance of den sites, because the pipeline would primarily be constructed within existing roadways and agricultural fields that do not provide suitable denning habitat. Although no kit fox denning or foraging habitat would be lost as a result of the project, potential movement corridors would be disturbed during construction of the Diablo Grande sewer line. As a result, movement of kit fox through the area could be impeded, and there is a slight chance that a kit

fox could be injured or killed during these construction activities. Disturbance of the movement corridor or take of a San Joaquin kit fox would be a significant impact.

Impact 6-3

First-Phase Expansion - Effects on Swainson's Hawk. *Construction of the evaporation/percolation ponds would result in loss of Swainson's hawk foraging habitat. Construction activities for the evaporation/percolation ponds and wastewater collection lines could result in disturbance and loss of active Swainson's hawk nests. This would be considered a* ***significant*** *impact.*

Construction of evaporation/percolation ponds on land that is currently used for agriculture could result in the loss of as much as 125 acres of high-quality Swainson's hawk foraging habitat (e.g., alfalfa and fallow fields). Swainson's hawks are known to nest in the vicinity of the study area, and CDFG provides guidelines for mitigating the loss of foraging habitat within 10 miles of an active Swainson's hawk nest (CDFG 1994). Nesting Swainson's hawks could also be affected by construction activities for the evaporation/percolation ponds and the wastewater collection lines. Active nests could be affected by the removal of nest trees and by disturbance from nearby construction during the breeding season, potentially resulting in nest abandonment. Loss of Swainson's hawk foraging habitat and loss of an active nest would be considered significant impacts.

Impact 6-4

First-Phase Expansion - Effects on Special-status Amphibians. *Construction of the Diablo Grande sewer line and lift station could result in indirect effects to California tiger salamander, California red-legged frog, foothill yellow-legged frog, and western spadefoot. This is a* ***potentially significant*** *impact.*

Suitable habitat for California tiger salamander, California red-legged frog, foothill yellow-legged frog, and western spadefoot is present in the western portion of the study area, in Salado Creek and/or the adjacent pond at the proposed lift station site. Construction of the Diablo Grande sewer line and lift station is not expected to result in direct impacts to the creek or pond, because the lift station would be constructed in upland habitat set back from the top of the creek bank, and the sewer line would be constructed within the existing road shoulder. Because the sewer line would be constructed within the existing road shoulder, none of the special-status amphibians are expected to occur within the construction corridor. In addition, none of them are expected to use uplands within the potential lift station site. The portion of the site that is nearest to the pond currently supports a pump station and access road. Therefore, it is relatively disturbed and provides very low-quality upland habitat. Along the remaining portions of the potential site, Salado Creek is highly incised and has a nearly vertical bank, typically greater than 10 feet high. It is unlikely salamanders and frogs would scale the bank to reach these uplands.

Although the project is unlikely to have direct impacts on special-status amphibians, these species could be indirectly affected. Construction of the sewer line and lift station could degrade aquatic habitat through runoff and subsequent increased sedimentation. Sedimentation could adversely affect special-status amphibian habitat quality and the overall suitability of Salado Creek. This would be a potentially significant impact.

Impact 6-5

First-Phase Expansion - Effects on Western Pond Turtle. *Expansion of the treatment system at the existing wastewater treatment plant could affect western pond turtle. This is a* ***potentially significant*** *impact.*

Western pond turtles are known to occupy the existing wastewater treatment ponds, and certain construction activities could potentially affect these turtles. Construction of the AIPS within existing percolation ponds of the City's wastewater treatment facility could occur when the ponds contain water. Draining of existing treatment ponds during expansion of the treatment facility could strand turtles. Other construction activities within the ponds, such as grading, could also affect the turtles. This is considered a potentially significant impact.

Impact 6-6

First-Phase Expansion - Effects on Burrowing Owl. *Construction of the Diablo Grande sewer line and lift station, evaporation/percolation ponds, and wastewater collection lines could result in loss of burrowing owl nests. This is a* ***potentially significant*** *impact.*

Suitable habitat within the study area includes grasslands, agricultural field margins, drainage ditches, and fallow fields. Burrowing owls could occupy the study area before the start of construction. No burrowing owls were observed in the western portion during reconnaissance-level surveys, but suitable habitat is present so they could be present. Burrowing owls and their nests are protected under Section 3503.5 of California Fish and Game Code. If burrowing owls are present in construction areas, occupied nest burrows could be destroyed. Owls nesting nearby could be disturbed by construction activity, potentially resulting in nest abandonment. This would be considered a potentially significant impact.

Impact 6-7

First-Phase Expansion - Effects on Other Raptors. *Construction activities for the evaporation/percolation ponds and wastewater collection lines could result in disturbance and loss of active raptor nests. This would be a* ***significant*** *impact.*

The construction of new wastewater treatment ponds on land that is currently used for agriculture could result in the loss of as much as 125 acres of high-quality raptor foraging habitat (e.g., alfalfa and fallow fields). In general, similar habitat is abundant in the vicinity and loss of foraging habitat would not substantially affect most raptor species, particularly those that do not breed in the region (e.g., ferruginous hawk and merlin). However, construction activities for the evaporation/percolation ponds and the wastewater collection

lines could result in removal of trees with active nests and/or disturbance of nesting raptors, potentially resulting in nest abandonment. Raptors and their nests are protected under Section 3503.5 of California Fish and Game Code. A variety of raptors, including white-tailed kite, northern harrier, red-tailed hawk, and American kestrel, are known or expected to nest in the vicinity of the study area. Potential disturbance that results in loss of an active raptor nest would be considered a significant impact.

Impact 6-8

First-Phase Expansion - Effects on Tricolored Blackbird. *Construction of the Diablo Grande lift station and sewer line could result in disturbance of nesting tricolored blackbirds. This is a* ***potentially significant*** *impact.*

Freshwater marsh habitat in Salado Creek and the adjacent pond at the western end of the study area provides suitable nesting habitat for tricolored blackbirds. Construction of the Diablo Grande lift station and sewer line would result in disturbance in this area. Depending on where the lift station is located, it could be within several hundred feet of the marsh. Although tricolored blackbirds are not known to nest at this site, a colony could become established before construction. Disturbance from construction activities could result in abandonment of an active nest colony, which would be a significant impact.

Impact 6-9

First-Phase Expansion - Effects on Other Special-status Wildlife. *Construction of the proposed project could affect suitable habitat for the remaining special-status species. However, similar habitat for these species is abundant in the region. This is a* ***less-than-significant*** *impact.*

The remaining special-status species are not expected to be substantially affected by the project. Valley elderberry longhorn beetle is not expected to occur within or immediately adjacent to the study area due to lack of elderberry shrubs. San Joaquin whipsnake, mountain plover, double-crested cormorant, loggerhead shrike, California horned lark, and San Joaquin pocket mouse are known to or could occur within the study area. Mountain plovers could forage in agricultural fields, but this species is rare in Stanislaus County and similar foraging habitat is regionally abundant. Double-crested cormorants are likely to forage in the canals and could occur in ponds at the wastewater treatment plant, but they would not be affected by project construction. Foraging habitat and a limited amount of suitable nesting habitat for loggerhead shrike and California horned lark is present in the study area, but potential impacts to these species are primarily restricted to loss of foraging habitat and similar habitats are regionally abundant. San Joaquin whipsnake and pocket mouse have some potential to occur in the portion of the study area west of I-5, but the construction areas are relatively disturbed and are not considered high-quality habitat for either species. Therefore, impacts to Valley elderberry longhorn beetle, San Joaquin whipsnake, mountain plover, double-crested

cormorant, loggerhead shrike, California horned lark, and San Joaquin pocket mouse would be considered less than significant.

Impact 6-10

First-Phase Expansion - Effects on Sensitive Habitats. *Construction of the Diablo Grande pump station and sewer line could affect Salado Creek and other sensitive habitats. Construction of the proposed percolation ponds and effluent force main could affect riparian woodland and a biological mitigation site. This is a* ***potentially significant*** *impact.*

Salado Creek, a Water of the U.S., would be directly affected by construction of the Diablo Grande sewer line along Sperry Avenue and could be indirectly affected by construction of the Diablo Grande sewer line and lift station in the western portion of the study area. A trench would be excavated through Salado Creek for pipeline installation along Sperry Avenue. This is anticipated to result in temporary disturbance of less than 0.01 acre of potential Waters of the U.S. In addition, construction of the sewer line and lift station in the western portion of the study area could affect Salado Creek and associated riparian vegetation as a result of runoff and subsequent sedimentation during construction activities. Blue oak woodland along and adjacent to the creek could also be affected by construction of the lift station or sewer line. These would be considered significant impacts.

The biological mitigation site on the northern side of the wastewater treatment plant and riparian woodland adjacent to the northeastern-most percolation pond site could be inadvertently affected by nearby construction-related activities, such as grading, pond construction, and effluent force main construction. Disturbance of either of these areas would be a significant impact.

Impact 6-11

First-Phase Expansion - Conflicts with Policies, Ordinances, or Habitat Conservation Plans. *There are no local, regional, or state policies, ordinances, or conservation plans that cover the project area. Therefore, the project would not conflict with any plans. This is a* ***less-than-significant*** *impact.*

The project area is not covered by any adopted HCP, NCCP, or other approved local, regional, or state habitat conservation plan. There are also no local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. Therefore, the project would not conflict with any policy, ordinance, or conservation plan. This impact would be less than significant.

6.2.3 GENERAL PLAN BUILDOUT

Impact 6-12

General Plan Buildout - Effects on Special-status Plants. *No special-status plants are expected to occur in the area affected by General Plan buildout. This is a* ***less-than-significant*** *impact.*

There is no suitable habitat for any of the special-status plant species and none of them are expected to occur within the General Plan buildout areas or in the vicinity of the wastewater treatment facility. Impacts to special-status plants would be less than significant.

Impact 6-13

General Plan Buildout - Effects on San Joaquin Kit Fox. *San Joaquin Kit Fox is not expected to be affected by General Plan buildout. This is a* ***less-than-significant*** *impact.*

San Joaquin kit fox is not expected to occur in the General Plan buildout areas or in the vicinity of the wastewater treatment facility. Agricultural habitats in these areas provide very low-quality foraging habitat and few, if any, potential denning sites. Therefore, San Joaquin kit fox is not expected to be affected by the buildout, and impacts to this species would be less than significant.

Impact 6-14

General Plan Buildout - Effects on Swainson's Hawk. *Construction of additional evaporation/percolation ponds to serve the General Plan buildout areas could result in loss of Swainson's hawk foraging habitat. Construction activities for the ponds and additional pipelines could result in disturbance and loss of active Swainson's hawk nests. This would be considered a* ***significant*** *impact.*

Construction of evaporation/percolation ponds on land that is currently used for agriculture could result in the loss of up to 275 additional acres of high-quality Swainson's hawk foraging habitat (e.g., alfalfa and fallow fields). Swainson's hawks are known to nest in the vicinity of the buildout areas, and CDFG provides guidelines for mitigating the loss of foraging habitat within 10 miles of an active Swainson's hawk nest (CDFG 1994). Nesting Swainson's hawks could also be affected by construction activities for the evaporation/percolation ponds and additional pipelines. Active nests could be affected by the removal of nest trees and by disturbance from nearby construction during the breeding season, potentially resulting in nest abandonment. Loss of Swainson's hawk foraging habitat and loss of an active nest would be considered significant impacts.

Impact 6-15

General Plan Buildout - Effects on Special-status Amphibians. *California tiger salamander, California red-legged frog, foothill yellow-legged frog, and western spadefoot are not expected to be affected by General Plan buildout. This is a* ***less-than-significant*** *impact.*

California tiger salamander, California red-legged frog, foothill yellow-legged frog, and western spadefoot are not expected to occur in the General Plan buildout areas or in the vicinity of the wastewater treatment facility. The buildout areas are entirely comprised of agricultural fields and developed habitats that are unsuitable for these species. Impacts to these species would be less than significant.

Impact 6-16

General Plan Buildout - Effects on Western Pond Turtle. *Expansion of the wastewater treatment plant to serve the General Plan buildout areas could affect western pond turtle. This is a* ***potentially significant*** *impact.*

Western pond turtles are known to occupy the existing wastewater treatment ponds, and certain construction activities could potentially affect these turtles. Construction of the AIPS within existing percolation ponds within the City's wastewater treatment facility could occur when the ponds contain water. Draining of existing treatment ponds during expansion of the treatment facility could strand turtles. Other construction activities within the ponds, such as grading, could also affect the turtles. This is considered a potentially significant impact.

Impact 6-17

General Plan Buildout - Effects on Burrowing Owl. *Construction of additional evaporation/percolation ponds and pipelines to serve the General Plan buildout areas could result in loss of burrowing owl nests. This is a* ***potentially significant*** *impact.*

Suitable burrowing owl habitat within the buildout areas include grasslands, agricultural field margins, drainage ditches, and fallow fields. Burrowing owls could occupy the buildout areas or wastewater treatment facility expansion areas before the start of construction. Burrowing owls and their nests are protected under Section 3503.5 of California Fish and Game Code. If burrowing owls are present in construction areas, occupied nest burrows could be destroyed. Owls nesting nearby could be disturbed by construction activity, potentially resulting in nest abandonment. This is considered a potentially significant impact.

Impact 6-18

General Plan Buildout - Effects on Other Raptors. *Construction of additional evaporation/percolation ponds and pipelines to serve the General Plan buildout areas could result in disturbance and loss of active raptor nests. This would be a* ***significant*** *impact.*

Construction of evaporation/percolation ponds on land that is currently used for agriculture could result in the loss of up to 275 additional acres of high-quality raptor foraging habitat

(e.g., alfalfa and fallow fields). In general, similar habitat is abundant in the vicinity and loss of foraging habitat would not substantially affect most raptor species, particularly those that do not breed in the region (e.g., ferruginous hawk and merlin). However, construction of the ponds and additional pipelines could result in removal of trees with active nests and/or disturbance of nesting raptors, potentially resulting in nest abandonment. Raptors and their nests are protected under Section 3503.5 of California Fish and Game Code. A variety of raptors, including white-tailed kite, northern harrier, red-tailed hawk, and American kestrel, are known or expected to nest in the vicinity of the study area. Potential disturbance that results in loss of an active raptor nest would be considered a significant impact.

Impact 6-19

General Plan Buildout - Effects on Tricolored Blackbird. *Tricolored blackbird is not expected to be affected by General Plan buildout. This is a* ***less-than-significant*** *impact.*

Tricolored blackbirds could forage in agricultural fields during the non-breeding season, but suitable foraging habitat is abundant in the region. In addition, there is no suitable nesting habitat in the buildout areas or in the vicinity of the wastewater treatment facility. Therefore, tricolored blackbird is not expected to be affected by the buildout and impacts to this species would be less than significant.

Impact 6-20

General Plan Buildout - Effects on Other Special-status Wildlife. *The remaining special-status species are not expected to be affected by General Plan buildout. This is a* ***less-than-significant*** *impact.*

The remaining special-status species are not expected to be substantially affected by General Plan buildout. Valley elderberry longhorn beetle, San Joaquin whipsnake, and San Joaquin pocket mouse are not expected to occur within or immediately adjacent to the buildout areas or in the vicinity of the wastewater treatment facility due to lack of suitable habitat. Mountain plover, double-crested cormorant, loggerhead shrike, and California horned lark are known to or could occur within these areas. Mountain plovers could forage in agricultural fields, but this species is rare and local in Stanislaus County and similar foraging habitat is regionally abundant. Double-crested cormorants could occur in wastewater treatment ponds, but they would not be affected by construction activities. Foraging habitat and a limited amount of suitable nesting habitat for loggerhead shrike and California horned lark is present, but potential impacts to these species are primarily restricted to loss of foraging habitat, and similar habitats are abundant in the region. Therefore, impacts to Valley elderberry longhorn beetle, San Joaquin whipsnake, mountain plover, double-crested cormorant, loggerhead shrike, California horned lark, and San Joaquin pocket mouse would be considered less than significant.

Impact 6-21

General Plan Buildout - Effects on Sensitive Habitats. *Construction of additional evaporation/percolation ponds and pipelines to serve the General Plan buildout areas could result in fill of Salado Creek. This is a* ***potentially significant*** *impact.*

Salado Creek, a potential Water of the U.S., runs through the East-North General Plan buildout area. It could be affected if General Plan buildout would result in fill of any portion of the creek. Fill of Waters of the U.S. would be a significant impact. As discussed in Impact 6-10, construction of new percolation ponds and an effluent force main could affect riparian woodland and a biological mitigation site. This is a potentially significant impact.

Impact 6-22

General Plan Buildout - Conflicts with Policies, Ordinances, or Habitat Conservation Plans. *There are no local, regional, or state policies, ordinances, or conservation plans that cover the project area. Therefore, the project would not conflict with any plans. This is a* ***less-than-significant*** *impact.*

The general plan buildout area is not covered by any adopted HCP, NCCP, or other approved local, regional, or state habitat conservation plan. There are also no local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. Therefore, General Plan buildout would not conflict with any policy, ordinance, or conservation plan. This impact would be less than significant.

6.3 Mitigation Measures

6.3.1 First-Phase Expansion

No mitigation measures are necessary for the following less-than-significant impacts.

6-1 First-Phase Expansion - Effects on Special-Status Plants
6-9 First-Phase Expansion - Effects on Other Special-Status Wildlife
6-11 First-Phase Expansion - Conflicts with Policies, Ordinances, or Habitat Conservation Plans

Mitigation measures for significant and potentially significant impacts are provided below.

6-2 **First-Phase Expansion - Protection of San Joaquin Kit Fox.** WHWD will implement the following construction impact avoidance and minimization measures, in accordance

with USFWS (1999) guidelines, for portions of the project that would be constructed west of the Delta-Mendota Canal.

- An onsite biological monitor shall be present during construction.
- A worker education program will be conducted.
- Project-related vehicles will observe a 20-mph speed limit in the project area except on county roads, and State and Federal highways; this is particularly important at night when kit foxes are most active.
- Nighttime construction will be prohibited.
- To prevent inadvertent entrapment of kit foxes during construction, all excavated, steep-walled holes or trenches more than 2 feet deep will be covered at the close of each working day with plywood or similar materials, or equipped with one or more escape ramps constructed of earth fill or wooden planks. Before trenches are filled, they will be thoroughly inspected for trapped kit foxes.
- All construction pipes, culverts, or similar structures with a diameter of 4 inches or greater that are stored at a construction site overnight will be thoroughly inspected for kit foxes before the pipe is buried, capped, or otherwise used or moved in any way. If a kit fox is discovered inside a pipe, that section of pipe will not be moved until the USFWS has been consulted.
- All food-related trash items, such as wrappers, cans, bottles, and food scraps, will be disposed of in a closed container and removed at least once a week from the construction site.

6-3 First-Phase Expansion - Protection of Swainson's Hawk. The City will implement the following measures:

- To avoid direct impacts to nesting Swainson's hawks, construction activities east of I-5 will not be conducted during the typical breeding season (March 1 to August 31).
- If avoiding construction during the breeding season is not feasible, pre-construction surveys will be conducted by a qualified ornithologist to identify active nests within 0.5 mile of the project area. The survey will be conducted no less than 14 days and no more than 30 days before the beginning of construction. To the extent feasible, the guidelines provided in the

Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in the Central Valley (Technical Advisory Committee 2000) will be followed.

- If active nests are found, impacts will be avoided by establishment of appropriate buffers. No project activity will commence within the buffer area until a qualified biologist confirms that the nest is no longer active. CDFG guidelines recommend implementation of 0.25- or 0.5-mile buffers, but the size of the buffer may be adjusted if a qualified biologist and CDFG determine it would not be likely to adversely affect the nest. Monitoring of the nest by a qualified biologist may be required if the activity could adversely affect the nest.
- Loss of foraging habitat from construction of evaporation/percolation ponds will be mitigated by following the draft CDFG guidelines (1994), which state that Habitat Management lands will be provided to CDFG at ratios based on the distance of active nest trees to the project site. For projects within 5 miles of an active nest tree but greater than 1 mile, the mitigation ratio is 0.75 acres of Habitat Management lands for each acre developed. For projects within 1 mile of an active nest, the ratio is 1:1. Because the final locations of the evaporation/percolation ponds have not been selected, the actual distance from an active nest cannot be determined and neither can the mitigated acreage. However, the study area includes areas that range from less than 1 mile to 5 miles from an active nest. Following finalization of the construction footprint and before any project construction activity, the total acreage of Habitat Management lands required for mitigation will be calculated according to the above mitigation ratios.

6-4: First-Phase Expansion - Protection of Special-status Amphibians. The City will implement measures to minimize erosion and runoff into Salado Creek from construction of the Diablo Grande lift station and pipeline. Appropriate runoff controls such as berms, filtration systems, and sediment traps will be used to control siltation and the potential discharge of pollutants. These mitigation measures will be made part of the Storm Water Pollution Prevention Plan to be prepared for Mitigation Measure Hydro-1 included in the Initial Study prepared for the Wastewater Master Plan (Appendix A of this EIR).

6-5 First-Phase Expansion - Protection of Western Pond Turtle. A qualified biologist will be present to survey for western pond turtles during the pond draining. If any turtles are found during the pond draining, they will be captured and moved by a qualified biologist to suitable habitat outside of the construction area.

6-6 **First-Phase Expansion - Protection of Burrowing Owl.** The City will implement the following measures:

- Before construction activity, focused pre-construction surveys will be conducted for burrowing owls where suitable habitat is present within 75 meters of the construction areas. Surveys will be conducted no less than 14 days and no more than 30 days before construction activities begin and surveys will be conducted in accordance with CDFG protocol (CDFG 1995).
- If no occupied burrows are found in the survey area, a letter report documenting survey methods and findings will be submitted to CDFG for review and approval, and no further mitigation will be necessary.
- If occupied burrows are found, impacts to them will be avoided by providing a buffer of 50 meters during the non-breeding season (September 1 through January 31) or 75 meters during the breeding season (February 1 through August 31). In addition, a minimum of 6.5 acres of foraging habitat will be preserved contiguous with each occupied burrow.
- If impacts to occupied burrows are unavoidable, on-site passive relocation techniques approved by CDFG will be used to encourage owls to move to alternative burrows outside of the impact area. However, no occupied burrows will be disturbed during the nesting season unless a qualified biologist verifies through non-invasive methods that juveniles from the occupied burrows are foraging independently and are capable of independent survival. Mitigation for foraging habitat for relocated pairs will follow guidelines provided in the California Burrowing Owl Consortium Guidelines (1993), which specify ranges for habitat from 6.5 to 19.5 acres per pair.

6-7 **First-Phase Expansion - Protection of Other Raptors.** The City will implement the following measures:

- If project activity would occur during the raptor nesting season (February 15 to September 15), preconstruction surveys will be conducted in areas of suitable nesting habitat within 500 feet of project activity. Surveys will be conducted no less than 14 days and no more than 30 days before project activity begins. If no active nests are found, no further mitigation will be required.
- If active nests are found, impacts will be avoided by establishment of appropriate buffers. No project activity within the buffer area will begin until a qualified biologist confirms that the nest is no longer active. CDFG guidelines

recommend implementation of 500-foot buffers, but the size of the buffer may be adjusted if a qualified biologist and CDFG determine it would not be likely to adversely affect the nest. Monitoring of the nest by a qualified biologist may be required if the activity could adversely affect the nest.

6-8 **First-Phase Expansion - Protection of Tricolored Blackbird.** The City will implement the following measures:

- If construction of the Diablo Grande lift station and pipeline would occur during the tricolored blackbird nesting season (March 1 to August 31), within 500 feet of the freshwater marsh upstream of the concrete dam in Salado Creek, preconstruction surveys will be conducted. The survey will be conducted within 14 days before project activity begins. If no colony is present, no further mitigation will be required.
- If a colony is found, impacts will be avoided by establishment of appropriate buffers. No project activity within the buffer area will begin until a qualified biologist confirms that the colony is no longer active. The appropriate size of the buffer will be determined in consultation with CDFG and is anticipated to range from 100 to 500 feet, depending on the extent of existing disturbance in the area and other relevant circumstances.

6-10 **First-Phase Expansion - Protection of Sensitive Habitats.** The City will implement the following measures:

- Authorization for fill of jurisdictional areas will be secured from USACE via the Section 404 permitting process. It is anticipated that less than 0.5 acre of Salado Creek would be excavated for pipeline installation.
- A CDFG Streambed and Lakebed Alteration Agreement may also be required for trench excavation and pipeline installation across Salado Creek.
- The acreage of jurisdictional habitat removed will be rehabilitated on a "no-net-loss" basis in accordance with USACE and CDFG regulations. It is anticipated that restoration of the creek to pre-project conditions would be adequate to satisfy agency regulations.
- Riparian and oak woodland vegetation adjacent to the Diablo Grande lift station site will be fenced with high-visibility construction fencing to prevent access. No construction activities, vehicles, equipment, or staging activities may occur

within the fenced area. The protective fencing will be maintained until all construction activities are complete.

- To protect the riparian woodland habitat located adjacent to the northeastern-most percolation pond site, a 100-foot setback will be established between the riparian woodland and the construction site. No construction activities, vehicles, equipment, or staging activities may occur within the setback area. During construction, the setback area will be fenced with high-visibility construction fencing to prevent access. The protective fencing will be maintained until all construction activities are complete. All grading plans will include appropriate runoff controls to avoid construction runoff into this area.
- The biological mitigation site at the north edge of the existing wastewater treatment plant will be avoided during construction, so its function as a mitigation site is not adversely affected.
- Implement Mitigation Measure 6-4.

6.3.2 General Plan Buildout

No mitigation measures are necessary for the following less-than-significant impacts.

6-12 General Plan Buildout - Effects on Special-Status Plants
6-13 General Plan Buildout - Effects on San Joaquin Kit Fox
6-15 General Plan Buildout - Effects on Special-Status Amphibians
6-19 General Plan Buildout - Effects on Tricolored Blackbird
6-20 General Plan Buildout - Effects on Other Special-Status Wildlife
6-22 General Plan Buildout - Conflicts with Policies, Ordinances, or Habitat Conservation Plans

Mitigation measures for significant and potentially significant impacts are provided below.

6-14 General Plan Buildout - Protection of Swainson's Hawk. The City will implement Mitigation Measure 6-3

6-16 General Plan Buildout - Protection of Western Pond Turtle. The City will implement Mitigation Measure 6-5.

6-17 **General Plan Buildout - Protection of Burrowing Owl.** The City will implement Mitigation Measure 6-6.

6-18 **General Plan Buildout - Protection of Other Raptors.** The City will implement Mitigation Measure 6-7.

6-21 **General Plan Buildout - Protection of Sensitive Habitats.** The City will implement the following measures:

- Authorization for fill of jurisdictional areas will be secured from USACE via the Section 404 permitting process.
- A CDFG Streambed and Lakebed Alteration Agreement may also be required for trench excavation and pipeline installation across Salado Creek.
- The acreage of jurisdictional habitat removed will be rehabilitated on a "no-net-loss" basis in accordance with USACE and CDFG regulations. It is anticipated that restoration of the creek to pre-project conditions would be adequate to satisfy agency regulations.
- Measures to minimize erosion and runoff into Salado Creek will be implemented. Appropriate runoff controls such as berms, filtration systems, and sediment traps will be implemented to control siltation and the potential discharge of pollutants.

6.4 LEVEL OF SIGNIFICANCE AFTER MITIGATION

Following implementation of the above mitigation measures, no significant impacts related to the first-phase expansion or future expansion for General Plan buildout would remain.

7 CULTURAL RESOURCES

This chapter describes the existing cultural resource setting for the Patterson Wastewater Master Plan (WWMP), and the Diablo Grande sewer line and lift station project areas. It also shows a discussion of the regulatory context for the proposed project and any potential impacts of the Patterson WWMP project on cultural resources. Finally, this chapter shows mitigation measures developed to lessen any potential impacts of the Patterson WWMP on cultural resources to a less-than-significant level.

The descriptions of setting are based primarily on a report, prepared by Holman and Associates, of archival research and field inspection of the West Patterson Business Park Master Development Plan area (Holman and Associates 2002) and on research and field inspections of the wastewater treatment facility potential alternative pond sites, proposed wastewater trunk lines and Diablo Grande sewer line and lift station site (EDAW 2002, 2003). These reports examine the potential for existence of cultural resources on the project sites through an examination of the available archival record and a systematic visual reconnaissance of the project area.

7.1 EXISTING CONDITIONS

7.1.1 AREA HISTORY AND CULTURE

NORTHERN VALLEY YOKUTS

The area comprising the greater Patterson area was home to the Northern Valley Yokuts. While little is known ethnographically, Yokuts tribal territory extended from the mid-San Joaquin Delta to the Mendota Hills and was bordered by the interior coastal range and the lower foothills. Their main water source was the lower San Joaquin River and its eastern tributaries. This area consisted of wetlands, which included tule marshes and marsh grasslands. The Northern Valley Yokuts lived along the San Joaquin River and its tributaries. Artifactual evidence from four sites in the northernmost part of the tribal area (but not in the greater Patterson area) indicate occupation after AD 1500. Pre-AD 1500 artifacts within some of the assemblages may be Miwok in origin.

There is no indication that the Northern Valley Yokuts lived in or around the immediate West Patterson project area. The closest approximate location was in the Merced area, to the southeast. Records, in the form of notations from the Spanish-Mexican period, mention settlements, ranging from two to three houses to 200-250 or more houses. These occupied the

tops of small mounds. These mounds were close to a major waterway and afforded protection from seasonal flooding.

In 1770, at the start of the Spanish-Mexican period, it is estimated that there were about 18,000 Yokuts total. As early as 1800, the Spanish began to explore the interior valleys. In the beginning, the Northern Valley Yokuts openly greeted the Spanish missionaries and soldiers. This changed when they were removed to the missions, which contributed to their demise. When the Mexican Period began in 1822, life did not improve for those who remained. However, the Indians managed to hold off Mexican settlements on their lands by hostile acts, at least until the 1840s. The death toll mounted after contact with European diseases, mainly malaria.

The Yokuts' demise took place after the American Gold Rush of 1849. While Yokuts territory was not a gold-producing area, the miners crossed it to reach the gold fields. The Yokuts were initially driven off their lands or killed if they resisted. The military chose not to intervene. After 1850, the Northern Valley Yokuts received some government land, but far from their native territory. By the 1910 census, the Yokuts population was reduced to 600, and by 1930 1,100 Yokuts are mentioned. There are no specific detailed records after 1930.

PATTERSON AREA HISTORY

Nearly 50 years before Patterson was established in California's Central Valley, the area was an old Spanish Land Grant known as Rancho Del Puerto. On January 30, 1844, the Mexican California Governor, Manuel Micheltoreno, made the rancho land grant in the names of Mariano and Pedro Hernandez. The Hernandez Land Grant extended from present-day Highway 33 to the San Joaquin River (west to east) and between Del Puerto Creek and Marshall Road (north to south). The rancho area lies approximately one mile east of the project area.

After the area became part of the United States, Samuel Reed and Ruben Wade claimed the land on January 7, 1855. President Abraham Lincoln issued a patent to the land on August 15, 1864, giving 13,340 acres to Reed and Wade. That land patent is on display at the Patterson Historical Society Museum. On June 18, 1866, Reed and Wade sold their grant to J.O. Eldredge for $5,000. Eldredge kept the land for two months before selling it to John D. Patterson for $5,400. Patterson had come to California in 1854 by sailing around Cape Horn. He brought Spanish Merino sheep, longhorn cattle, and racing horses to the Central Valley. He was one of the first men to serve on the Stanislaus County Election Board.

Patterson established the Patterson Ranch Company and bought an additional 5,122 acres. This new acreage was west of the Ranch Company headquarters, extending to the southwest corner of Section 30, or at the corner of Sperry and Ward avenues. After his death on March 7, 1902, ownership transferred to his brothers, Thomas and William Patterson. Thomas Patterson had moved to California from New York in 1888. He had been a Fresno banker before inheriting John D. Patterson's estate. Thomas and William sold their inheritance to the Ranch Company on May 16, 1908, for $540,000 in gold coin. There is no mention of what happened to William Patterson.

Thomas began the development of the Patterson Colony. The town was plotted by subdividing the land into ranches. Thomas wanted to make the town different from all other western towns. He decided to pattern the Colony after Washington, D.C. and Paris. This unique approach used a series of circles with streets radiating outward. The major streets were lined with palm, eucalyptus, and sycamore trees. Only the palm trees survive.

Patterson Colony was officially recorded with the *Stanislaus County Recorder* on December 13, 1909. It sprang to life as a tent city in early 1910, when the first settlers arrived from Sweden. In 1914, its founder, Thomas Patterson, died. Thomas' uncle, another John D. Patterson, moved to the area from Toronto, Canada. He became the Colony's manager, continuing Thomas' vision. Thomas' son, John D. "Jack" Patterson, still owned much of the land in 1980.

The first building built in Patterson Colony was the Patterson Ranch Company headquarters, which was also used as the Colony's first post office. Later, it was used by Thomas Patterson to sell his land to newly arriving settlers. It was initially built to be the central point of the town and resides on a circular piece of land, from where the original streets radiate outward. It was constructed between late 1909 and early 1910. Today, it is called the "Center Building" and houses the Patterson Historical Society Museum and the Patterson-Westley Chamber of Commerce. The building is also listed as a California State Historical Landmark. The Patterson Mercantile was also built in 1910. Today, it is the Century 21 Real Estate office.

On the eastern side of the central town circle are two small parks. These were initially the beginning of the ranchette lands. Thomas Patterson's vision was to extend the business section of the town westward from his central building and for the ranchettes to extend to the east. It is unclear how, or if, this vision was ever formalized, due to how the town is laid out today. However, the Central Building has front doors facing both east and west. Both parks appear to be only vestiges of their original design. South Park is designated as the "Veteran's Memorial Park."

The Patterson Water Company was formed on February 9, 1911. Thomas Patterson held most, if not all, of the water rights, because he owned the land. To entice settlers to the Colony, he offered one share of the water company for every acre of land purchased. Initially, the only crop that would grow was barley. Construction of the irrigation system also began in 1911. Over the course of the next 18 years, hand-dug canals eventually brought water from the San Joaquin River. The initial canals ended at present-day Highway 33, except for the water used by the Colony. It is unknown when the western side of Patterson received irrigation, or when the various lateral channels were constructed.

Most of the early streets in the Colony were named after either trees and bushes, or were numbered. Men's names were connected to various routes only on the outskirts of the Colony. One of these original streets was "Sperry Avenue;" Mr. Sperry was the superintendent of the old Rancho Del Puerto. Sperry Avenue connects Highway 33 with Interstate 5 and becomes Del Puerto Canyon Road to the west of the freeway.

7.1.2 Inventory Methods

Archival Research

EDAW's research of cultural resource issues for the WWMP and the Diablo Grande sewer line and lift station projects began with a record search of pertinent cultural resource information. This search was conducted at the Central California Information Center (CCC) of the California Historical Resources Information System (CHRIS) located at California State University, Stanislaus. The record search included a review of select publications and properties listed in the following sources:

- National Register of Historic Places (National Park Service 1996, and Computer Listings 1966 through July 2000),
- California Register of Historical Resources (State of California 2001),
- California Points of Historical Interest (State of California 1992 and updates),
- California Historical Landmarks (State of California 1996), and
- Directory of Properties in the Historical Resources Inventory (State of California 1976).

Additional background research for historic buildings and resources was conducted using the following sources:

- General Land Office Plat Map - Township 5 South, Range 8 East (1869) on file at the Bureau of Land Management Office, Sacramento,
- Stanislaus County Assessors Records on file at the Assessors Office, Modesto,

- Sanborn Fire Insurance Maps, and
- First American Real Estate Solutions commercial database.

The files maintained at the CCC contain information on previously conducted archaeological investigations that occurred in the vicinity of and within the project area. No sites have been previously formally recorded within the wastewater facility expansion area. Only three sites are known to be located within 1/4-mile of the facility. All three of these sites are adjacent to the San Joaquin River. Site CA-SRA-171, recorded by Lowe in 1971, documented the presence of several sets of human remains with associated ground and flaked stone tools, quartz crystals, and rectangular shell beads that had been impacted by the excavation of fill adjacent to the San Joaquin River. In 1978 Pope concluded that these mechanical excavation operations had completely destroyed the site. CA-SRA-122 is also an area containing human remains that has been impacted by mechanized equipment. Documentation of the third resource is in the form of a roughly defined area, lacking any description or other formal recondition (CCC file number 4001).

FIELD METHODS

EDAW archaeologists conducted a survey of the project areas proposed for the first-phase expansion that includes new wastewater disposal ponds near the wastewater treatment plant, wastewater collection lines to serve the West Patterson Business Park Master Development Plan Area, and the proposed Diablo Grande sewer line and lift station (EDAW 2002, 2003).

Because planning in the East-North and East-South General Plan buildout areas is still at a General Plan level, and the specific locations of the sewer lines have not yet determined, no pedestrian survey was conducted in these areas. Rather, only a records search and literature review were performed.

Previous cultural resource studies have been conducted in the project area for the Creekside Development Project (Peak & Associates 1993), the Diablo Grande Development Project (Holman and Associates 1990, Julian 1991), and the West Patterson Business Park Master Development Plan area (Holman and Associates 2002).

EDAW archaeologists conducted the field surveys following contemporary professional archaeological fieldwork standards consistent with the Secretary of the Interior's Standards and Guidelines for Identification of Cultural Resources (CAR 44720-23). When conducting the surveys, 7.5-minute U.S. Geological Survey (USGS) topographic maps and Global Positioning System (GPS) instrumentation were used to locate and orient the surveys in the

field. The GPS unit (with 5-meter accuracy) was also used to more accurately plot cultural resource site locations.

The archaeological survey was conducted during June and July 2002 and January 2003. Every effort was made to ensure complete survey coverage by using systematic pedestrian transects over the study area. However, two small residential parcels (APN #s 047-27-08 and 047-27-07) measuring approximately ½ acre each were not accessible for pedestrian survey. Visual inspection of these residential lots from the property's perimeter found them to be landscaped residential lots with low sensitivity for historic resources. A more detailed discussion of the survey methods can be found in the archaeological survey reports prepared by EDAW (2002, 2003).

7.1.3 RESULTS

EDAW archaeologists identified a total of 10 historic resources during their inventory of the proposed project areas. These potentially significant resources consisted of two historic refuse scatters (WP-1, WP-2) and eight potentially significant historic resources and buildings (WP-3, WP-4, WP-5, 2818 Olive Avenue, 2830 Olive Avenue, 1524 Sperry Avenue, Salado Creek, and Lateral 6S). Each of these resources has been documented in accordance with current professional standards and guidelines (Please refer to the Technical Reports in Appendix C). All of the identified historic resources have been evaluated for their significance and potential inclusion in the California Register of Historical Resources (CRHR). All identified cultural resources are recommended as not significant and ineligible for inclusion in the CRHR. Additional residences located on parcels 047-27-07 and -08 have been constructed within the last few years and do not meet the age requirement for significance or eligibility to the CRHR.

HISTORIC REFUSE SCATTERS

WP-1

WP-1 is situated along a terrace formed by a remnant oxbow of the San Joaquin River. The entire deposit is approximately 260 meters in length and 50 meters in width. It is primarily situated east of the City's wastewater treatment facility, with only a small portion (less than 10%) of the deposit area situated within the facility. Fragmented artifacts are dominated by glass bottle and jar fragments with a lesser percentage of ceramic and crockery. Time-specific items indicate that refuse was disposed of at this locale from the early- to mid-20th century. Inspection of excavated drainage channels within the wastewater facility adjacent to the refuse indicates that the deposit lacks subsurface components. This lack of depth coupled with a lack of association and a broad temporal span indicates that the refuse does not have the potential

to yield information important to further an understanding of history. WP-1 is not considered a significant historical resource.

WP-2

WP-2 is a light scatter of small ceramic and glass bottle fragments located in an area approximately 20 meters wide and 120 meters in length. Items indicative of a particular timeframe were not observed, and evidence of intensive refuse disposal was not observed on the surface or a newly excavated irrigation ditch that bisects the material. Therefore, given the low density of the debris and the lack of subsurface deposits, there does not appear to be the potential for data or information that may be important to furthering an understanding of history in the region. This deposit, therefore, is not considered a significant historical resource.

HISTORIC RESOURCES AND BUILDINGS

WP-3

WP-3 consists of the buildings at the 14500 Elm Avenue ranch complex. These buildings include a single-family residence, a dairy barn and associated milk house, a barn covered with corrugated metal, a shed, and numerous small pens and corrals. Assessors records indicate that these structures date from 1919, with the corrugated metal barn of more recent construction, possibly constructed as late as the 1940s. The configuration of the complex is consistent with a small-scale dairy operation. Integrity of the structures varies from good for the newer barn to poor for the collapsing barn structure erected in 1919. Although currently planted with row crops, the land surrounding the farmstead would have been planted in hay when it functioned as an operating dairy. Archival evidence could not be found linking the structures to a person or event of significance to the past. Given the level of integrity and a lack of association with persons or events of significance to the past, the site does not appear to be eligible for listing on the CRHR.

WP-4

WP-4 consists of the buildings at 14518 Elm Avenue, including a single-family residence and a detached garage with a shed roof. The single-story residence is a wood-framed building with deteriorating concrete/asbestos siding. The building style suggests that the structure was constructed in the late 1930s to 1940s. Architecturally, neither the residence nor the garage are representative of a unique style or method of construction. Archival evidence could not be

found linking the structures to a person or event of significance to the past. Therefore, the site does not appear to be eligible for listing on the CRHR.

WP-5

WP-5 consists of the buildings at 2006 Lemon Avenue, including a dairy barn and associated milk house. The barn is a woodframe building with a horizontal wood exterior cladding. The monitor roof is covered with corrugated metal overlaying wood shingles and features exposed rafters and a hay hood. A broken double-wide hinged main entry door is featured on the southern facade. A smaller sliding entry door is at the southwest corner of the building. Seven regularly spaced openings are on the eastern facade, with a hinged single entry door. The building is approximately 30 feet in height, and has a concrete foundation. The associated milk house is a woodframe building with a composite shiplap wood and concrete exterior surface. The side gable roof features wood shingles, now covered with moss, and exposed rafters with open eaves. A single-entry door is featured on the southern facade. A broken fixed window is on the northern facade. An extended roof, to the southwest corner of the dairy barn, attaches this building. There is an approximately 6-foot space between the two buildings.

These deteriorating buildings (barn and milk house) are not associated with a significant person, nor do they represent the work of a master, or display characteristics of a significant style of architecture. They sit alone on the parcel, are surrounded by row crops, and are currently used for storage and the disposal of debris. Although the structures represent an aspect of the historic dairy industry in Patterson, they lack integrity of feeling and setting of early dairy operations. This type of building occurs throughout the Patterson area and better examples are well documented. Therefore, neither structure appears to be a primary source of information, and are recommended not significant or eligible for inclusion in the CRHR.

2818 Olive Avenue

2818 Olive Avenue (APN: 047-28-15-000) is a two-story, woodframe building with horizontal exterior wood siding, and a cross-gable roof with an exterior-mounted brick chimney. The full-width brick porch is supported by simple square wood columns. The window treatments are a combination of fixed, bay, and sash. The connecting two-car garage structure also has an extra bay for workspace and is covered with corrugated metal. A combination of deciduous and conifer trees are dotted around the property. According to the owner, this home was constructed ca. 1916, and moved from Modesto, California. According to assessor's records, the home was built in 1925. The home has been extensively modified as evidenced by the

connecting garage structure and the brick porch. The assessor's office noted several thousand dollars worth of improvements for this property.

Four dilapidated ancillary buildings sit on this property. Each of the buildings is of woodframe construction with exterior wood siding. Three of the structures are sheds and feature gable roofs with deteriorating wood shingles. One of the structures is an old milking shed and features a shed roof with a corrugated metal covering. Each of these buildings are used for storage and are surrounded by farming equipment and debris. Although no exact date of construction was found for these ancillary buildings, the owner estimates that they were built between 1925 and 1940.

According to the owner, Mr. Charles Ferry, the property on which these buildings sit has been in their family for 80 years (C. Ferry, pers. comm., 2003). The field adjacent to the house is used for agricultural purposes, and is currently filled with hay. Corn, tomatoes, and alfalfa are also grown throughout the year. Although these buildings are associated with agricultural development in the vicinity of Patterson, none of them are significant within that context (Criterion A). The buildings are not associated with a historically significant person (Criterion B), nor do they represent the work of a master or display distinguishing architectural characteristics (Criterion C). In certain instances, buildings themselves can serve as important sources of information about historic construction styles (Criterion D); however, these types of buildings are well documented and do not appear to be sources of significant information. Currently, the ancillary buildings appear ready to collapse and are lacking integrity, thereby hindering their eligibility potential to the CRHR. The home has been heavily modified and having been moved to its current location. Lacking historic integrity of location, feeling, and design, this building does not appear to meet the eligibility criteria for inclusion in the CRHR.

2830 Olive Avenue

2830 Olive Avenue (APN: 047-28-15-000) is single-story woodframe building with a stucco exterior and a built-in garage. The cross-gabled roof and the gabled entry porch is shingled. Casement and sash windows are featured on this home. A porch with a corrugated metal roof and simple wood beam supports is attached on the eastern facade of the house, possibly by the owner. Although a different address, this house sits on the same property as 2818 Olive Avenue, and has the same parcel number. The assessor's office has no information about the building at this address; however, according to the owner, this house was built ca. 1940.

Little information could be found about this building, other than that provided by the property owner, Charles Ferry. The building does not appear to be associated with a historically significant person (Criterion B) and does not represent the work of a master

(Criterion C). This type of building is well documented and represented throughout Patterson, so it does not appear to be a source of primary information (Criterion D). Additionally, the lack of thorough documentation limits the building's potential to yield important information. Thus, this historical building does not appear to meet the eligibility criteria for inclusion in the CRHR.

1524 Sperry Avenue

1524 Sperry Avenue (APN: 021-27-06-000) is a shed with a woodframe and exterior board and batten siding. The moderately sloped gable roof features open eaves. Window openings, minus glazing, are featured on each facade. According to the owner, the shed was built ca. 1952, and was originally used to store hay. The building is currently used to store equipment and the surrounding area is littered with modern debris.

The shed structure is one part of a larger home site that is located outside the study area; however, the shed is closer to the proposed project area, approximately 15 feet south of Sperry Avenue. Although this building is in good condition, it is not significant within a particular historic context associated with Patterson (Criterion A). The shed is not known to be associated with a historically significant person (Criterion B), nor does it represent the work of a master or display distinguishing architectural characteristics (Criterion C). This type of building is otherwise well documented, and does not appear to be a source of primary information (Criterion D). This shed does not appear to meet the eligibility criteria for inclusion in the CRHR.

Salado Creek

Salado Creek was identified by Holman and Associates (2002) as a potential historic resource. Salado Creek is a natural watercourse and the archival research indicates that the section located within the study area may represent a manmade realignment. Historic maps (1855-1870) show that the creek once flowed northeast rather than completely northward in this area. It is believed that sometime between 1906 and 1912, an effort was made to change the course of the creek, probably for irrigation purposes and flood control.

The section of Salado Creek located within the project area (south of Sperry Avenue) no longer retains enough historic integrity to the period of this realignment to meet the criteria for eligibility for CRHR inclusion. Modern improvements, such as periodic maintenance and improvements of the roadway, rip-rap, and added abutments, have compromised the feeling of place and time and its ability to yield primary information (Criterion D). This realigned feature is not associated with historically significant persons (Criterion B), nor does it represent

the work of a master (Criterion C). This resource does not appear to meet the criteria to be eligible for inclusion in the CRHR.

Lateral 6S

Lateral 6S canal runs diagonally southeast underneath Sperry Avenue between Rogers Road and Baldwin Road. The portion of the canal located in the project area is underground, not visible, and therefore was not recorded. According to the West Stanislaus Irrigation District, most of this canal is piped. According to the assessment presented by Holman and Associates (2002) in its cultural resource investigation report, Lateral 6S is not seen on the 1916 USGS map but is shown on the 1953 USGS map update, qualifying it as a potentially significant historic resource. This canal is unlined for most of its length, except for a portion that crosses into the northern half of Section 26 of the 1953 USGS topographic map. This small portion is now lined with crumpling concrete slabs. Holman and Associates concluded that this resource was likely ineligible for inclusion on the CRHR due to a loss of integrity.

7.2 REGULATORY FRAMEWORK

The State CEQA Guidelines (§15064.5[a]) define historical resources as follows:

- A resource listed, or determined by the State Historical Resources Commission to be eligible for listing, in the CRHR.
- A resource included in a local register of historical resources, as defined in §5020.1(k) of the Public Resources Code, or identified as significant in an historical resource survey meeting the requirements of §5024.1(g) of the Public Resources Code.
- Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered to be an historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record.

Generally, a resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing on the CRHR (Pub. Res. Code SS5024.1, Title 14 CCR, §4852), including the following:

- is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

- is associated with the lives of persons important in our past;
- embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
- has yielded, or may be likely to yield, information important in prehistory or history.

The fact that a resource is not listed, or determined to be eligible for listing, in the CRHR; is not included in a local register of historical resources (pursuant to §5020.1(k) of the Public Resources Code); or is not identified in an historical resources survey (meeting the criteria in §5024.1(g) of the Public Resources Code) does not preclude a lead agency from determining that the resource may be an historical resource as defined in Public Resources Code sections 5020.1(j) or 5024.1.

CEQA guidelines also require consideration of unique archaeological resources (Section 15064.5). As used in Public Resource Code (Section 21083.2), a unique archaeological resource means an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

- contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information,
- has a special and particular quality such as being the oldest of its type or the best available example of its type, or
- is directly associated with a scientifically recognized important prehistoric or historic event or person.

In addition to meeting one or more of the above criteria, historical resources eligible for listing in the CRHR must retain enough of their historic character or appearance to be recognizable as historical resources and to convey the reasons for their significance. Integrity is evaluated with regard to the retention of location, design, setting, materials, workmanship, feeling, and association (Office of Historic Preservation 2001).

7.3 ENVIRONMENTAL IMPACTS

7.3.1 THRESHOLDS OF SIGNIFICANCE

REGULATORY CONTEXT

For purposes of this EIR, the project would result in a significant adverse impact on cultural resources if it would:

a) cause a substantial adverse change in the significance of a historical resource as defined in §15064.5,

b) cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5,

c) directly or indirectly destroy a unique paleontological resource or site or unique geologic feature, or

d) disturb any human remains, including those interred outside of formal cemeteries.

According to CEQA guidelines (California Code of Regulations, Title 14, 15064.5), a project with an effect that may cause a substantial adverse change in the significance of an historic resource is a project that may have a significant effect on the environment (California Code of Regulations, Title 14, 15064.5(b)). CEQA further states that a substantial adverse change in the significance of a resource means the physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historic resource would be materially impaired. Actions that would materially impair the significance of a historic resource are any actions that would demolish or adversely alter those physical characteristics of an historical resource that convey its historical significance and qualify it for inclusion in the CRHR or in a local register or survey that meet the requirements of section 5020.1(k) and 5024.1(g) of the Public Resources Code.

FIRST-PHASE EXPANSION

Impact 7-1

First-Phase Expansion - Subsurface Cultural Resources. *No known significant archaeologic or historic sites occur within the proposed project site. However, construction activities related to implementation of the wastewater master plan project could result in the disturbance of previously unknown subsurface cultural resources. This is a* ***potentially significant*** *impact.*

Based on both archival research and pedestrian field surveys, no evidence of significant prehistoric or historic resources was found to be present within any portion of the project site. No archaeological or historic resources listed on or eligible for inclusion on the National or California Registers of Historic Places are known to occur in any of these locations. Although the literature review and field surveys found no evidence of cultural resources within these areas, previously undiscovered subsurface cultural resources could be unearthed during construction of the expanded wastewater facilities. This inadvertent discovery could result in the demolition of or substantial damage to significant cultural resources. This is a potentially significant impact.

7.3.2 General Plan Buildout

Impact 7-2

General Plan Buildout - Unidentified Cultural Resources. *Based on archival research conducted for the General Plan Buildout areas, no known significant archaeological or historic resource sites occur within the proposed project area. No field surveys have been conducted in the General Plan Buildout area. The City of Patterson may consider construction of future percolation ponds in an area that has not been surveyed for cultural resources. Therefore, future construction activities could result in the demolition of or substantial damage to significant cultural resources. This is a* ***potentially significant*** *impact.*

Based on archival research conducted for the General Plan Buildout areas, no known significant archaeological or historic resource sites occur within the proposed project area. Both the archival research and pedestrian surveys were conducted for approximately 277 acres of the potential percolation pond sites. No significant cultural resources were identified as a result of these investigations. However, because no field surveys have been conducted in the General Plan Buildout area, and because the City of Patterson may consider construction of future percolation ponds in an area that has not been surveyed, the potential exists for unidentified significant cultural resources to be present in the General Plan Buildout areas. Therefore, future construction activities could result in the demolition of or substantial damage to significant cultural resources. This is a potentially significant impact.

7.4 Mitigation Measures

7.4.1 First-Phase Expansion

Mitigation measures for significant and potentially significant impacts are provided below.

7-1 **First-Phase Expansion - Construction Cessation If Resources Are Discovered During Ground-Disturbing Activities.** In the event that previously unknown archaeological

resources are discovered during any land alteration activities, the construction crew will immediately cease work in the immediate area. A qualified archaeologist approved by the City of Patterson will be consulted to evaluate the resource in accordance with state guidelines. Mitigation measures consistent with the State CEQA Guidelines will be devised and a mitigation plan submitted for approval by the City of Patterson. Any necessary archaeological excavation and monitoring activities will be conducted in accordance with prevailing professional standards. Mitigation, in accordance with a plan approved by the City, will be implemented before work within the area of the resource find begins.

In the event that human remains are discovered, the County Coroner will be contacted in accordance with §7050.5 of the State Health and Safety Code. As cited in §15064.5 of the State CEQA Guidelines, if the coroner determines that the remains represent Native American interment, the Native American Heritage Commission in Sacramento will be consulted to identify the most likely descendant(s) and the appropriate disposition of the remains. Consultation with descendants will occur as directed by the Commission.

7.4.2 General Plan Buildout

7-2 General Plan Buildout - Identify Cultural Resources Prior to and During Future Construction. The City will implement the following measures:

- Conduct archival research and pedestrian field surveys in all areas not previously subjected to cultural resources inventory procedures.
- Implement Mitigation Measure 7-1.

7.5 Level of Significance After Mitigation

Implementation of the mitigation measures outlined above would reduce any potential impacts of the proposed project on potentially significant cultural resources to a less-than-significant level. Following implementation of the above mitigation measures, no significant impacts related to the first-phase or future expansion for General Plan buildout would occur.

8 AIR QUALITY

This chapter includes a summary of local and regional air quality conditions and an analysis of potential air quality impacts associated with the proposed project. Mitigation measures are recommended, as necessary, to reduce potentially significant adverse air quality impacts. The information contained in this section is based, in part, on documents prepared by the San Joaquin Valley Air Pollution Control District (SJVAPCD), U.S. Environmental Protection Agency (U.S. EPA), California Air Resources Board (ARB), and National Oceanographic and Atmospheric Administration (NOAA).

8.1 EXISTING CONDITIONS

The proposed project site is located in the San Joaquin Valley Air Basin (SJVAB), which is under the jurisdiction of the SJVAPCD. Applicable air quality regulations and the physical factors affecting air quality conditions applicable to the proposed project site are discussed below.

8.1.1 TOPOGRAPHY, METEOROLOGY, AND DISPERSION

The dispersion of air pollution in an area is determined by such natural factors as topography, meteorology, and climate, along with atmospheric stability conditions and the presence of inversions. The factors affecting the dispersion of air pollution with respect to the SJVAB are discussed below.

TOPOGRAPHY

The SJVAB, which occupies the southern half of the Central Valley, is approximately 250 miles long and on average 35 miles wide. The Coast Ranges, which have an average elevation of 3,000 feet, are located on the western border of the SJVAB. The San Emigdi Mountains, which are part of the Coast Ranges, and the Tehachapi Mountains, which are part of the Sierra Nevada, are both located south of the SJVAB. The Sierra Nevada forms the eastern border of the SJVAB, extending in the northwest direction to Mt. Whitney, which has an elevation of 14,495 feet. The SJVAB is basically flat with a downward gradient in terrain to the northwest.

METEOROLOGY AND CLIMATE

The climate of the SJVAB is strongly influenced by the presence of mountain ranges. The mountain ranges to the west and south induce winter storms from the Pacific Ocean to release

precipitation on the western slopes, producing a partial rain shadow over the valley. In addition, the mountain ranges block the free circulation of air to the east, which results in the entrapment of stable air in the valley for extended periods during the cooler half of the year.

Winter in the SJVAB is characterized as mild and fairly humid, and the summer is hot, dry, and cloudless. The climate is a result of the topography and the strength and location of a semipermanent, subtropical high-pressure cell. During summer, the Pacific high-pressure cell is centered over the northeastern Pacific Ocean, resulting in stable meteorological conditions and a steady northwesterly wind flow. Upwelling of cold ocean water from below to the surface due to the northwesterly flow produces a band of cold water off the California coast. In winter, the Pacific high-pressure cell weakens and shifts southward, resulting in wind flow offshore, the absence of upwelling, and the occurrence of storms.

The annual temperature, humidity, precipitation, and wind patterns reflect the topography of the SJVAB and the strength and location of the semipermanent, subtropical high-pressure cell. Summer temperatures that often exceed 100° F and clear sky conditions are favorable to ozone (O_3) formation. Most of the precipitation in the valley occurs during more frequent periods of rainfall in winter. The winds and unstable atmospheric conditions associated with the passage of winter storms result in periods of low air pollution and excellent visibility. However, between winter storms, high pressure and light winds lead to the creation of low-level temperature inversions and stable atmospheric conditions, resulting in high carbon monoxide (CO) concentrations and particulate matter (PM). The orientation of the wind flow pattern in the SJVAB is parallel to the valley and mountain ranges. Summer wind conditions promote the transport of O_3 and ozone precursors from the Bay Area through the Carquinez Strait, a gap in the Coast Ranges, and low mountain passes such as Altamont Pass and Pacheco Pass.

With respect to the proposed project site, the City of Patterson is located in the northern portion of the SJVAB. The climate is semiarid with an annual normal precipitation of approximately 14 inches. January temperatures range from a normal minimum of 37° F to a normal maximum of 53° F. July temperatures range from a normal minimum of 61° F to a normal maximum of 95° F (NOAA 1992). The wind is predominantly from the north-northwest at 10 miles per hour (mph) (ARB 1994).

Atmospheric Stability and Inversions

Stability describes the resistence of the atmosphere to vertical motion. The stability of the atmosphere depends on the vertical distribution of temperature with height. When the temperature decreases vertically at 6° F per 1,000 feet, the atmosphere is "neutral." When the

lapse rate (change in temperature with respect to height) is greater than 6° F per 1,000 feet, the atmosphere is "unstable." When the lapse rate is less than 6° F per 1,000 feet, the atmosphere is "stable." Stability categories range from "extremely unstable" (Class A), through "neutral" (Class D), to "stable" (Class F). Unstable conditions typically occur during daytime hours when solar heating sufficiently warms the lower atmospheric layers. Under Class A stability conditions, large horizontal wind direction fluctuations coupled with large vertical mixing depths occur . Under Class B stability conditions, wind direction fluctuations and the vertical mixing depth are less pronounced because of a decrease in the amount of solar heating. Under Class C stability conditions, solar heating is weak along with horizontal and vertical fluctuations because of a combination of thermal and mechanical turbulence. Under Class D stability conditions, vertical motions are primarily generated by mechanical turbulence. Under Class E and Class F stability conditions, air pollution emitted into the atmosphere travels downwind with poor dispersion. The dispersive power of the atmosphere decreases with progression through the classes from A to F.

With respect to the SJVAB, Classes D through F are predominate during the late fall and winter because of cool temperatures and entrapment of cold air near the surface. March and August are transition months with equally occurring percentages of Class F and Class A. During the spring months of April and May and the summer months of June and July, Class A is predominant. The fall months of September, October, and November have comparable percentages of Class A and Class F.

An inversion is a layer of warmer air over a layer of cooler air. Inversions influence the mixing depth of the atmosphere, which is the vertical depth available for diluting air pollution near the ground, thus significantly affecting air quality conditions. The SJVAB experiences both surface-based and elevated inversions. The shallow surface-based inversions are present in the morning but are often broken by daytime heating of the air layers near the ground. The deep elevated inversions occur less frequently than the surface-based inversions but generally result in more severe stagnation. The surface-based inversions occur more frequently in the fall, and the stronger elevated inversions usually occur during December and January.

8.1.2 CRITERIA AIR POLLUTANTS

The ARB and U.S. EPA currently focus on five "criteria pollutants" as indicators of air quality: O_3, CO, nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and PM. A brief description of each criteria air pollutant, including information on adverse health effects and formation processes, is provided below.

OZONE

O_3 is a photochemical oxidant and the primary component of smog. O_3 is not directly emitted into the air but is formed through complex chemical reactions between precursor emissions of organic compounds and oxides of nitrogen (NO_X) in the presence of sunlight. Both organic compounds and NO_X are emitted by mobile (transportation) and stationary (industrial) sources. O_3 located in the upper atmosphere (stratosphere) acts in a beneficial manner by shielding the Earth from harmful ultraviolet radiation emitted by the sun. However, O_3 located in the lower atmosphere (troposphere) is a major health and environmental concern. Because sunlight and heat serve as catalysts for the reactions between O_3 precursors, peak O_3 concentrations typically occur during summer in the northern hemisphere.

The adverse health effects associated with exposure to O_3 pertain primarily to the respiratory system. Scientific evidence indicates that ambient levels of O_3 not only affect sensitive receptors, such as asthmatics and children, but healthy adults. Exposure to ambient levels of ozone ranging from 0.10 to 0.40 part per million (ppm) for 1–2 hours has been found to significantly alter lung functions by increasing respiratory rates and pulmonary resistance and impairing respiratory mechanics. Ambient levels of O_3 above 0.12 ppm are linked to symptomatic responses such as throat dryness, chest tightness, shortness of breath, headache, and nausea (U.S. EPA 2002).

CARBON MONOXIDE

CO is a colorless, odorless, and poisonous gas produced by incomplete burning of carbon in fuels, principally from mobile sources of pollution (e.g., cars, trucks). It is estimated that up to 78% of the nationwide CO emissions are from mobile sources. The other 22% consist primarily of CO emissions from forest fires, wood-burning stoves, incinerators, and industrial sources. Peak CO levels are often localized near areas with high concentrations of mobile sources and typically occur during calm conditions in the winter months.

CO enters the bloodstream through the lungs by combining with hemoglobin, which normally supplies oxygen to the cells. However, CO combines with hemoglobin much more readily than oxygen does, resulting in a drastic reduction in the amount of oxygen available to the cells. Adverse health effects associated with exposure to CO concentrations include dizziness, headaches, slow reflexes, and fatigue. CO exposure is especially harmful to individuals who suffer from cardiovascular and respiratory diseases (U.S. EPA 2002).

NITROGEN DIOXIDE

NO_2 is a brownish, highly reactive gas that is present in all urban environments. The major anthropogenic (human-made) sources of NO_2 are combustion devices, such as boilers, gas turbines, and mobile and stationary reciprocating internal combustion engines. Combustion devices primarily emit nitric oxide (NO), which reacts oxidatively in the atmosphere to form NO_2 (EPA 2002). The combined emissions of NO and NO_2 are referred to as NO_X, which are reported as equivalent NO_2. Because NO_2 is formed and depleted by reactions associated with photochemical smog, the NO_2 concentration in a particular geographical area may not be representative of the local NO_X emission sources.

Inhalation is the most common route of exposure to NO_2. The severity of the adverse health effects depend primarily on the concentration inhaled rather than the duration of exposure. An individual may experience a variety of acute symptoms, including cough, difficulty with breathing, vomiting, headache, and eye irritation during or shortly after exposure. After a period of approximately 4–12 hours, an exposed individual may experience chemical pneumonitis or pulmonary edema with breathing abnormalities, cough, hemoptysis, cyanosis, chest pain, and rapid heartbeat.

SULFUR DIOXIDE

SO_2 is produced by such stationary sources as coal and oil combustion, steel mills, refineries, pulp and paper mills, and nonferrous smelters. The major adverse health effects associated with SO_2 exposure pertain to the upper respiratory tract. SO_2 is a respiratory irritant with bronchoconstriction occurring with inhalation of SO_2 at 5 ppm or more. On contact with the moist mucous membranes, SO_2 produces sulfurous acid, which is a direct irritant. Concentration rather than duration of the exposure is an important determinant of respiratory effects. Exposure to high concentrations of SO_2 may result in edema of the lungs and respiratory paralysis.

PARTICULATE MATTER

Respirable particulate matter with a diameter of 10 micrometers or less is referred to as PM_{10}. PM_{10} consists of particulates directly emitted into the air, such as fugitive dust, soot, and smoke from mobile and stationary sources, construction operations, fires, and exposure of disturbed surfaces, and particulates formed in the atmosphere by condensation and/or transformation of SO_2 and reactive organic gases (U.S. EPA 2002). PM_{10} includes a subgroup of finer particles called $PM_{2.5}$, which have an aerodynamic diameter of 2.5 micrometers or less.

The adverse health effects associated with PM_{10} depend on the specific composition of the particulate matter. For example, health effects may be associated with metals, polycyclic aromatic hydrocarbons, and other toxic substances adsorbed onto fine particulates. Generally, adverse health effects associated with PM_{10} may result from both short-term and long-term exposure to elevated PM_{10} concentrations and may include breathing and respiratory symptoms, aggravation of existing respiratory and cardiovascular diseases, alterations in the body's immune system, carcinogenesis, and premature death (U.S. EPA 2002). $PM_{2.5}$ poses an increased health risk because it can deposit deep in the lung and contain substances that are particularly harmful to human health (ARB 2002b).

8.1.3 Regulatory Setting

Air quality at the proposed project site is regulated by several jurisdictions, including the U.S. EPA, ARB, City of Patterson, Stanislaus County, and SJVAPCD. The state, regional, and local jurisdictions develop rules, regulations, policies, or plans to achieve the goals and directives imposed through legislation that shall not supercede those developed by the U.S. EPA but may be more stringent.

National and State Ambient Air Quality Standards

Ambient air quality is described in terms of compliance with state and national standards. Ambient air quality standards indicate the air pollutant concentration considered safe for the protection of public health and welfare. These standards are designed to protect people who are sensitive to respiratory distress, such as asthmatics, the elderly, children, people already weakened by other disease or illness, and persons engaged in strenuous work or exercise. National Ambient Air Quality Standards (NAAQS) originally were established by U.S. EPA in 1971 for six air pollution constituents. The NAAQS have been periodically revised since 1971. Each individual state has the authority to add other pollutants, to require more stringent compliance, or to include different exposure periods. California Ambient Air Quality Standards (CAAQS) and NAAQS are listed in Table 8-1.

San Joaquin Valley Air Pollution Control District Regulations

The SJVAPCD is the agency primarily responsible for ensuring that NAAQS and CAAQS are not exceeded and that air quality conditions are maintained in the SJVAB. The responsibilities of the SJVAPCD include, but are not limited to, preparing plans for the attainment of ambient air quality standards, adopting and enforcing rules and regulations concerning sources of air pollution, issuing permits for stationary sources of air pollution, inspecting stationary sources of air pollution and responding to citizen complaints, monitoring ambient air quality and

Table 8-1
Ambient Air Quality Standards

California [1]		National [2]	
Air Pollutant	**Concentration [5]**	**Primary [3,5]**	**Secondary [4,5]**
Ozone	0.09 ppm, 1-hour average	0.12 ppm, 1-hour average 0.08 ppm, 8-hour average	0.12 ppm, 1-hour average 0.08 ppm, 8-hour average
Carbon monoxide	9 ppm, 8-hour average 20 ppm, 1-hour average	9 ppm, 8-hour average 35 ppm, 1-hour average	9 ppm, 8-hour average 35 ppm, 1-hour average
Nitrogen dioxide	0.25 ppm, 1-hour average	100 $\mu g/m^3$ annual	100 $\mu g/m^3$ annual
Sulfur dioxide	0.04 ppm, 24-hour average 0.25 ppm, 1-hour average	0.03 ppm, annual average 0.14 ppm, 24-hour average	0.5 ppm, 3-hour average
Suspended particulate matter (PM_{10})	30 $\mu g/m^3$ annual geometric mean 50 $\mu g/m^3$, 24-hour average	50 $\mu g/m^3$ annual arithmetic mean 150 $\mu g/m^3$, 24-hour average	50 $\mu g/m^3$ annual arithmetic mean 150 $\mu g/m^3$, 24-hour average
Suspended particulate matter ($PM_{2.5}$)	See note 6 below.	15 $\mu g/m^3$ annual arithmetic mean 65 $\mu g/m^3$, 24-hour average	15 $\mu g/m^3$ annual arithmetic mean 65 $\mu g/m^3$, 24-hour average
Lead	1.5 $\mu g/m^3$, 30-day average	1.5 $\mu g/m^3$ calendar quarter	1.5 $\mu g/m^3$ calendar quarter
Sulfates	25 $\mu g/m^3$, 24-hour average	--	--
Hydrogen sulfide	0.03 ppm, 1-hour average	--	--
Vinyl chloride	0.01 ppm, 24-hour average	--	--
Visibility-reducing particles	In sufficient amount to produce an extinction coefficient of 0.23 per kilometer-visibility of 10 miles or more (0.07 to 30 miles or more for Lake Tahoe) due to particles when the relative humidity is less than 70%.	--	--

[1] California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1-hour and 24-hour averages), nitrogen dioxide, suspended particulate matter (PM_{10}), and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. California Ambient Air Quality Standards are listed in the Table of Standards in §70200 of Title 17 of the California Code of Regulations.

[2] National standards (other than ozone, PM_{10}, and those based on annual averages or annual arithmetic means) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when 99% of the daily concentrations, averaged over 3 years, are equal to or less than the standard. For $PM_{2.5}$, the 24-hour standard is attained when 98% of the daily concentrations, averaged over 3 years, are equal to or less than the standard.

[3] National Primary Standards: the levels of air quality necessary, with an adequate margin of safety, to protect public health.

[4] National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

[5] The concentration is expressed in units in which it was promulgated where ppm = parts per million by volume and $\mu g/m^3$ = micrograms per cubic meter.

[6] On June 20, 2002, the ARB passed new, stricter standards for particulate matter. The newly adopted standards include PM_{10} annual-average standard of 20 $\mu g/m^3$, not to be exceeded, and new annual average $PM_{2.5}$ standard of 12 $\mu g/m^3$, not to be exceeded.

Source: ARB 2003

meteorological conditions, and implementing programs and regulations required by the federal Clean Air Act (CAA) and the California Clean Air Act (CCAA). In an attempt to achieve NAAQS and CAAQS and maintain air quality, the SJVAPCD has completed the following air quality attainment plans and reports: 1994 Ozone Attainment Demonstration Plan (amended in 2001), 1997 PM_{10} Attainment Demonstration Plan, 1997–1999 PM_{10} Progress Report, 2000 Ozone Rate of Progress Report, 2000 Annual Progress Report, and the 2000 Triennial Plan.

8.1.4 Ambient Air Quality

Existing Local Source Inventory

The Patterson area is characterized by agricultural, grazing, and urban/suburban land uses. Agricultural sources in the master plan area can include off-road equipment and irrigation water pumping stations that would generate exhaust emissions, along with farming activities or burning that can create substantial dust or soot emissions. Besides agricultural operations, few stationary emitting sources are in the project area. There is a crude pipeline operation approximately three miles south of Sperry Avenue along I-5 that is a major source of organic compounds; otherwise, there are no major commercial or industrial sources in the vicinity (ARB 2003). Other land uses in the master plan area cause minor emissions through small-scale commercial and rural residential activities.

Mobile sources in the project vicinity contribute to emissions in the area. Traffic on I-5 and area roadways routinely cause exhaust emissions and emissions from entrained dust on the roadways.

Throughout the remainder of the SJVAB, agricultural operations and mobile sources account for a substantial portion of ozone precursor and PM_{10} emissions. The majority of PM_{10} emissions in the valley are attributed to farming operations and airborne dust from paved and unpaved roads (SJVAPCD 2002). Managing growth of emissions from agricultural operations and emissions from all types of motor vehicle activity is an important component of the regional air quality attainment strategy. Industry and other stationary sources make up the remainder of the manmade emissions in the basin.

Ambient Air Quality Monitoring Data

Table 8-2 summaries the air quality data from 1999 to 2001 obtained from the Modesto air quality monitoring station. The Modesto air quality monitoring station is the closest to the proposed project site with sufficient data to meet U.S. EPA and/or ARB criteria for quality

assurance. In general, the ambient air quality measurements from the stations are representative of the air quality in the vicinity of the proposed project site.

Table 8-2
Summary of Annual Air Quality Data
Modesto-14th Street Air Quality Monitoring Station

	1999	2000	2001
Ozone (O_3)			
Maximum concentration (1-hour/8-hour average)	0.119/0.104	0.131/0.101	0.124/0.093
Number of days state standard exceeded	13	7	12
Number of days national 1-hour/8-hour standard exceeded	0/7	1/4	0/7
Carbon Monoxide (CO)			
Maximum concentration (1-hour/8-hour average)	11.4/6.36	8.0/5.98	7.8/6.03
Number of days state standard exceeded	0	0	0
Number of days national 1-hour/8-hour standard exceeded	0/0	0/0	0/0
Nitrogen Dioxide (NO_2)			
Maximum concentration (1-hour average)	0.103	0.079	0.087
Number of days state standard exceeded	0	0	0
Annual average (ppm)	0.022	0.019	0.018
Suspended Particulate - PM_{10}			
Maximum concentration	132	112	158
Number of days state standard exceeded	27	18	12
Number of days national standard exceeded	0	0	1
Suspended Particulate - $PM_{2.5}$			
Maximum concentration	108	77	95
Number of days federal national exceeded	11	5	3

ppm = parts per million by volume.
$\mu g/m^3$ = micrograms per cubic meter.

Source: ARB 2003, U.S. EPA2003

As noted in the table, the state (1-hour) and/or federal (1-hour/8-hour) O_3 standards were exceeded several times during the past 3 years, as were the standards for PM_{10} and $PM_{2.5}$. With respect to CO and NO_2, neither the state nor the national standards were exceeded from 1999 to 2001.

AIR QUALITY ATTAINMENT STATUS

Under the CCAA, the ARB is required to designate areas of the state as attainment, nonattainment, or unclassified with respect to applicable standards. An "attainment" designation for an area signifies that pollutant concentrations did not violate the applicable

standard in that area. A "nonattainment" designation indicates that a pollutant concentration violated the applicable standard at least once, excluding those occasions when a violation was caused by an exceptional event, as defined in the criteria. An "unclassified" designation signifies that the data do not support either an attainment or a nonattainment status. The CCAA divides districts into moderate, serious, and severe air pollution categories, with increasingly stringent control requirements mandated for each category.

Federal and state classifications for nonattainment areas are typically based on "design values" (maximum concentrations recorded at a monitoring station over a given period) and/or the region's ability to reach attainment within the timeframes established for each designation. For instance, under the federal classification system, areas designated "severe" nonattainment (i.e., design value of 0.180 to 0.191 ppm) have until November 15, 2005, to attain the federal 1-hour ozone standard, whereas areas designated "extreme" nonattainment (i.e., design value of 0.280 ppm and greater) must reach attainment by November 15, 2010. State ozone classifications are similar to federal classifications but are based solely on design values. Federal and state nonattainment classification systems have not been established for all criteria pollutants. The state and national attainment status designations pertaining to the SJVAB are summarized Table 8-3. The SJVAB is currently designated as a nonattainment area with respect to the state and national PM_{10} and ozone 1-hour standards. The attainment designations with respect to the $PM_{2.5}$ have not yet been determined.

Table 8-3
SJVAB Attainment Status Designations for San Joaquin County

Pollutant	National Designation	State Designation
Ozone, 1-hour	Nonattainment/extreme	Nonattainment/severe
Ozone, 8-hour	Designation to be determined	No state standard
PM_{10}	Nonattainment/serious	Nonattainment
$PM_{2.5}$	Designation to be determined	No state standard
CO - San Joaquin	Unclassified/attainment	Attainment
Nitrogen dioxide	Unclassified/attainment	Attainment
Sulfur dioxide - San Joaquin	Unclassified	Attainment
Lead (particulate)	No designation	Attainment
Hydrogen sulfide	No federal standard	Unclassified
Sulfates	No federal standard	Attainment
Visibility-reducing particulates	No federal standard	Unclassified

Source: ARB 2003

Despite the noteworthy air quality improvements over the past decade, the SJVAB failed to meet the previous federal O_3 standard deadline; thus, the valley was downgraded from nonattainment/serious to nonattainment/severe designation by U.S. EPA. The SJVAPCD is now required to submit a plan to the ARB that demonstrates that the valley will meet the O_3 standards by 2005, which would involve reducing the total emissions inventory by an additional 30%, or 300 tons per day. To avoid being faced with sanctions, the SJVAPCD voluntarily requested the federal government's worst air quality designation for ground-level O_3, which is the designation of nonattainment/extreme. With this designation, the new attainment date for the SJVAB would be 2010. A nonattainment/extreme designation is not a delay in implementing air pollution controls but allows the SJVAB the opportunity to benefit from improved pollution controls for industry and mobile source controls being implemented by other agencies without incurring immediate sanctions.

8.2 Environmental Impacts

8.2.1 Analysis Methodology

Air quality impacts associated with implementation of the WWMP fall into two major categories:

- Short-Term Construction Impacts: Emissions associated with proposed construction activities.
- Long-Term Operational Impacts: Emissions associated with the operation of the master plan components.

Implementation of the wastewater master plan would have the greatest potential effect on air quality during construction phases. During long-term operation of the proposed facilities, impacts would be primarily associated with the generation of regional emissions (reactive organic gases [ROG] and NO_X) and the potential generation of malodorous gases associated with the operation of the expanded wastewater treatment plant. Because long-term operations of the expanded treatment plant would not result in a substantial increase in vehicle trips (an increase of approximately 2 trips per day), the project's contribution to localized concentrations of CO concentrations from mobile sources would be minimal. Municipal wastewater treatment plants typically generate minimal amounts of hazardous air pollutants. The Patterson Wastewater Treatment Plant is not considered a major source of hazardous air pollutants (HAP) (ARB 2003). Consequently, the project's contribution to long-term localized concentrations of CO or hazardous air pollutants are considered less than significant and are not evaluated in this report.

8.2.2 SIGNIFICANCE CRITERIA/THRESHOLDS

For the purposes of this analysis, the SJVAPCD's thresholds of significance are used to determine if the project would result in a significant air quality impact. Based on the thresholds identified in the SJVAPCD's *Guide for Assessing and Mitigating Air Quality Impacts* (SJVAPCD 1998), significant air quality impacts would be determined as follows:

- **Short-term increases in regional criteria pollutants.** Construction impacts associated with implementation of the wastewater master plan would be considered significant if the feasible control measures for construction in compliance with Regulation VIII as listed in the SJVAPCD guidelines are not incorporated or implemented.
- **Long-term increases in regional criteria pollutants.** Regional (operational) impacts associated with implementation of the proposed wastewater master plan would be considered significant if master plan components generate emissions of ROG and NO_X that exceed 10 tons/year.
- **Increases in odorous emissions.** Odor impacts associated with the proposed wastewater master plan would be considered significant if it has the potential to frequently expose members of the public to objectionable odors.

8.2.3 FIRST-PHASE EXPANSION

Impact 8-1

First-Phase Expansion - Construction Related Short-Term Air Quality Impacts. *Construction activities associated with the first-phase expansion would result in the generation of NO_X, ROG, and PM_{10} emissions in addition to the potential airborne entrainment of asbestos associated with demolition of existing structures. This is a **significant** impact.*

The facilities proposed for construction include two advanced integrated pond systems (AIPS), up to 125 acres of percolation ponds, the associated equipment related to upgrading the wastewater treatment plant, construction of the Diablo Grande sewer line and lift station, and construction of sewer trunk lines in the West Patterson area. Construction of the proposed facilities would be expected to occur over a 12-month period.

Short-term construction emissions are typically generated by the use of heavy equipment, the transport of materials, and employee commute trips during construction. Construction-related emissions consist primarily of ROG, NO_X, and PM_{10}. Emissions of ROG and NO_X are generated primarily by the operation of gasoline- and diesel-powered motor vehicles and the application of architectural coatings. Emissions of PM_{10} are generated primarily by wind erosion of exposed graded surfaces. Construction-generated emissions would vary from day to

day, depending on the specific activities being conducted and meteorological conditions. In addition, the demolition of the existing farm-related structures and residential units located on potential percolation pond sites would potentially result in the airborne entrainment of asbestos from the disturbance of asbestos-containing materials that may exist in these older buildings. Asbestos is listed as a toxic air pollutant (TAC) by the ARB and as a HAP by the U.S. EPA. The risk of disease depends on the intensity and duration of exposure. Asbestos fibers when inhaled may remain in the lungs and are linked to such diseases as asbestosis, lung cancer, and mesotheliom (ARB 2003).

As previously discussed, the SJVAPCD's approach to CEQA analyses of short-term construction impacts is to require implementation of effective and comprehensive control measures in compliance with SJVAPCD Regulation VIII, rather than to require detailed quantification of emissions. All proposed construction activities are expected to comply with the SJVAPCD rules; however, the SJVAPCD specifically identifies measures for use as CEQA mitigation. Without implementing the recommended mitigation, construction emissions could have a significant air quality impact.

Impact 8-2

First-Phase Expansion - Regional Emissions Primarily Associated with Increased Vehicle Use. *The proposed project would generate increases in regional pollutants of ROG, NO_X, and PM_{10}, primarily associated with routine maintenance activities and employees commuting to and from the wastewater facility and the Diablo Grande lift station. To a lesser degree, regional increases in volatile organic compounds (VOCs) would occur due to the treatment process. Emissions produced by the proposed project would be below SJVAPCD significance thresholds. This is considered a* ***less-than-significant*** *impact.*

Long-term air quality impacts consist of emissions associated with the operation of the expanded wastewater treatment facility. ROG and NO_X are the regional pollutants of primary concern in the SJVAB. Operational emissions of ROG and NO_X associated with the expanded wastewater facilities would be primarily associated with increases in mobile source emissions related to routine maintenance activities and employees commuting to and from the proposed facility sites. Additional minor increases in regional emissions would also occur from the evaporation of VOCs during the collection, treatment, and storage of wastewater influent. Increased energy demand associated with the operation of the proposed facilities would also result in minor increases in regional emissions. The operational emissions attributable to these sources are discussed separately below.

STATIONARY SOURCE EMISSIONS - INCREASED ENERGY DEMAND

The operation of the expanded facilities, including the Diablo Grande sewer line would require the use of additional pumps and motors, all of which would be electrically powered.

This electrical equipment would result in indirect offsite emissions of criteria pollutants associated with the generation of electricity. However, because emissions associated with electricity generation either occur at plants that are outside the SJVAB or are offset through the use of pollution credits, resultant increases in stationary source emissions attributable to increased electrical demand are considered less than significant.

STATIONARY SOURCE EMISSIONS - DIESEL-POWERED EQUIPMENT

The proposed project would include replacement of the City's existing 200-kW backup generator with a diesel-powered 400-kW backup emergency-use power generator at the wastewater treatment facility. The project would also include a propane-powered backup emergency-use generator (size not yet determined) at the Diablo Grande lift station. These generators would be used in the case of a power outage. Operation of the backup generators would occur on an intermittent and as-needed basis and would be subject to SJVAPCD regulations and permitting requirements for the operation of stationary emission sources.

As part of the district permitting requirements, operation of the backup generators would be limited to a maximum of 200 hours per year. In addition, any potential increases in operational emissions in excess of the SJVAPCD's New Source Review Offset Thresholds must be offset. Operational emissions from stationary sources would, therefore, not exceed the annual threshold of 10 tons/year for each of the ozone precursor pollutants, ROG and NO_X. As a result, emissions associated with stationary sources, including backup generators, are typically not considered to have a significant regional air quality impact (SJVAPCD 1998b). Because the backup generator would be used on an intermittent and as-needed basis, limited to a maximum of 200 hours annually, emissions from these sources are anticipated to have only a minor contribution to total project-related operational emissions.

EVAPORATIVE WASTEWATER TREATMENT EMISSIONS

Evaporative emissions of VOCs (also referred to as ROGs) can occur when high levels of VOCs are contained in wastewater influent. Industrial activities typically contribute a majority of the VOCs commonly found in wastewater influent, often associated with the use of paint solvents, cleaning solutions, degreasing solutions, gasoline, and pesticides. Wastewater generated by residential, institutional, and commercial activities typically contain only trace levels of VOCs. Source control measures are often considered the most effective method of reducing concentrations of VOCs in wastewater influent from industrial facilities. With incorporation of industrial source control measures, evaporative emissions of VOCs from public wastewater treatment facilities are typically minor and do not result in a substantial contribution to regional ozone formation (U.S. EPA 19915).

The U.S. EPA has established pretreatment standards for the discharge of industrial pollutants to publicly owned wastewater treatment facilities as part of its National Pretreatment Program. In California, the Regional Water Quality Control Board (RWQCB) implements this program. Once the RWQCB determines that a publicly owned wastewater treatment facility meets the criteria for regulation under this pretreatment program, it modifies the operator's waste discharge requirements (WDRs) to require the operator to develop a local pretreatment program. The local program is subject to review and approval by the RWQCB. The City would be required to obtain revisions to its current WDRs from the RWQCB before expansion of its wastewater treatment facility. If the City's treatment plant is determined to be subject to the pretreatment program, the revised WDRs would require the City to develop a pretreatment program to control industrial pollutants, including VOCs. As a result, VOC concentrations in the wastewater influent at the wastewater treatment plant is anticipated to be minor. Consequently, evaporative emissions of VOCs associated with the operation of the proposed wastewater treatment facilities are, likewise, anticipated to be minor and are expected to result in only a minor contribution to total project-related emissions.

Mobile Source Exhaust Emissions

Operation of the expanded facilities would result in increased use of motor vehicles, primarily associated with employees traveling to and from the proposed wastewater treatment facilities and routine maintenance and inspection activities. Operation of the proposed facilities would likely require the addition of approximately two full-time employees. Assuming an average of two trips per day per employee, operation of the proposed facilities would result in a maximum of approximately 1,460 employee trips annually. Assuming an average trip length of 10 miles, the proposed facilities would result in increased mobile source emissions of approximately 0.01 tons/year of ROG and NO_X. In comparison to existing operations, implementation of the proposed project is not anticipated to result in a substantial change in routine onsite, maintenance- and inspection-related mobile source activities.

Total Operational Emissions

Because the proposed equipment at the plant and the Diablo Grande lift station would be electrically powered (with the exception of the emergency generators), increases in regional pollutants associated with the operation of the proposed facilities would be primarily the result of increased vehicle use associated with employees commuting to and from the proposed facilities. Mobile source emissions have been estimated at less than 0.01 tons/year for each of the ozone precursor pollutants, ROG and NO_X. Additional emissions from stationary sources and evaporative emissions from wastewater influent would also occur. However, emissions from these sources would result in only minor contributions to total project-generated emissions. As a result, total operational emissions of ROG and NO_X would not be anticipated

to exceed the SJVAPCD's threshold of 10 tons/year. Consequently, increases in regional emissions associated with the operation of the proposed facilities would be considered less than significant.

Impact 8-3

First-Phase Expansion - Long-Term Odor Impacts. *The proposed project would result in increased odor-generating potential associated with the operation of the wastewater facility due to the increased area of proposed percolation ponds that could affect nearby residents and places of assembly. This is a* ***potentially significant*** *impact.*

Increased emissions of odorous compounds associated with the proposed project would be primarily associated with the operation of the proposed wastewater facilities. Odors from domestic wastewater are typically a result of anaerobic biological activity in the sewer collection and wastewater treatment systems. Odors are most prevalent during warm weather conditions (approximately 70° F and higher), which favor a more rapid multiplication of the anaerobic bacteria. In addition, sewage containing industrial wastes may have odor problems compounded by organic gases from waste chemicals added to the sewer system. The anaerobic decomposition of compounds containing nitrogen and sulfur results in a number of gases, including hydrogen sulfide, ammonia, carbon dioxide, methane, nitrogen, oxygen, and hydrogen. Although many different combinations of gases can occur at any given time, the most offensive odors associated with domestic wastewater are typically the result of emissions of hydrogen sulfide gas.

The elements of a wastewater treatment facility most likely to generate odors typically include storage areas in which wastewater influent (i.e., untreated wastewater) or solids are open to the air and/or stored for extended periods of time. Major sources of odors typically include the influent pump stations, mechanical screens, and grit removal chambers. Additional sources of minor odors would also include sludge-handling activities and stockpiled materials from the mechanical screen and grit removal chambers. Storage and percolation ponds for treated effluent tend to generate fewer odors than those generated by the treatment facility, because the effluent in the storage ponds has already been treated.

During high winds, odors generated at treatment plants are usually diluted. However, during light or calm wind conditions, potential odor impacts are high because dilution is minimized. When these odors are strong, or when a slight breeze exists, odors can be transmitted over long distances. Potential increases in odors may be offset by design and/or operational procedures, including the use of chemicals and incorporation of additional treatment technologies. For example, the AIPS can result in less odor than traditional treatment processes. Most odors are generated in the anaerobic zone. The aerobic zone of the facultative ponds can create a cap that inhibits odors from the anaerobic zone from escaping to the atmosphere.

The City is considering, and this EIR is analyzing, several alternative locations for the new percolation ponds. In addition, the project would increase the amount of wastewater treated by the facility. Odors are generally not considered a nuisance unless they are detected by someone who finds them objectionable. No complaints of odor nuisance have been received by City wastewater treatment facility staff for at least six years (City of Patterson 2003). All of the alternative pond sites are located within one mile of residential dwellings and places of assembly as shown in Exhibit 8-1. Therefore, resultant odors could potentially be detectable at these residences and could result in a significant nuisance. Consequently, increases in odorous emissions associated with the operation of the proposed wastewater facilities would be considered a potentially significant impact.

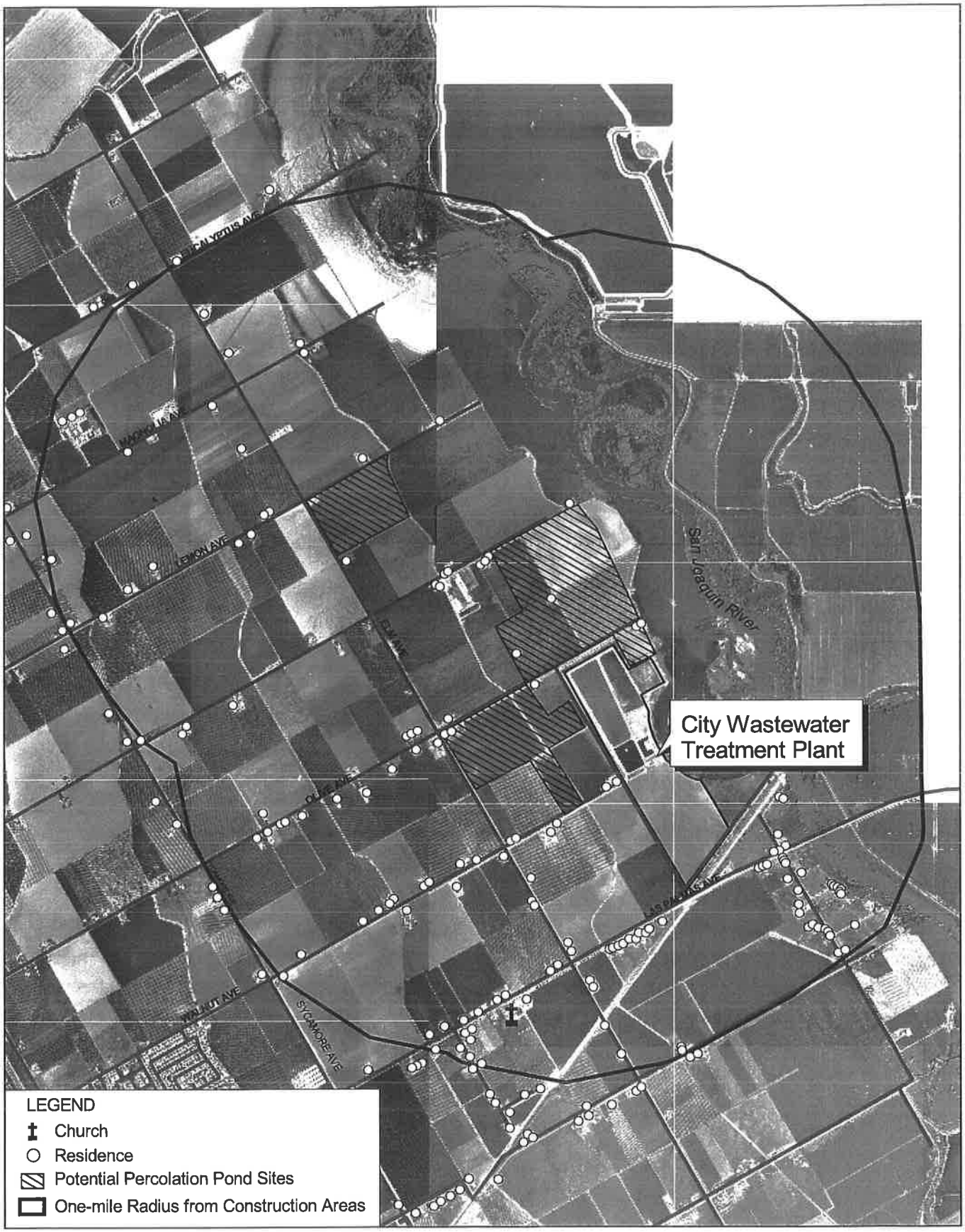
8.2.4 General Plan Buildout

Impact 8-4

General Plan Buildout - Construction-Related Short-Term Air Quality Impacts. *Construction activities associated with future wastewater treatment facility expansions to serve General Plan buildout would result in the generation of NO_X, ROG, and PM_{10} emissions in addition to the potential airborne entrainment of asbestos associated with demolition of existing structures. This is a* ***significant*** *impact.*

Short-term construction emissions are typically generated by the use of heavy equipment, the transport of materials, and employee commute trips during construction. Construction-related emissions consist primarily of ROG, NO_X, and PM_{10}. Emissions of ROG and NO_X are generated primarily by the operation of gasoline- and diesel-powered motor vehicles and the application of architectural coatings. Emissions of PM_{10} are generated primarily by wind erosion of exposed graded surfaces. Construction-generated emissions would vary from day to day, depending on the specific activities being conducted and meteorological conditions. In addition, the demolition of the existing farm-related structures and residential units located on potential percolation pond sites would potentially result in the airborne entrainment of asbestos from the disturbance of asbestos-containing materials that may exist in these older buildings. Asbestos is listed as a TAC by the ARB and as a HAP by the EPA. The risk of disease depends on the intensity and duration of exposure. Asbestos fibers when inhaled may remain in the lungs and are linked to such diseases as asbestosis, lung cancer, and mesotheliom (ARB 2003).

As previously discussed, the SJVAPCD's approach to CEQA analyses of short-term construction impacts is to require implementation of effective and comprehensive control measures in compliance with SJVAPCD Regulation VIII, rather than to require detailed quantification of emissions. All proposed construction activities are expected to comply with the SJVAPCD rules; however, the SJVAPCD specifically identifies measures for use as CEQA



Sensitive Receptors Within One Mile of Proposed Facilities

EXHIBIT 8-1

City of Patterson Wastewater Master Plan EIR
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mitigation. Without implementing the recommended mitigation, construction emissions could have a significant air quality impact.

Impact 8-5

General Plan Buildout - Regional Emissions Primarily Associated with Increased Vehicle Use. *Expansion of the City's wastewater treatment facilities to accommodate General Plan buildout would generate increases in regional pollutants of ROG, NO_X, and PM_{10}, primarily associated with routine maintenance activities and employees commuting to and from the wastewater facility. To a lesser degree, regional increases in VOCs would occur due to the treatment process. Emissions produced by the proposed project would be below SJVAPCD significance thresholds. This is considered a* ***less-than-significant*** *impact.*

Long-term air quality impacts consist of emissions associated with the operation of the expanded wastewater treatment facility to accommodate General Plan buildout. ROG and NO_X are the regional pollutants of primary concern in the SJVAB. Operational emissions of ROG and NO_X associated with the expanded wastewater facilities would be primarily associated with increases in mobile source emissions related to routine maintenance activities and employees commuting to and from the proposed facility sites. Additional minor increases in regional emissions would also occur from the evaporation of VOCs during the collection, treatment, and storage of wastewater influent. Increased energy demand associated with the operation of the proposed facilities would also result in minor increases in regional emissions. The operational emissions attributable to these sources are discussed separately below.

STATIONARY SOURCE EMISSIONS - INCREASED ENERGY DEMAND

The operation of the expanded facilities would require the use of additional pumps and motors, all of which would be electrically powered. This electrical equipment would result in indirect offsite emissions of criteria pollutants associated with the generation of electricity. However, because emissions associated with electricity generation either occur at plants that are outside the SJVAB or are offset through the use of pollution credits, resultant increases in stationary source emissions attributable to increased electrical demand are considered less than significant.

STATIONARY SOURCE EMISSIONS - DIESEL-POWERED EQUIPMENT

The City is proposing to replace the existing 200-kW emergency backup generator with a 500-kW backup generator. No other pieces of diesel-powered equipment would be anticipated for expansion of the City's wastewater treatment facility to accommodate General Plan buildout. The backup emergency-use power generators would only be used in the case of a power outage. Their operation would occur on an intermittent and as-needed basis and would be

subject to SJVAPCD regulations and permitting requirements for the operation of stationary emission sources.

As part of the district permitting requirements, potential increases in operational emissions in excess of the SJVAPCD's New Source Review Offset Thresholds must be offset. Operational emissions from stationary sources would, therefore, not exceed the annual threshold of 10 tons/year for each of the ozone precursor pollutants, ROG and NO_X. As a result, emissions associated with stationary sources, including backup generators, are typically not considered to have a significant regional air quality impact (SJVAPCD 1998b). Because backup generators are used on an intermittent and as-needed basis, emissions from this source are anticipated to have only a minor contribution to total project-related operational emissions.

EVAPORATIVE WASTEWATER TREATMENT EMISSIONS

Evaporative emissions of VOCs (also referred to as ROGs) can occur when high levels of VOCs are contained in wastewater influent. Industrial activities typically contribute a majority of the VOCs commonly found in wastewater influent, often associated with the use of paint solvents, cleaning solutions, degreasing solutions, gasoline, and pesticides. Wastewater generated by residential, institutional, and commercial activities typically contain only trace levels of VOCs. Source control measures are often considered the most effective method of reducing concentrations of VOCs in wastewater influent from industrial facilities. With incorporation of industrial source control measures, evaporative emissions of VOCs from public wastewater treatment facilities are typically minor and do not result in a substantial contribution to regional ozone formation (U.S. EPA 1991).

The U.S. EPA has established pretreatment standards for the discharge of industrial pollutants to publicly owned wastewater treatment facilities as part of its National Pretreatment Program. In California, RWQCB implements this program. Once the RWQCB determines that a publicly owned wastewater treatment facility meets the criteria for regulation under this pretreatment program, it modifies the operator's WDRs to require the operator to develop a local pretreatment program. The local program is subject to review and approval by the RWQCB. The City would be required to obtain revisions to its WDRs from the RWQCB before each expansion phase. If the City's treatment plant is determined to be subject to the pretreatment program, the revised WDRs would require the City to develop a pretreatment program to control industrial pollutants, including VOCs. As a result, VOC concentrations in the wastewater influent at the wastewater treatment plant is anticipated to be minor. Consequently, evaporative emissions of VOCs associated with the operation of the proposed wastewater treatment facilities are, likewise, anticipated to be minor and are expected to result in only a minor contribution to total project-related emissions.

MOBILE SOURCE EXHAUST EMISSIONS

Operation of the expanded facilities to serve General Plan buildout would result in increased use of motor vehicles, primarily associated with employees traveling to and from the proposed wastewater treatment facilities and routine maintenance and inspection activities. Operation of the expanded facilities may require up to two additional full-time employees, in addition to the two new employees anticipated for the first-phase expansion. Assuming an average of two additional trips per day per employee, operation of the City's facilities at full buildout would result in a maximum of approximately 2,920 additional employee trips over existing conditions. Assuming an average trip length of 10 miles, the proposed facilities would result in increased mobile source emissions of approximately 0.02 tons/year of ROG and NO_X. In comparison to existing operations, implementation of the proposed project is not anticipated to result in a substantial change in routine onsite, maintenance- and inspection-related mobile source activities.

TOTAL OPERATIONAL EMISSIONS

Because the proposed equipment at the plant would be electrically powered (with the exception of any additional emergency generators that might be needed), increases in regional pollutants associated with the operation of the proposed facilities would be primarily the result of increased vehicle use associated with employees commuting to and from the proposed facilities. The increase in mobile source emissions has been estimated at less than 0.02 tons/year over existing conditions for each of the ozone precursor pollutants, ROG and NO_X. Additional emissions from stationary sources and evaporative emissions from wastewater influent would also occur. However, emissions from these sources would result in only minor contributions to total project-generated emissions. As a result, total operational emissions of ROG and NO_X would not exceed the SJVAPCD's threshold of 10 tons/year. Consequently, increases in regional emissions associated with the operation of the builtout wastewater treatment facilities would be considered less than significant.

Impact 8-6

General Plan Buildout - Long-Term Odor Impacts. *Expansion of the wastewater treatment facilities to serve buildout of the General Plan would result in increased odor-generating potential due to the increased area of proposed percolation ponds that could affect nearby residents and places of assembly. This is a* ***potentially significant*** *impact.*

Increased emissions of odorous compounds associated with the proposed project would be primarily associated with the operation of the proposed wastewater facilities. During high winds, odors generated at treatment plants are usually diluted. However, during light or calm wind conditions, potential odor impacts are high because dilution is minimized. When these odors are strong, or when a slight breeze exists, odors can be transmitted over long distances.

Potential increases in odors may be offset by design and/or operational procedures, including the use of chemicals and incorporation of additional treatment technologies.

The City is considering, and this EIR is analyzing, several alternative locations for the new percolation ponds. In addition, the project would increase the amount of wastewater treated by the facility. Odors are generally not considered a nuisance unless they are detected by someone who finds them objectionable. No complaints of odor nuisance have been received by City wastewater treatment facility staff for at least six years (City of Patterson 2003). All of the alternative pond sites are located within one mile of residential dwellings and places of assembly as shown in Exhibit 8-1. Therefore, resultant odors could potentially be detectable at these residences and could result in a significant nuisance. Consequently, increases in odorous emissions associated with the operation of the proposed wastewater facilities would be considered a potentially significant impact.

8.3 MITIGATION MEASURES

8.3.1 FIRST-PHASE EXPANSION

No mitigation measures are necessary for the following less-than-significant impacts.

8-2: First-Phase Expansion - Regional Emissions Primarily Associated with Increased Vehicle Use

Mitigation measures for significant and potentially significant impacts are provided below.

8-1: First-Phase Expansion - Regional Criteria Pollutant Reduction Measures. The following mitigation measures, including those recommended by the SJVAPCD, will be incorporated into the project to reduce short-term construction emissions:

- All disturbed areas, including storage piles, which are not being actively used for construction purposes, shall be effectively stabilized to limit dust emissions using water, chemical stabilizer/suppressant, or vegetative ground cover.
- All onsite unpaved roads and offsite unpaved access roads used for ongoing construction activities shall be effectively stabilized to limit dust emissions using water or chemical stabilizer/suppressant.

- All land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activities shall be effectively controlled to limit fugitive dust emissions by applying water or by presoaking.
- With the demolition of buildings, all exterior surfaces of the building shall be wetted during demolition.
- When materials are transported offsite, all material shall be covered, effectively wetted to limit visible dust emissions, or at least six inches of freeboard space from the top of the container shall be maintained.
- All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at least once every 24 hours when operations are occurring. (The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. Use of blower devices is expressly forbidden.)
- Following the addition of materials to, or the removal of materials from, the surfaces of outdoor storage piles, said piles shall be effectively stabilized to limit fugitive dust emissions using sufficient water or chemical stabilizer/suppresant.
- Onsite vehicle speeds on unpaved roads shall be limited to 15 mph.
- Sandbags or other erosion control measures shall be installed to prevent silt runoff to public roadways from adjacent project areas with a slope greater than 1%.
- Wheel washers shall be installed for all exiting trucks and equipment, or wheels shall be washed to remove accumulated dirt before leaving the site.
- Excavation and grading activities shall be suspended when winds exceed 20 mph.
- Areas subject to excavation and grading at any one time shall be limited to the fullest extent possible.
- Onsite equipment shall be maintained and properly tuned in accordance with manufacturers' specifications.
- When not in use, onsite equipment shall not be left idling.
- Alternative fueled or catalyst-equipped diesel construction equipment, or NO_X- or PM_{10}-controlled equipment shall be used, where possible.
- Before demolition of any existing structures, an asbestos survey shall be completed to identify any asbestos-containing building materials. Asbestos-

containing materials shall be abated before and/or during demolition, in accordance with state and/or local regulatory requirements.

8-3 First-Phase Expansion - Airborne Odor Reduction Measures. The following mitigation measures will be incorporated into the City's wastewater treatment expansion project to reduce potential emissions of airborne odors:

- Before final design, the City of Patterson will ensure that appropriate engineering controls have been incorporated into the design and construction of the proposed wastewater treatment and conveyance facilities to minimize the production of unpleasant odors. Engineering controls to diminish odors could include, but would not be limited to, covering the headworks and/or prechlorinating at the headworks use of chemical additives to mask odors, or installing systems to collect odiferous air and remove unpleasant odors (e.g., air scrubber).
- During operation of the expanded wastewater treatment and conveyance facilities, the City of Patterson will ensure that engineering controls designed to suppress odors are functioning properly by periodically evaluating odor levels adjacent to the facilities. Should offensive odors be present, the City will take appropriate action to correct them to the extent practical.

8.3.2 General Plan Buildout

No mitigation measures are necessary for the following less-than-significant impacts.

8-5: General Plan Buildout- Regional Emissions Primarily Associated with Increased Vehicle Use

Mitigation measures for significant and potentially significant impacts are provided below.

8-4 General Plan Buildout - Regional Criteria Pollutant Reduction Measures. The City will implement Mitigation Measure 8-1.

8-6 General Plan Buildout - Airborne Odor Reduction Measures. The City will implement Mitigation Measure 8-3.

8.4 LEVEL OF SIGNIFICANCE AFTER MITIGATION

Implementing Mitigation Measures 8-1 and 8-4 would reduce impacts resulting from emissions associated with construction activities to a less-than-significant level. Implementing Mitigation Measures 8-3 and 8-6 would keep odors to a minimum. Although the frequency of occurrence and duration of exposure to odors would be substantially reduced, detectable levels of odorous emissions at nearby residences would still be expected to occur on an occasional basis given the close proximity of nearby residences. As a result, potential increases in odorous emissions would be considered a significant and unavoidable impact.

9 WATER QUALITY AND SURFACE HYDROLOGY

On October 31, 2002, an Initial Study (IS) was prepared for the Patterson Wastewater Master Plan, and circulated with the Notice of Preparation (NOP). The IS and NOP are included in Appendix A of this EIR. The IS concluded that certain hydrology and water quality impacts related to the Wastewater Master Plan would be less-than-significant, in some cases following incorporation of the mitigation measures included in the IS. Hydrology and water quality issues scoped out of this EIR include: effects on groundwater supply and recharge; substantial alteration of drainage patterns which would result in substantial erosion or siltation; storm water runoff; placement of housing in a 100-year flood hazard area; exposure of people to a significant risk involving flooding; and, inundation by seiche, tsunami, or mudflow. These issues, therefore, are not discussed further in this EIR.

This chapter describes the existing groundwater quality and groundwater and surface hydrology characteristics in the vicinity of the Patterson wastewater treatment plant to establish a baseline against which potential impacts of the Patterson Wastewater Master Plan may be compared. This chapter then evaluates the impacts of the Patterson Wastewater Master Plan project on groundwater quality and on surface water quality and hydrology of the San Joaquin River. The information presented in this Chapter is based on the following technical reports, which are included in Appendix B of this EIR:

- *Report of Background Groundwater Quality Study and Evaluation of Future Impacts Due to Anticipated Development Within the City of Patterson Wastewater Service Area* (Lee & Ro 2003a);
- *Report of Waste Discharge, City of Patterson Wastewater Treatment Plan Expansion, Phase I Construction 2003-2004, Phase II Construction 2007-2008* (Lee & Ro 2003b); and,
- *Hydraulic Analysis Patterson WWTP Expansion* (MBK Engineers 2003).

9.1 EXISTING CONDITIONS

9.1.1 REGULATORY FRAMEWORK

REGIONAL WATER QUALITY CONTROL BOARD

In California, the nine Regional Water Quality Control Boards, under the supervision of the State Water Resources Control Board (SWRCB), are responsible for protecting surface, ground, and coastal waters throughout the state. These regional boards develop standards restricting the amount of pollutants that can be discharged into the ground or into a water

restricting the amount of pollutants that can be discharged into the ground or into a water body, and enforce these standards by requiring proper authorization before discharges of potential waterborne pollutants. The Patterson wastewater treatment facility is under the jurisdiction of the Central Valley Regional Water Quality Control Board (RWQCB), which is responsible for implementing state and federal water quality protection guidelines in the vicinity of the project area. The RWQCB implements the Water Quality Control Plan (Basin Plan) (RWQCB 1994). The Basin Plan, a master policy document for managing water quality issues in the region, establishes beneficial water uses for waterways and water bodies within the region. Beneficial uses of surface waters in the Central Valley include contact water recreation, noncontact water recreation, industrial service supply, irrigation supply, navigation, shellfish harvesting, fishing, and preservation of rare and endangered species. Beneficial uses of the groundwater aquifer include municipal and domestic supply, industrial process supply, industrial service supply, and agricultural supply.

The San Joaquin River, which drains the northern portion of the San Joaquin Valley, carries substantial amounts of agricultural return water or drainage (RWQCB 1994). The San Joaquin River in the vicinity of the City of Patterson is designated as "impaired" by the RWQCB for numerous pollutants under Clean Water Act Section 303(d) (RWQCB 1998). The existing 1998 303(d) list indicates that the San Joaquin River is impaired for the following pollutants: boron, chlorpyrifos, DDT, diazinon, electrical conductivity, group A pesticides, selenium, and unknown toxicity. Agriculture has been identified as the source for each of these pollutants (with the exception of unknown toxicity).

Treatment Requirements

If not properly treated, wastewater can reduce the quality of surface water and groundwater aquifers. Under the federal Clean Water Act, discharges to surface waters (e.g., San Joaquin River) require issuance of a National Pollutant Discharge Elimination System (NPDES) permit, whereas discharges to land (e.g., percolation ponds, farmland irrigation) do not. Discharges to both land and water require Waste Discharge Requirements (WDRs). These permits are issued by the RWQCBs and include standards for pollutant discharges.

On June 16, 2000, the RWQCB issued WDRs for the City's existing wastewater treatment plant (Order No. 5-00-146). The WDRs prohibit certain discharges including hazardous materials, discharges to surface waters, untreated or partially treated waste, and discharges that would cause degradation of any water supply. The WDRs also include discharge specifications that limit the quantity of daily discharges (1.3 mgd) and the allowable extent of objectionable odors, require protection from 100-year flood events, limit biological oxygen

demand (BOD)[1] and settleable solids reaching the percolation disposal ponds, limit the pH range (i.e., level of acidity and alkalinity), and prevent mosquito breeding.

The WDRs for the City's wastewater treatment plant also include groundwater limitations such that "the discharge, in combination with other sources, shall not cause the underlying groundwater to contain waste constituents in concentrations greater than the background water quality at or beyond the point of compliance. Any incremental increase in waste constituent concentrations within the point of compliance, when compared to background, shall not exceed the increase typically caused by the percolation discharge of domestic wastewater and shall not violate water quality objectives, unreasonably impact beneficial uses, or cause pollution or nuisance." The water quality objectives for groundwater in the San Joaquin basin are the drinking water maximum contaminant levels (MCLs).

FEDERAL EMERGENCY MANAGEMENT AGENCY

In 1968, Congress created the National Flood Insurance Program (NFIP) in response to the rising cost of taxpayer-funded disaster relief for flood victims and the increasing amount of damage caused by floods. The NFIP makes federally backed flood insurance available for communities that agree to adopt and enforce floodplain management ordinances to reduce future flood damage. The NFIP is managed by the Federal Emergency Management Agency (FEMA). FEMA is the agency responsible for conducting floodplain studies and publishing Flood Insurance Rate Maps that delineate flood hazard areas. The City of Patterson and County of Stanislaus are participating communities in the NFIP, and therefore all new development must comply with the minimum requirements of the NFIP. FEMA performed a flood insurance study for Stanislaus County in November 1987 and revised the study in March 2001. As shown in Exhibit 9-1, the eastern portion of the proposed percolation pond sites is located within FEMA's Zone A Floodplain. Zone A is the flood insurance rate zone that corresponds to the flood elevation that has a 1% chance of being equaled or exceeded each year. Zone A floodplains are determined in FEMA's Flood Insurance Study by approximate methods of analysis, and detailed hydraulic analyses are not performed for such areas.

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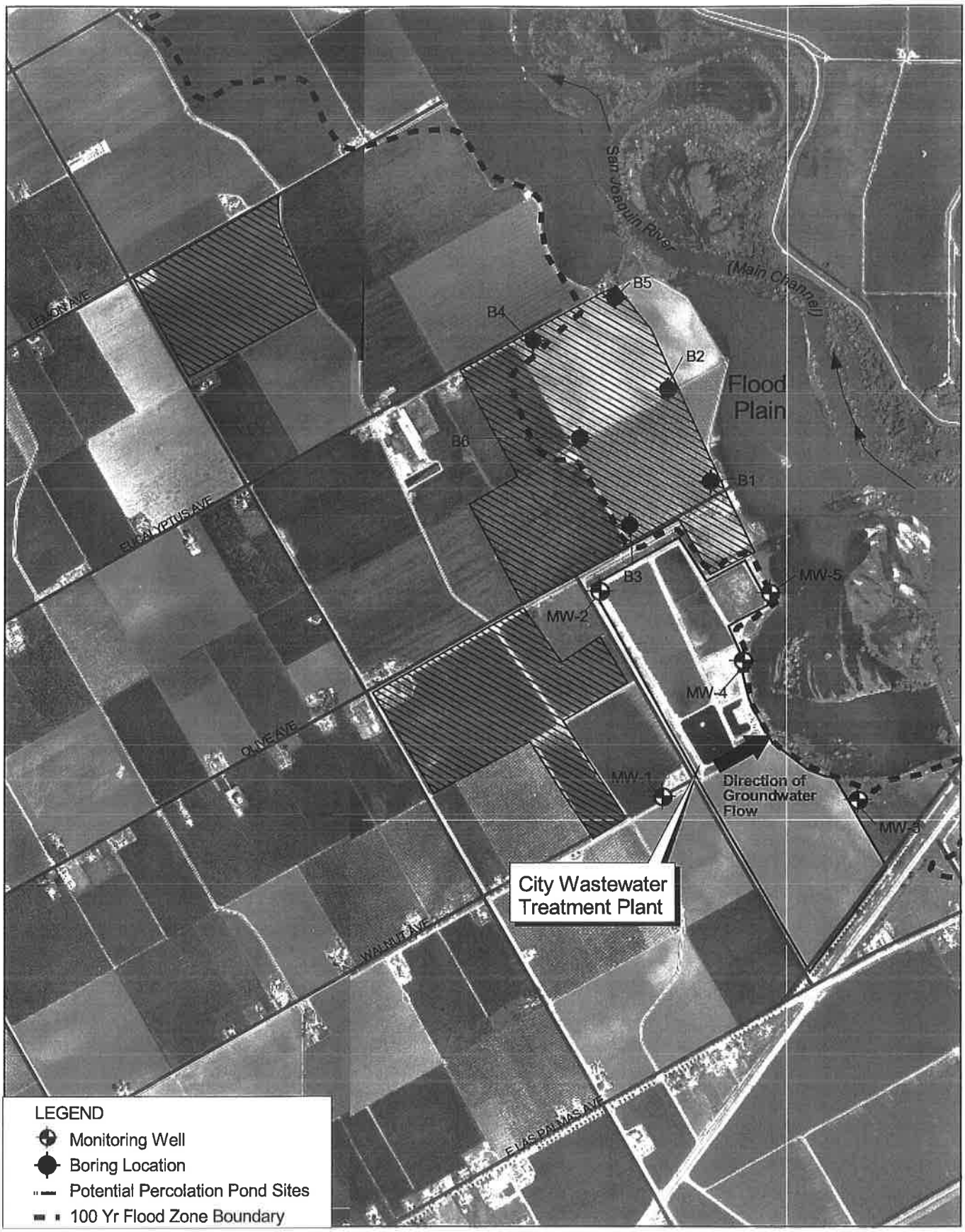
[1] Biological oxygen demand is a measurement of how much dissolved oxygen is in the water to support aquatic life. Wastewater serves as food for microorganisms that consume dissolved oxygen. Reduced oxygen levels in surface water (i.e., high BOD) can adversely affect fish and other aquatic organisms that rely on the dissolved oxygen.



Wastewater Treatment Plant Groundwater Monitoring Well Locations

EXHIBIT 9-1

City of Patterson Wastewater Master Plan EIR
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STATE RECLAMATION BOARD

The mission of the State Reclamation Board is to control flooding along the Sacramento and San Joaquin rivers and their tributaries in cooperation with the U.S. Army Corps of Engineers. The Reclamation Board cooperates with various agencies of the federal, state, and local governments in establishing, planning, constructing, operating, and maintaining flood control works. The Reclamation Board's mission also includes maintaining the integrity of the existing flood control system and designated floodways through their regulatory authority by issuing encroachment permits.

9.1.2 HYDROLOGY AND HYDROGEOLOGY

REGIONAL SETTING

The City of Patterson is located in the San Joaquin Basin of the Central Valley of California (Planert and Williams 1995). The Central Valley is bounded on the east by the Sierra Nevada, a tilted granitic block, and on the west by the Coast Ranges, which consist of deformed marine sedimentary rock. The southern part of the Central Valley, which has no external drainage, is called the Tulare Basin. The northern part of the Central Valley (i.e., San Joaquin Basin) is drained by the San Joaquin River, which flows northward and joins with the Sacramento River in the Sacramento-San Joaquin Delta area and ultimately flows to San Francisco Bay. The surface-water hydrology of the San Joaquin and Tulare basins has been greatly modified by development of water resources. Reservoirs capture up to 7.5 million acre-ft of the 8.84 million acre-ft/yr total mean annual flow into the San Joaquin Valley from the Sierra Nevada drainages. The timing of surface-water flow is highly controlled, with the release of water stored in the reservoirs to meet downstream needs for irrigation, power generation, in-stream fisheries, and recreational uses (Domagalski 1998). In sharp contrast to the Sierra Nevada tributaries, most streams that drain the Coast Ranges are intermittent or ephemeral and contribute an insignificant amount of water to the valley. The total mean annual flow from the Coast Ranges, including the Tehachapi Mountains, is estimated to be 92,600 acre-ft/year, which represents about 1% of the total surface water that enters the San Joaquin Valley from the Sierra Nevada (Domagalski 1998).

The San Joaquin River is the only surface-water outlet from the San Joaquin Valley. The water quality of the San Joaquin River is of critical interest because the river flows into the Sacramento-San Joaquin Delta. The delta is the source of irrigation water to farms in the San Joaquin Valley and the source for the California Aqueduct, which in turn supplies drinking water for millions of people in southern California. Groundwater is withdrawn from an

aquifer in the San Joaquin Valley that averages about 1,400 feet in thickness (Domagalski, 1998).

Groundwater recharge in the San Joaquin Basin is primarily from runoff at the mountain margins and from irrigation water infiltration in the central parts of the basin. The shallowest groundwater is characterized by irrigation water recharge to the aquifer within the last 50 years. Irrigation water was historically drawn from the nearby river with excess irrigation water percolating to the underlying aquifer or draining back to the river. Groundwater recharged from infiltration of excess irrigation water may contain elevated concentrations of nutrients, pesticide residues, and trace elements (Dubrovsky et al. 1998).

SITE-SPECIFIC SETTING

The Patterson wastewater treatment plant is located on a gently sloping plain at the edge of a 10-foot high bluff above the San Joaquin River about a half-mile to the east (Exhibit 9-1). The area between the plant and the river is occupied by the river's floodplain and seasonal ox-bow ponds formed by cutoff meanders of the river. Hydrolgeologic information about the project site has been obtained from existing monitoring well data at the existing plant, and from groundwater sampling and borings at some of the proposed percolation pond sites. Travel time for water from the percolation ponds to reach the river approximately one-half mile to the east was estimated at approximately 3.4 years under current conditions.

GROUNDWATER QUALITY

Water Quality Sampling

To monitor compliance with the groundwater limitations and with the SWRCB's groundwater antidegradation policy (State Board Resolution No. 68-16), the City's current WDRs require the City to develop and implement a groundwater monitoring program and to provide quarterly monitoring reports to the RWQCB. The City has been preparing and providing these monitoring reports to the RWQCB. These reports demonstrate that the City's plant is in compliance with the WDRs and the SWRCB groundwater antidegradation policy.

Pursuant to the monitoring requirement, the City of Patterson installed five monitoring wells at and around the existing plant (Exhibit 9-1). The groundwater gradient slopes towards the San Joaquin River to the east side of the plant. Monitoring wells MW-1 and MW-2 are located west of the treatment plant, and are sampled for background upgradient data. Monitoring wells MW-3, MW-4, and MW-5 are located downgradient of the plant and are intended to monitor the quality of the groundwater after the treated effluent has percolated into the

groundwater. Well MW-3 is located downgradient of the newer southern percolation ponds, which have received very limited service to date. MW-3 therefore is believed to represent background conditions, rather than downgradient conditions (Lee & Ro 2002). The City has been collecting groundwater data from these wells on a quarterly basis since April 2001 for the constituents required to be monitored by the WDRs. These constituents include pH, electrical conductivity, total dissolved solids (TDS), nitrate as nitrogen (i.e., N), total coliform organisms, and fecal coliform organisms. The monitoring well data are presented in Tables 9-1 and 9-2.

In January 2003, the City collected groundwater from six locations in the proposed percolation pond areas and sampled it for 44 different constituents as part of its background groundwater study (Exhibit 9-1). This study included the typical wastewater constituents requested by the RWQCB in their comment letter on the West Patterson EIR (RWQCB 2002). The requested constituents include TDS, sodium, chloride, ammonia, total Kjeldahl nitrogen (TKN), nitrate as nitrogen, and total coliform bacteria. In February 2003, the City also sampled groundwater in its monitoring wells for most of the same 44 constituents, including the constituents specifically requested by RWQCB. The results of the background study and the February 2003 monitoring well sampling are presented in Table 9-1.

The City also samples treated effluent at the plant before it is discharged to the disposal ponds. Sampling data from April 2001 through December 2001 are shown in Table 9-3, and additional sampling data from April 2001 through December 2002 are shown in Table 9-4.

Groundwater Quality Characteristics

The water quality objectives for groundwater in the San Joaquin basin are the drinking water MCLs. The MCLs are shown in Table 9-1. All constituents analyzed in the 2003 monitoring well sampling were found at concentrations below the applicable MCLs, except for arsenic and nitrate. Arsenic was detected at 0.02 mg/L (which exceeded the MCL of 0.01 mg/L) in one downgradient sample and was not found at concentrations exceeding 0.005 mg/L in any of the background samples. However, as arsenic was not detected in the other monitoring wells, the average concentration in the groundwater influenced by the plant effluent is expected to be within drinking water limits.

Nutrients

No nutrient reduction treatment is performed in the Patterson wastewater treatment plant processes, so the effluent generally contains both nitrate and phosphorous. Nitrate and phosphorous are nutrients that can cause algal blooms that deplete the dissolved oxygen concentration in surface water. Nitrate is also directly toxic to humans as a drinking water

Table 9-1
Groundwater Quality Data (2003)

Analyte	January 2003 Background Water Quality Study Proposed Percolation Pond Sites						February 2003 Monitoring Well Data Wastewater Treatment Plant					UNIT	MCL[1]
	B-1	B-2	B-3	B-4	B-5	B-6	MW-1	MW-2	MW-3	MW-4	MW-5		
Aluminum	0.25	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	mg/L	—
Arsenic	<0.002	<0.002	<0.002	0.005	0.0027	<0.002	<0.01	<0.01	<0.01	0.02	<0.01	mg/L	0.01
Barium	0.069	0.095	0.049	0.03	0.046	0.051	<0.1	<0.1	<0.1	<0.1	<0.1	mg/L	2
Boron	1.2	1.2	0.8	1.1	1.7	3	2.5	2.4	2.5	0.8	1.5	mg/L	—
Bromide	0.76	0.77	0.71	0.58	0.76	0.99	NS	NS	NS	NS	NS	mg/L	—
Cadmium	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001	mg/L	0.005
Calcium	120	93	85	47	44	110	73	61	130	109	98	mg/L	—
Chloride	250	230	320	180	210	490	300	418	398	200	400	mg/L	—
Chromium	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.031	0.028	0.037	0.015	0.02	mg/L	0.1
Copper	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	mg/L	1.3
Fluoride	0.53	0.64	0.75	0.66	0.6	0.68	NS	NS	NS	NS	NS	mg/L	4
Iron	0.1	<0.1	0.38	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/L	—
Lead	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	mg/L	0.015
Magnesium	68	110	87	64	65	170	124	175	152	78	83	mg/L	—
Manganese	0.41	0.51	0.72	0.058	0.14	1.3	<0.02	<0.02	<0.02	0.56	<0.02	mg/L	—
Mercury	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.001	<0.001	<0.001	<0.001	mg/L	0.002
Molybdenum	0.031	<0.02	<0.02	<0.02	0.023	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	mg/L	—
Nickel	NS	NS	NS	NS	NS	NS	<0.05	<0.05	<0.05	<0.05	<0.05	mg/L	—
Potassium	22	7.5	9.7	5.4	7.1	4.2	6.3	<2	3.9	17	9.6	mg/L	—
Selenium	<0.005	0.0086	<0.005	<0.005	<0.005	0.015	<0.01	0.03	<0.01	<0.01	0.03	mg/L	0.05
Silver	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/L	—
Sodium	310	270	290	230	310	490	303	286	351	142	269	mg/L	—
Zinc	0.041	<0.02	0.022	<0.02	0.03	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	mg/L	—

Table 9-1 (continued)
Groundwater Quality Data (2003)

Analyte	January 2003 Background Water Quality Study Proposed Percolation Pond Sites						February 2003 Monitoring Well Data Wastewater Treatment Plant					UNIT	MCL[1]
	B-1	B-2	B-3	B-4	B-5	B-6	MW-1	MW-2	MW-3	MW-4	MW-5		
pH	7.01	7.27	7.23	8.3	8.07	7.28	7.6	7.3	7.3	7.1	7.1	UNIT	—
Hardness, Total	580	680	570	380	380	970	693	873	951	593	587	mg/L	—
Alkalinity as CaCO3	430	440	360	250	360	610	410	530	500	400	370	mg/L	—
Hydroxide	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	mg/L	—
Carbonate	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	mg/L	—
Bicarbonate	430	440	360	250	360	610	410	530	500	400	370	mg/L	—
Nitrate (as N)	17.84	13.55	1.1	5.87	16.94	18.29	23	8.8	16	0.58	6.8	mg/L	10
Nitrite	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	NS	NS	NS	NS	NS	mg/L	1
Ammonia (as N)	0.31	0.65	0.58	0.4	0.31	0.48	<0.1	<0.1	<0.1	<0.1	<0.1	mg/L	—
Total Kjeldahl Nitrogen	1.6	0.61	0.68	0.58	0.8	0.81	<1	<1	<1	<1	<1	mg/L	—
Phosphorous	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.13	0.18	0.13	0.24	0.18	mg/L	—
Sulfate	350	320	300	230	310	630	684	493	831	281	344	mg/L	—
Electrical Conductivity	2,400	2,200	2,200	1,500	2,300	3,800	3,650	4,100	4,280	1,960	623	µmhos/cm	—
Total Dissolved Solids	1,500	1,700	1,700	980	1,600	2,800	1,950	1,580	2,360	1,120	1,570	mg/L	—
Sum of Anions	24.2	23	22.6	15.3	20.8	40.5	NC	NC	NC	NC	NC	mg/L	—
Sum of Cations	25.6	24.4	23.5	17.5	20.8	39.5	NC	NC	NC	NC	NC	mg/L	—
Total Coliform	<2	<2	<2	4	<2	<2	2	<2	2	<2	<2	MPN/100 mL	—
Fecal Coliform	<2	<2	<2	2	<2	<2	<2	<2	<2	<2	<2	MPN/100 mL	—

NC = Not Calculated NS = Not Sampled MPN=Most Probable Number

[1] If no value is shown, no MCL exists for this constituent.

Source: Lee & Ro 2003

Table 9-2
Groundwater Analytical Results

Month/Year	Wastewater Treatment Plant	pH (Unit)	Electrical Conductivity (uS/cm)	Total Dissolved Solids (mg/L)	Nitrate as Nitrogen (mg/L)	Total Coliform Organisms (MPN/100 mL)	Fecal Coliform Organisms (MPN/100 mL)
April 2001	MW-1	7.5	3,600	2,400	25	4	<2
	MW-2	7.4	2,900	1,800	4.9	17	2
	MW-3	7.2	4,100	2,800	17	22	<2
	MW-4	7.4	930	550	0.48	7	<2
	MW-5	6.9	1,500	1,500	9.8	500	<2
July 2001	MW-1	7.44	1,890	1,600	8.8	<2	<2
	MW-2	7.28	1,901	2,010	6.4	<2	<2
	MW-3	6.36	1,537	3,110	19	<2	<2
	MW-4	6.86	1,853	1,680	<0.2	<2	<2
	MW-5	6.80	1,898	1,700	1.4	<2	<2
September 2001	MW-1	7.85	2,710	1,830	15	500	170
	MW-2	7.66	3,720	2,050	4.9	11	<2
	MW-3	7.54	4,410	2,260	15	<2	<2
	MW-4	7.27	2,710	1,670	2.7	<2	<2
	MW-5	7.36	3,130	1,670	4.4	<2	<2
November 2001	MW-1	7.60	3,105	2,190	13	80	8
	MW-2	7.46	3,010	2,140	5.4	<2	<2
	MW-3	7.30	3,593	2,500	17	<2	<2
	MW-4	7.10	2,592	1,710	<0.2	<2	<2
	MW-5	7.15	2,554	1,710	3.4	<2	<2
February 2002	MW-1	7.7	2,704	2,170	25	<2	<2
	MW-2	7.7	2,737	2,070	5.6	<2	<2
	MW-3	7.3	3,020	2,430	19	<2	<2
	MW-4	7.3	1,990	1,450	0.4	<2	<2
	MW-5	7.1	2,265	1,610	6.2	<2	<2
May 2002	MW-1	7.0	2,980	2,030	16	<2	<2
	MW-2	7.3	3,160	2,140	1.7	8	<2
	MW-3	7.3	3,490	2,480	17	<2	<2
	MW-4	7.2	2,540	1,640	2.2	<2	<2
	MW-5	6.9	2,450	1,530	29	<2	<2
August 2002	MW-1	7.9	1,898	1,340	9.3	<2	<2
	MW-2	7.5	3,056	2,030	3.8	<2	<2
	MW-3	7.5	3,135	2,120	12	<2	<2
	MW-4	7.3	2,729	1,650	<0.25	<2	<2
	MW-5	7.1	2,654	1,570	1.0	<2	<2
November 2002	MW-1	7.6	2,290	1,400	6.6	<2	<2
	MW-2	7.3	3,000	1,960	2.5	<2	<2
	MW-3	7.3	3,240	2,250	6.8	<2	<2
	MW-4	7.1	2,700	1,580	1.6	<2	<2
	MW-5	6.9	2,180	1,470	<0.25	<2	<2

MPN=Most Probable Number
Source: Lee & Ro 2003

contaminant that can cause "blue baby syndrome" at concentrations in excess of drinking water standards.

Table 9-3
Treatment Plant Effluent Sampling - Nitrate [1]

Nitrate [as NO_3] (mg/L)						
Sampling Location	Jan 01	Feb 01	Mar 01	Apr 01	May 01	Jun 01
Plant Effluent	69	78	32	7	9.5	11.5
	Jul 01	Aug 01	Sep 01	Oct 01	Nov 01	Dec 01
	32	20	14	16	45	45
Average	31.6					

[1] Weighted average of AIPS and activated sludge system.

Source: Lee & Ro 2002

The objectives listed in the Basin Plan for nitrogen in drinking water sources are the MCLs specified in Title 22 of the California Code of Regulations. The MCL for nitrate and nitrite as nitrogen is 10 mg/L, and the MCL for nitrate as NO_3 is 45 mg/L. One mg/L nitrate as nitrogen is equivalent to 5 mg/L nitrate as NO_3. Nitrate as nitrogen has been detected in groundwater samples in the background monitoring wells at concentrations of up to 25 mg/L (see Tables 9-1 and 9-2). Nitrate as nitrogen exceeded the MCL in downgradient monitoring well samples on one occasion (May 2002), but was below the MCL on all other occasions. The average nitrogen concentration of the plant effluent for the sample period (January 2001 through December 2002) was 6.6 mg/L (see Tables 9-3 and 9-4). This was calculated by using a weighted average of the nitrogen concentrations sampled in the activated sludge system effluent (about 0.5 mgd) and the AIPS effluent (about 0.3 mgd), as follows:

Activated sludge effluent (2002 Average):	52.8 mg/L (63% of City treated effluent)
AIPS effluent (2002 Average):	4.3 mg/L (37%of City treated effluent)
Average 2002 concentrations:	34.9 mg/L
Average 2001 concentrations (Table 9-3):	31.6 mg/L
Average nitrate as NO_3 concentrations:	33.2 mg/L
Average nitrogen concentrations:	6.6 mg/L (33.2 ÷5 monitoring wells)

Because the plant effluent is consistently lower in nitrogen concentration than the shallow groundwater upgradient of the plant, the effluent appears to reduce the nitrogen concentration of the local groundwater by dilution. This is evidenced by the reduced nitrogen concentrations sampled in MW-4 and MW-5, located downgradient of the more frequently

TABLE 9-4
Treated Effluent Sampling Data

Effluent Sampling 2001

Constituent/Parameter	2001				
	April	May	June	July	August
Activated Sludge					
Flow (mdg)	0.4	0.5	0.5	0.5	0.5
BOD (mg/l)	2	3	4	2	2
TSS (mg/l)	25	20	15	30	13
Settleable Solids (ml/l)	0	0	0	0	0
Electrical Conductivity	1,411	1,471	1,687	1,636	1,744
pH	7	7	7	7	7
AIPS					
Flow (mdg)	0.3	0.3	0.3	0.3	0.3
BOD (mg/l)	21	30	37	32	46
TSS (mg/l)	25	40	85	53	50
Settleable Solids (ml/l)	0	0	0	0	0
Electrical Conductivity	1,417	1,591	1,796	1,727	1,867
pH	7	8	7	7	7

* Data maybe incorrectly recorded ND Non-Detect NA Data not available
Source: Lee & Ro 2003b

Effluent Sampling 2002

Constituent/Parameter	2002												
	January	February	March	April	May	June	July	August	September	October	November	December	Average 2002
Activated Sludge													
Flow (mgd)	0.5	39.9*	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.5	0.5**
BOD (mg/l)	4	ND	ND	2	2	2	2	3	ND	8	3	3	2.4
TSS (mg/l)	10	40	ND	26	17	ND	ND	ND	10	36	ND	69	17.3
Settleable Solids (ml/l)	0	ND	ND	ND	ND	ND	ND	ND	ND	1	ND	ND	0.1
Electrical Conductivity	1,466	1,506	1,499	1,644	1,843	1,585	2,014	1,812	1,815	1,755	1,642	2,285	1,739
Nitrate (NO3)	61	64	71	15	46	22	26	79	61	69	61	NA	52.3
pH	8	8	7	7	7	7	7	8	8	8	7	7	7.4
Total Dissolved Solids (mg/l)	605***	NA	1,250***	1,230	1,282	1,258	1,372	1,247	1,255	1,245	1,240	1,120	1,250
AIPS													
Flow (mgd)	0.3	23.5*	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3**
BOD (mg/l)	30	21	29	50	46	30	22	54	48	43	69	74	43
TSS (mg/l)	63	30	51	58	85	37	48	69	57	93	89	71	62.6
Settleable Solids (ml/l)	0	ND	ND	ND	ND	1	3	6	ND	ND	ND	ND	0.8
Electrical Conductivity	1,539	1,503	1,511	1,696	1,924	2,083	1,455	1,948	1,851	1,833	1,406	1,394	1679
Nitrate (NO3)	14	5.4	6.1	3.2	12.4	2.2	1.3	ND	1	1.3	ND	NA	4.3
pH	8	8	8	8	7	7	7	7	8	8	7	7	7.5
Total Dissolved Solids (mg/l)	605***	NA	1,250***	1,280	1,322	1,388	1,455	1,299	1,278	1,248	1,180	1,090	1,282

* Data maybe incorrectly recorded
** does not include February 2002
*** weighted average of AIPS and activated sludge system
NA Data not available
ND Non-Detect
NS Not sampled
Source: Lee & Ro 2003b

used effluent ponds (see Tables 9-1 and 9-2). Nitrogen concentrations in these two wells are generally well below the 10 mg/L MCL, and have only exceeded the MCL during one sampling event: 29 mg/L in May 2002. Sampling data show that nitrogen concentrations in MW-3 have exceeded 10 mg/L during eight of the nine sampling events. As previously discussed, however, MW-3 is located downgradient of the southern effluent ponds, which have received very limited service to date. Samples from MW-3 are therefore believed to represent background conditions rather than downgradient conditions (Lee & Ro 2002). Ammonia, another nitrogen-containing compound, was found in all of the one-time HydroPunch®-type background study samples from the proposed pond expansion area, but was not found in any of the monitoring well samples.

Phosphate, a common constituent of detergents and wastewater, has been measured in the plant influent and effluent at concentrations of approximately 8 to 9 mg/L , which is equivalent to a phosphorous (phosphate as P) concentration of approximately 3 mg/L (Lee & Ro 2003a). Phosphorous was measured in the groundwater monitoring wells at concentrations ranging from 0.13 to 0.18 mg/L in the background monitoring wells and 0.18 to 0.24 mg/L in the downgradient monitoring wells. No phosphorous was detected in the background study samples at the proposed percolation ponds, but the detection limit for the method used was 0.5 mg/L. No substantial increase in phosphorous concentration was observed in the downgradient groundwater as compared to the background wells.

The substantial reduction of phosphorous concentrations between the plant effluent and the downgradient wells (i.e., from 3 mg/L to 0.18 and 0.24 mg/L) indicates that phosphorous is used by biological growth in the percolation ponds or in the immediate area of the ponds. The slight increase in average concentration in the downgradient groundwater was so small as to be within the normal variability of the analysis technique and is not likely to represent a substantial difference in concentrations. Because phosphorous is an essential nutrient with no MCL, a slight increase in concentration would not violate water quality objectives, nor would it be considered to unreasonably impact beneficial uses or cause pollution or nuisance.

Salinity

The plant effluent appears to have a beneficial impact to groundwater salinity under current conditions by dilution. Sampling of the background monitoring wells near the existing plant indicates that the groundwater salinity (TDS) in the shallow aquifer surrounding the treatment plant is high. Average TDS concentrations in background monitoring wells (MW-1 and MW-2) are 1,879 to 1,976 mg/L , respectively (see Tables 9-1 and 9-2). The average TDS concentration of the plant effluent is 1,292 mg/l (see Table 9-4). This was calculated by using a weighted average of the TDS concentrations sampled in the activated sludge system effluent

and the AIPS effluent. Because the plant effluent is of lower salinity than the shallow groundwater upgradient of the plant, the effluent appears to reduce the salinity concentration of the local groundwater by dilution. This is evidenced by the reduced average TDS concentrations sampled in MW-4 and MW-5 (1,450 and 1,592 mg/L, respectively), located downgradient of the more frequently used effluent ponds (see Tables 9-1 and 9-2). Sampling data for electrical conductivity, another indicator of salinity, provides further evidence that the plant effluent dilutes local groundwater salinity. As shown in Tables 9-1 and 9-2, average electrical conductivity in the downgradient wells (MW-4 and MW-5) was lower than the average salinity in the upgradient wells (MW-1 and MW-2) in all sampling occasions except August 2002.

Lee & Ro prepared a study evaluating the potential influence of San Joaquin River water on groundwater salinity in the downgradient monitoring wells at the wastewater treatment plant. Groundwater elevations observed in the monitoring wells since April 2001 were compared with water elevations and electrical conductivity measurements reported for the river. These data were compared with the TDS results from the City's quarterly monitoring well samples. San Joaquin River elevations and salinity were not found to correlate with groundwater salinity. Lee & Ro's study concludes that it is highly unlikely that any river water potentially infiltrating the aquifer has influenced (i.e., diluted) the salinity of the groundwater sampled in the Patterson WWTP monitoring wells (Lee & Ro 2003b).

Pathogens

A common method for determining whether water contains infectious organisms that could threaten human health is to use an indicator species such as coliform bacteria (a common group of bacteria used as an indicator of fecal pollution and an indirect indicator of the presence of organisms that could cause human disease). Typically, the most probable number assay (MPN) is used to assess the concentration of coliform in a water sample. This assay involves making a dilution series from the sample to be analyzed. At a certain dilution level (or factor) the chance of finding a virus in the solution is statistically rare. The objective listed in the Basin Plan for coliform organisms (total coliform) in drinking water sources is 2.2/100 mL MPN. Coliform has been detected in groundwater samples from monitoring wells at the plant. Total coliform exceeded 2.2/100 mL MPN in the background monitoring wells (MW-1 and MW-2) during four of the eight sampling events and in one of the background wells at the proposed percolation pond site (Tables 9-1 and 9-2). In the downgradient wells (MW-4, and MW-5), however, total coliform exceeded 2.2/100 mL MPN in only one sampling event (i.e., April 2001). The City does not sample coliform in the plant effluent. Data from the monitoring wells, however, suggest that coliform in the groundwater appears to be related primarily to agricultural land uses upgradient of the plant (Lee & Ro 2002).

Pathogens such as coliform bacteria travel only short distances in the soil and groundwater and are not believed to affect groundwater uses beyond the immediate pond area. Two months is the maximum time pathogens would be expected to remain active. At the estimated groundwater velocity of 2.1 ft/day, pathogens would be expected to remain active for a travel distance of approximately 127 feet downgradient of the ponds (Lee & Ro 2003a).

Selenium

Selenium is a constituent of concern in the San Joaquin Basin. Selenium has an MCL of 0.05 mg/L. The water quality objective for selenium in the San Joaquin River is a maximum concentration of 0.012 mg/L. The concentrations found in the groundwater were approximately the same in the background study samples and an upgradient monitoring well as in the one downgradient monitoring well with detectable concentrations of selenium. The concentration of selenium in groundwater does not appear to be significantly influenced by the effluent disposal.

Boron

Boron is a contaminant of concern in the San Joaquin Basin. Boron has no MCL, but the water quality objective for boron in the San Joaquin River is a maximum concentration of 2.0 mg/L from March 15 through September 15 and 2.6 mg/L for the remainder of the year. Boron was found at average concentrations of 1.5 mg/L in the background study samples at the proposed percolation pond sites, 2.5 mg/L in the background monitoring well samples, and 1.2 mg/L in the downgradient monitoring well samples. Boron, therefore, appears to be diluted by the effluent.

Quality of Groundwater Inflow to the San Joaquin River

The effluent-effected groundwater that flows to the San Joaquin River is similar to or better in quality than the background groundwater with regards to salinity, nitrate, total coliform organisms, and trace mineral concentrations.

As discussed above, pathogens are expected to remain active for a travel distance of approximately 127 feet downgradient of the ponds at the current estimated groundwater velocity of 2.1 ft/day (Lee & Ro 2003a). Pathogens, therefore, are not expected to affect the water quality of the San Joaquin River located about a half-mile from the existing percolation ponds.

The current background nitrate load along the San Joaquin River near Patterson is estimated at 60.2 Kg/mile nitrate (as nitrogen) per day, which is based on an average flow of 2 cfs/mi and average concentration in the background study samples of 12.3 mg/L nitrate (as nitrogen) (Lee & Ro 2003a). The nitrate load to the San Joaquin River associated with effluent disposal in the percolation ponds under current conditions was estimated based on a concentration of 3.94 mg/L nitrate (as nitrogen), the average observed in monitoring wells MW-4 and MW-5 over the nine quarters of monitoring to date. The groundwater inflow to the river of 1.24 cfs/mile (2,100 L/min/mile) corresponds to a nitrate load of 11.9 Kg/mile nitrate (as nitrogen) per day. This is a substantially lower rate than the estimated background rate of 60.2 Kg/mile nitrate (as nitrogen) per day, and indicates that effluent from the City's percolation ponds does not adversely affect the nitrate load of the river.

9.1.3 River Hydrology

The eastern portion of the proposed percolation pond sites is located on the left (west) bank floodplain terrace of the San Joaquin River about one river mile downstream of the Las Palmas Avenue bridge (see Exhibit 9-2). Typical vegetation in this area mainly consists of agricultural fields interspersed with low-growing herbaceous vegetation. The soils are generally free draining, and the normal annual precipitation in the area is about 10 inches.

U.S. Army Corps of Engineers

The Lower San Joaquin River and Tributaries Project was authorized by the 78th Congress in the Flood Control Act of 22 December 1944, Public Law 534. Subsequently, the U.S. Army Corps of Engineers (USACE) prepared plans to provide flood control along the project reach. In the reach at the Patterson wastewater treatment facility, the design flow was selected at 45,000 cfs (about the 50-year annual exceedence). The improvements included construction of a project levee on the right (east) bank. No levees were constructed by USACE on the left bank. The design water surface elevations at the Patterson wastewater treatment plant per the Design Memorandum are 52.1 to 52.9 feet above mean sea level (msl).

Floodways and Floodplains

FEMA performed a flood insurance study for Stanislaus County in November 1987, and revised the study in March 2001. As shown in Exhibit 9-2, the eastern portion of the proposed percolation pond sites is located within FEMA's Zone A Floodplain. The Reclamation Board designated a portion of the San Joaquin River's floodplain as a floodway. As shown in Exhibit 9-2, the City's wastewater treatment plant and the proposed percolation pond sites are located outside of the Reclamation Board's designated floodway.

Source: MBK 2003

Project Feature Map

EXHIBIT 9-2

City of Patterson Wastewater Master Plan EIR
G 2T008.01 3/03

0 1000 FEET NORTH

EDAW

HYDRAULIC ANALYSIS

A hydraulic analysis was prepared for existing and post-project conditions by MBK Engineers. MBK's *Hydraulic Analysis Patterson WWTP Expansion* (dated January 29, 2003) is included in Appendix B of this EIR. The USACE computer program, UNET, was used to compute water surface elevations in the subject reach. The program is designed to calculate water surface profiles for unsteady state flow (i.e., flows with changing discharge over time) in natural or manmade channels (MBK 2003). Exhibit 9-3 shows the cross-section locations in the study area. The maximum water surface elevations and velocities under existing conditions are shown in Tables 9-5 and 9-6.

Table 9-5
Maximum Water Surface Elevations - Existing Conditions

Cross-Section Location (River Mile)	Existing Conditions (feet - NGVD)
95.324	52.46
95.04	52.05
94.84	51.69
94.54	51.12
94.207	50.7

Source: MBK 2003
NGUD=National Geodetic Vertical Datum

Table 9-6
Maximum Channel Velocities - Existing Conditions

Cross-Section Location (River Mile)	Existing Conditions (feet per second)
95.324	3.78
95.04	5.24
94.84	4.89
94.54	5.59
94.207	3.43

Source: MBK 2003
NGUD=National Geodetic Vertical Datum

9.2 ENVIRONMENTAL IMPACTS

9.2.1 THRESHOLDS OF SIGNIFICANCE

The following significance criteria were developed based on Appendix G of the State CEQA Guidelines and the RWQCB's anti-degradation policy. The project would result in a significant effect on groundwater quality and on surface water quality and hydrology if it would:

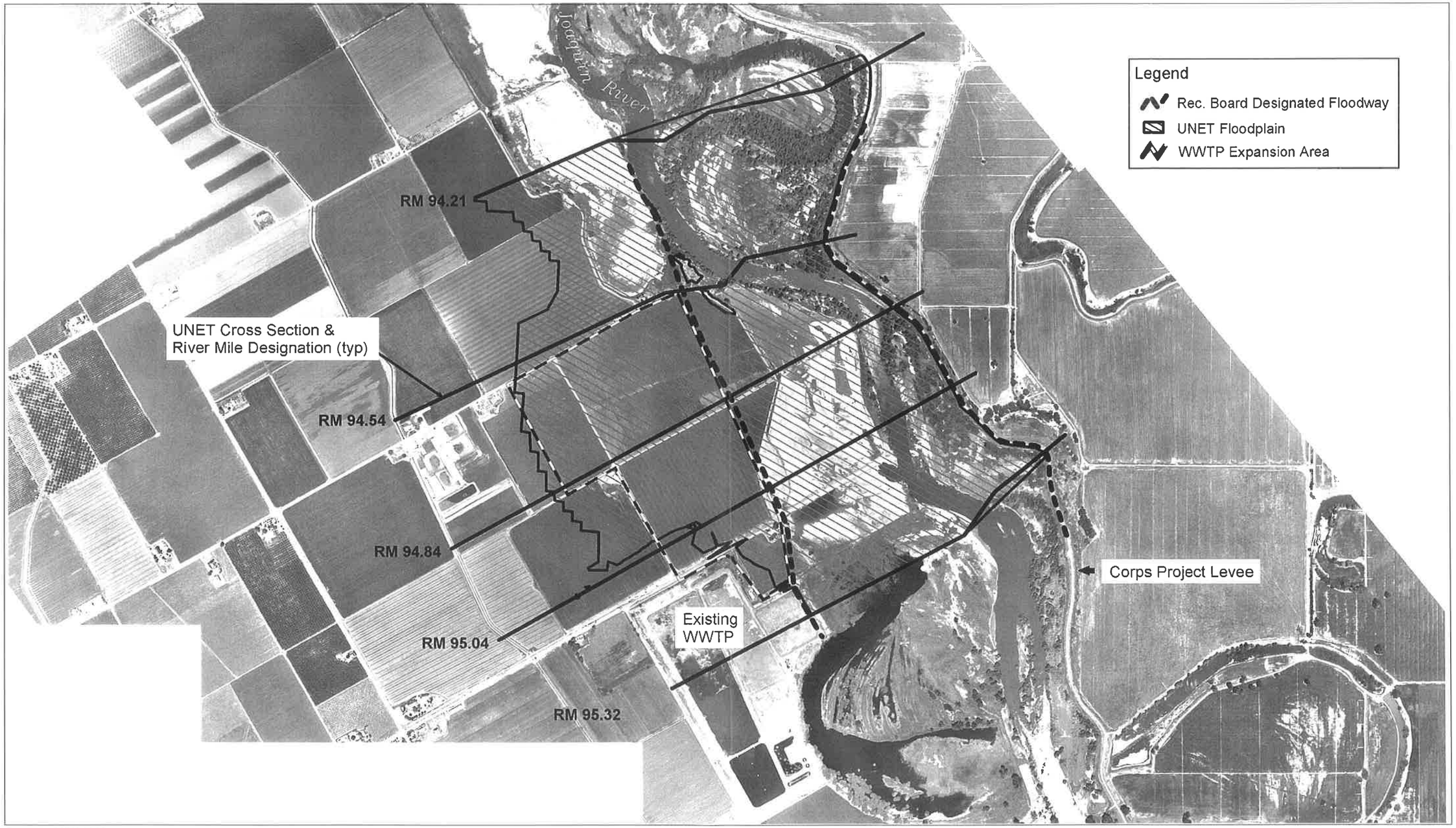
- Violate any water quality standards or waste discharge requirement.
- Unreasonably affect present and anticipated beneficial uses, or cause pollution or nuisance.
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in flooding on or offsite.
- Otherwise substantially degrade water quality.
- Place within a 100-year flood hazard area structures that would impede or redirect flood flows.

9.2.2 POST-PROJECT HYDROGEOLOGY

PHASE 1 AND 2 EXPANSION

As previously discussed, the City currently disposes of 0.8 mgd of treated effluent in a mile-long swath of percolation ponds. The groundwater inflow along the 19-mile stretch of the San Joaquin River that encompasses the Patterson area has been estimated to be 2 cfs/mile, and the average river flow is estimated at 1,000 cfs (Phillips et al. 1991).

Under the proposed conditions in the year 2004 after the Phase 1 expansion, 2.75 mgd would be disposed in percolation ponds extending along the river for a distance of about 1.5 miles. The inflow of effluent to the river after Phase 1 expansion would be approximately 1.83 mgd/mile or 2.84 cfs/mile, an increase of about 1.60 cfs/mile over existing conditions near the plant site (Lee & Ro 2003a). The contribution from the expanded plant effluent disposal would represent about 0.4% of the river flow at Patterson (2.84 cfs/mile x 1.5 miles ÷ 1,000 cfs).



Source: MBK 2003

Cross Section Location and UNET Floodplain Map

EXHIBIT 9-3

City of Patterson Wastewater Master Plan EIR
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0 1000 FEET

NORTH

EDAW

Disposal of the additional 1.95 mgd of wastewater (i.e., 2.75 mgd - 0.8 mgd) would increase the rate of groundwater inflow reaching the San Joaquin River. Using their conceptual flow rate model, Lee & Ro estimated that the proposed additional flow through the year 2008 would increase the groundwater flow rate from 2.1 ft/day (or 774 ft/year) to approximately 3.2 ft/day (or 1160 ft/year).

Under the proposed conditions in the year 2008 after the Phase 2 expansion, 3.25 mgd would be disposed in percolation ponds extending along the river for a distance of about 1.5 miles. The inflow of effluent to the river after Phase 2 expansion would be approximately 2.17 mgd/mile or 3.35 cfs/mile, an increase of about 2.11 cfs/mile over existing conditions near the plant site and an increase of about 1.35 cfs/mile over the average inflow along the river (Lee & Ro 2003a). The contribution from the expanded plant effluent disposal would represent about 0.5% of the river flow at Patterson (3.35 cfs/mile x 1.5 miles ÷ 1,000 cfs).

Disposal of the additional 2.45 mgd of wastewater (i.e., 3.25 mgd - 0.8 mgd) would increase the rate of groundwater flow reaching the San Joaquin River. Using their conceptual flow rate model, Lee & Ro estimated that the proposed additional flow through the year 2008 would increase the groundwater flow rate from 2.12 ft/day (or 775 ft/year) to approximately 4.6 ft/day (or 1,680 ft/year).

General Plan Buildout

Under full General Plan buildout conditions, approximately 4.1 mgd would be disposed in the percolation ponds. The inflow of effluent to the river after full plant expansion would be approximately 2.73 mgd/mile or 4.23 cfs/mile, an increase of about 2.99 cfs/mile over existing conditions near the plant site (Lee & Ro 2003a). The contribution from the expanded plant effluent disposal would represent about 0.64% of the river flow at Patterson (4.23 cfs/mile x 1.5 miles ÷ 1,000 cfs).

Disposal of the additional 3.3 mgd of wastewater (i.e., 4.1 mgd - 0.8 mgd) would increase the rate of groundwater flow reaching the San Joaquin River. Using their conceptual flow rate model, Lee & Ro estimated that the proposed flow increases through the year 2020 would increase the groundwater flow rate from 2.12 ft/day (or 775 ft/year) to approximately 4.1 ft/day (or 1,500 ft/year).

Hydraulic Analysis

The purpose MBK's analysis was to determine the hydraulic impacts of constructing new percolation ponds within the 100-year floodplain when the flow in the San Joaquin River

approximates the design flow of 45,000 cfs. The analysis shows that reducing the floodplain area under post-project conditions would result in no substantial change to water surface elevations or velocities and thus would have no substantial effect on river or floodplain hydrology. The results of MBK's study are presented in Tables 9-7 and 9-8.

Table 9-7
Maximum Water Surface Elevations - Post Project (feet - NGVD)

Cross-Section Location (River Mile)	Existing Conditions	Post Project	Net Change
95.324	52.46	52.45	-0.01
95.04	52.05	52.07	0.02
94.84	51.69	51.7	0.01
94.54	51.12	51.08	-0.04
94.207	50.7	50.7	0

Source: MBK 2003
NGUD=National Geodetic Vertical Datum

Table 9-8
Maximum Channel Velocities - Post Project (feet per second)

Cross-Section Location (River Mile)	Existing Conditions	Post Project	Net Change
95.324	3.78	3.79	0.01
95.04	5.24	5.07	-0.17
94.84	4.89	4.89	0
94.54	5.59	5.74	0.15
94.207	3.43	3.43	0

Source: MBK 2003
NGUD=National Geodetic Vertical Datum

9.2.3 First-Phase Expansion

Impact 9-1

First-Phase Expansion - Effects on Groundwater Quality. *The City's existing effluent does not adversely affect groundwater quality. Treated effluent generated by the expanded wastewater treatment plant is expected to be similar to the plant's existing treated effluent, except that Diablo Grande wastewater would further dilute salinity concentrations. Expansion of the City's wastewater treatment plant, therefore, would have a* ***less-than-significant*** *impact on groundwater quality.*

Beneficial uses of the groundwater aquifer in the San Joaquin Basin are municipal and domestic supply, industrial process supply, industrial service supply, and agricultural supply. The most stringent water quality criteria for these beneficial uses are for drinking water sources. The primary contaminants of concern associated with effluent from wastewater treatment plants are coliform, and nitrogen and phosphorous compounds. Groundwater salinity, selenium, and boron are also an important issues in the San Joaquin Basin.

The groundwater monitoring conducted near the City's wastewater treatment facility shows that except for the April 4, 2001 monitoring event, the groundwater downgradient of the plant consistently complies with the Basin Plan objectives for coliform. The groundwater monitoring and effluent sampling also show that treated effluent from the plant reduces the concentrations of salinity, nitrogen, and boron in the groundwater by dilution. Also, the concentration of selenium in groundwater does not appear to be substantially influenced by the effluent disposal. Groundwater monitoring also indicates that phosphorous is used by biological growth in the percolation ponds or in the immediate area of the ponds. As discussed above, the slight increase in average phosphorous concentration in the downgradient groundwater was so small as to be within the normal variability of the analysis technique and is not likely to represent a substantial difference in concentrations. Because phosphorous is an essential nutrient with no MCL, a slight increase in concentration would not violate water quality objectives, nor would it be considered to unreasonably impact beneficial uses, or cause pollution or nuisance.

The character of the wastewater generated by the City is expected to be similar to the wastewater currently generated by the City. Treated City-generated wastewater, therefore, is expected to be similar to the existing treated effluent and would not be expected to violate any water quality standards or waste discharge requirements, unreasonably impact beneficial uses, cause pollution or nuisance, or otherwise substantially degrade groundwater quality.

The character of the wastewater generated by Diablo Grande is also expected to be similar to the wastewater currently generated by the City, except that Diablo Grande wastewater would be lower in salinity concentrations than the well water used by the City. Diablo Grande will obtain its potable water from the State Water Project (SWP), which is of much lower salinity. Table 9-9 lists the water quality of SWP water at the Harvey O. Banks pumping plant at the intake of the California Aqueduct near Tracy, California. Table 9-9 shows that SWP water contains much lower concentrations of boron, bromide, chloride, magnesium and sodium than the background shallow groundwater near the City's wastewater treatment plant. Therefore, treatment of Diablo Grande wastewater would be expected to further reduce salinity in the effluent treated by the City's expanded plant.

Table 9-9
Harvey O. Banks Pumping Plant Water Quality Data for 2002

Analyte	Jan-02	Feb-02	Mar-02	Apr-02	May-02	Jun-02	Jul-02	Aug-02	Sep-02	Oct-02	Nov-02	Dec-02	Average
Aluminum	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
Arsenic	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.003	0.002	0.00
Barium	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
Boron	0.1	0.2	0.1	0.1	0.2	0.1	<0.1	<0.1	<0.1	0.1	0.2	0.2	0.14
Bromide	0.13	0.15	0.12	0.23	0.16	0.09	0.14	0.37	0.37	0.43	0.37	0.36	0.24
Cadmium	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
Calcium	20	23	20	19	21	16	14	16	16	18	19	20	18.50
Chloride	46	49	43	139	47	32	43	112	112	134	134	114	83.75
Chromium	0.001	0.006	0.005	0.004	0.003	0.005	<0.001	0.003	0.003	0.003	0.005	0.006	0.0040
Copper	0.003	0.002	0.002	0.002	0.002	0.002	0.004	0.002	0.002	0.002	0.002	0.002	0.0023
Fluoride	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.10
Iron	0.085	0.053	0.018	0.021	<0.005	<0.005	<0.005	<0.005	<0.005	0.006	0.011	0.029	0.032
Lead	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
Magnesium	11	13	12	13	12	9	9	14	14	16	15	15	12.75
Manganese	0.028	0.015	0.008	0.01	<0.005	<0.005	0.008	0.008	0.008	0.022	0.016	0.009	0.013
Mercury	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
Molybdenum	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
Potassium	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
Selenium	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	0.002	<0.001	0.001	0.0013
Silver	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
Sodium	31	39	33	48	38	26	31	71	71	79	71	70	50.67
Zinc	0.015	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.015
pH	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
Hardness, Total	95	111	99	101	102	77	72	98	98	111	110	112	98.83

Table 9-9 (continued)
Harvey O. Banks Pumping Plant Water Quality Data for 2002

Analyte	Jan-02	Feb-02	Mar-02	Apr-02	May-02	Jun-02	Jul-02	Aug-02	Sep-02	Oct-02	Nov-02	Dec-02	Average
Alkalinity as CaCO3	69	92	82	79	79	70	60	66	66	83	83	72	75.08
Hydroxide	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
Carbonate	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
Bicarbonate	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
Nitrate (as N)	1.7	1	0.81	0.87	0.68	0.49	0.28	0.19	0.19	0.3	0.3	0.93	0.65
Nitrite	INC	INC	INC	INC	INC	INC	INC	INC	INC	INC	INC	INC	
Ammonia (as N)	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
Total Kjeldahl Nitrogen	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
Phosphate	0.15	0.07	0.06	0.08	0.09	0.08	0.07	0.06	0.06	0.06	0.07	0.07	0.077
Sulfate	37	44	37	35	42	29	17	23	23	33	35	39	32.83
Electrical Conductivity	379	445	395	466	401	309	305	533	533	652	652	557	468.92
Total Dissolved Solids	232	263	202	260	222	173	181	321	321	398	398	338	275.75
Sum of Anions	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
Sum of Cations	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
MBAS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
BOD (DOC)	8.3	4	3.6	3.8	3.8	2.7	2.2	1.9	1.9	2.2	2.3	3.4	3.34
Total Coliform	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
Fecal Coliform	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
E. coli	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	

INC = Included in Nitrate Concentration.
NS = Not Sampled
NR = Not Reported
Source: Lee & Ro 2003a

In summary, the City's existing effluent does not adversely affect groundwater quality. Treated effluent generated by the expanded wastewater treatment plant is expected to be similar to the plant's existing treated effluent, except that Diablo Grande wastewater would further dilute salinity concentrations. Expansion of the City's wastewater treatment plant, therefore, would not be expected to violate any water quality standards or waste discharge requirements, unreasonably impact beneficial uses, cause pollution or nuisance, or otherwise substantially degrade water quality. Expansion of the City's wastewater treatment plant, therefore, would have a less-than-significant impact on groundwater quality.

Impact 9-2

First-Phase Expansion - Effects on Surface Water Quality. *Increased effluent disposal would not adversely affect the quality of groundwater inflow to the San Joaquin River. The existing effluent-effected groundwater inflow to the San Joaquin River is similar to or better in quality than the background groundwater with regard to salinity, nitrate, total coliform organisms, and trace mineral concentrations. Pathogens would not be expected to affect the water quality of the river, and nitrate loading would continue to be less than background nitrate loading conditions. Expansion of the City's wastewater treatment plant, therefore, would have a* ***less-than-significant*** *impact on surface water quality.*

The increased effluent disposal would increase the effluent-affected groundwater inflow to the San Joaquin River from the current rate of approximately 1.24 cfs/mile. The increased flow, however, would not adversely affect the quality of groundwater inflow. As discussed above, the existing effluent-effected groundwater inflow to the San Joaquin River is similar to or better in quality than the background groundwater with regard to salinity, nitrate, total coliform organisms, and trace mineral concentrations. Treated effluent generated by the expanded wastewater treatment plant is expected to be similar to the plant's existing treated effluent, except that Diablo Grande wastewater would further dilute salinity concentrations.

Pathogens will continue to be present in the plant effluent. With the increased flow, the distance traveled within the two-month period that pathogens remain active would also increase. The maximum travel distance is expected to be less than 276 feet, however, and would not affect the water quality in the river approximately 1,000 to 2,500 feet east of the proposed ponds (Lee & Ro 2003a).

As previously discussed, the current background nitrate load along the San Joaquin River near Patterson is estimated at 60.2 Kg/mile nitrate (as nitrogen) per day (Lee & Ro 2003a). The nitrate load in the year 2008 at 3.35 cfs/mi is estimated to be 32.3 Kg nitrate (as nitrogen) per day per mile of river, or approximately half the average background load. Effluent from the City's percolation ponds, therefore, would not adversely affect the nitrate load of the river.

In summary, increased effluent disposal would not adversely affect the quality of groundwater inflow to the San Joaquin River. The existing effluent-effected groundwater inflow to the San Joaquin River is similar to or better in quality than the background groundwater with regard to salinity, nitrate, total coliform organisms, and trace mineral concentrations. Pathogens would not be expected to affect the water quality of the river, and nitrate loading would continue to be less than background nitrate loading conditions. Expansion of the City's wastewater treatment plant, therefore, would not be expected to violate any water quality standards or waste discharge requirements, unreasonably impact beneficial uses, cause pollution or nuisance, or otherwise substantially degrade water quality. Expansion of the City's wastewater treatment plant, therefore, would have a less-than-significant impact on surface water quality.

Impact 9-3

First-Phase Expansion - Changes in Floodplain Hydraulics. *Reducing the floodplain area under post-project conditions by constructing new percolation ponds within the 100-year floodplain would result in no substantial change to water surface elevations or velocities and, thus, would have no substantial effect on river or floodplain hydrology. The project, therefore, would result in a* ***less-than-significant*** *impact related to changes in floodplain hydraulics.*

According to the hydraulic analysis prepared for this EIR, reducing the floodplain area under post-project conditions by constructing new percolation ponds within the 100-year floodplain would result in no substantial change to water surface elevations or velocities and, thus, would have no substantial effect on river or floodplain hydrology (MBK 2003). As shown in Table 9-7, new percolation ponds within the 100-year floodplain would increase river elevations in some locations near the ponds by a maximum of 0.02 feet (i.e., about ¼ inch), and would lower river elevations in some locations near the ponds by up to 0.04 feet (i.e., about ½ inch). As shown in Table 9-8, new percolation ponds within the 100-year floodplain would also change the maximum channel velocity of the river by a net value between 0.01 cfs and 0.17 cfs. These changes would be limited to a mile-long stretch of river near the ponds, and would result in a less-than-significant impact related to floodplain hydraulics.

9.2.4 General Plan Buildout

Impact 9-4

General Plan Buildout - Effects on Groundwater Quality. *The City's existing effluent does not adversely affect groundwater quality. Treated effluent generated by future expansion phases of the wastewater treatment plant is expected to be similar to the plant's existing treated effluent, except that Diablo Grande wastewater would further dilute salinity concentrations. Expansion of the City's wastewater treatment plant to serve General Plan buildout, therefore, would have a* ***less-than-significant*** *impact on groundwater quality.*

As discussed in Impact 9-1, the City's existing effluent does not adversely affect groundwater quality. Treated effluent generated by future expansion phases of the wastewater treatment plant is expected to be similar to the plant's existing treated effluent, except that Diablo Grande wastewater would further dilute salinity concentrations. Expansion of the City's wastewater treatment plant to serve General Plan buildout, therefore, would not be expected to violate any water quality standards or waste discharge requirements, unreasonably impact beneficial uses, cause pollution or nuisance, or otherwise substantially degrade water quality. Expansion of the City's wastewater treatment plant to serve General Plan buildout, therefore, would have a less-than-significant impact on groundwater quality.

Impact 9-5

General Plan Buildout - Effects on Surface Water Quality. *Increased effluent disposal for Phase 2 expansion and General Plan buildout would not adversely affect the quality of groundwater inflow to the San Joaquin River. The existing effluent-effected groundwater inflow to the San Joaquin River is similar to or better in quality than the background groundwater with regard to salinity, nitrate, total coliform organisms, and trace mineral concentrations. Pathogens would not be expected to affect the water quality of the river, and nitrate loading would continue to be less than background nitrate loading conditions. Expansion of the City's wastewater treatment plant to serve General Plan buildout, therefore, would have a* ***less-than-significant*** *impact on surface water quality.*

The increased effluent disposal would increase the effluent-affected groundwater inflow to the San Joaquin River from the current rate of approximately 1.24 cfs/mile. The increased flow, however, would not adversely affect the quality of groundwater inflow. As discussed previously, the existing effluent-effected groundwater inflow to the San Joaquin River is similar to or better in quality than the background groundwater with regard to salinity, nitrate, total coliform organisms, and trace mineral concentrations. Treated effluent generated by the expanded wastewater treatment plant is expected to be similar to the plant's existing treated effluent, except that Diablo Grande wastewater would further dilute salinity concentrations.

Pathogens will continue to be present in the plant effluent. With the increased flow, the distance traveled within the two-month period that pathogens remain active would also increase. The maximum travel distance is expected to be approximately than 276 feet for the Phase II expansion, and 245 feet at full General Plan buildout. The effluent, therefore, would not affect the water quality in the river approximately 1,000 to 2,500 feet east of the proposed ponds (Lee & Ro 2003a).

As previously discussed, the current background nitrate load along the San Joaquin River near Patterson is estimated at 60.2 Kg/mile nitrate (as nitrogen) per day (Lee & Ro 2003a). The nitrate load in the year 2008 at 3.35 cfs/mi (after the Phase II buildout) is estimated to be 32.3 Kg nitrate (as nitrogen) per day per mile of river, or approximately half the average

background load. The nitrate load after full General Plan buildout (approximately the year 2020) at 4.23 cfs/mi is estimated to be 40.8 Kg nitrate (as nitrogen) per day per mile of river, or approximately 68% of the average background load. Effluent from buildout of the City's percolation ponds, therefore, would not adversely affect the nitrate load of the river.

In summary, increased effluent disposal for Phase 2 expansion and General Plan buildout would not adversely affect the quality of groundwater inflow to the San Joaquin River. The existing effluent-effected groundwater inflow to the San Joaquin River is similar to or better in quality than the background groundwater with regard to salinity, nitrate, total coliform organisms, and trace mineral concentrations. Pathogens would not be expected to affect the water quality of the river, and nitrate loading would continue to be less than background nitrate loading conditions. Expansion of the City's wastewater treatment plant to serve General Plan buildout, therefore, would not be expected to violate any water quality standards or waste discharge requirements, unreasonably impact beneficial uses, cause pollution or nuisance, or otherwise substantially degrade water quality. Expansion of the City's wastewater treatment plant to serve General Plan buildout, therefore, would have a less-than-significant impact on surface water quality.

Impact 9-6

General Plan Buildout - Changes in Floodplain Hydraulics. *Reducing the floodplain area under post-project conditions by constructing new percolation ponds within the 100-year floodplain would result in no substantial change to water surface elevations or velocities and, thus, would have no substantial effect on river or floodplain hydrology. If new ponds are constructed within the floodplain study areas for future expansion phases, the project would result in a* ***less-than-significant*** *impact related to floodplain hydraulics.*

As discussed in Impact 9-3, reducing the river's floodplain area by constructing new percolation ponds within the 100-year floodplain portion of the study area would result in no substantial change to water surface elevations or velocities and, thus, would have no substantial effect on river or floodplain hydrology (MBK 2003).

9.3 Mitigation Measures

9.3.1 First-Phase Expansion

No mitigation measures are necessary for the following less-than-significant impacts.

9-1 First-Phase Expansion - Effects on Groundwater Quality
9-2 First-Phase Expansion - Effects on Surface Water Quality
9-3 First-Phase Expansion - Changes in Floodplain Hydraulics

9.3.2 General Plan Buildout

No mitigation measures are necessary for the following less-than-significant impacts.

9-4 General Plan Buildout - Effects on Groundwater Quality
9-5 General Plan Buildout - Effects on Surface Water Quality
9-6 General Plan Buildout - Changes in Floodplain Hydraulics

9.4 Level of Significance after Mitigation

No significant impacts related to water quality and surface hydrology would result from implementation of the Wastewater Master Plan.

10 POPULATION AND HOUSING

This chapter documents the existing population and housing conditions and trends in the Wastewater Master Plan (WWMP) service area and estimates changes to these conditions that could be created by implementation of the proposed project. The analysis focuses on the direct effects on population and housing resulting from construction of infrastructure and facilities associated with implementation of the WWMP.

The WWMP would provide sewer service for, and enable the construction of, projects that include a substantial number of housing units and population-generating elements (e.g., Diablo Grande, West Patterson Business Park, Keystone Pacific Business Park, Patterson Gardens, Creekside developments). The WWMP would also ultimately serve and support development in the East-North and East-South General Plan areas. Changes to population and housing in Patterson and Diablo Grande associated with growth served by, or enabled by the WWMP, are indirect effects of WWMP implementation. These indirect effects are addressed separately in Section 12.2, Growth-Inducing Impacts.

10.1 EXISTING CONDITIONS

The existing conditions discussion describes population and housing conditions in and around the WWMP project and service area to establish a baseline against which population and housing impacts of WWMP implementation can be compared.

10.1.1 POPULATION

According to the U.S. Census, the population of Stanislaus County in 2000 was 446,997, and the population of the City of Patterson was 11,606. California Department of Finance estimated Stanislaus County's population in January 2002 to be 469,500 and the City of Patterson's population to be 13,050 (DOF 2003a).

Population projections for the City of Patterson were calculated as part of the City of Patterson General Plan, and more recently by the City in 2002. These projections are described below and summarized in Table 10-1. The 1991 City of Patterson General Plan projects that the population in the General Plan area will be 21,000 at the end of the General Plan 20-year analysis period in 2011. At full buildout of the General Plan, the population is projected to be 30,800; however, no timeframe is provided for expected full buildout.

Table 10-1 City of Patterson Population Projections			
Source of Projections	2006	2011	2020 (or General Plan Buildout)
City of Patterson General Plan	19,000	21,000	30,800
City Projections	16,490	21,592	30,000
Source: City of Patterson 2001a and 2002, Lee & Ro 2002, StanCOG 2002.			

In February 2002, the City of Patterson developed growth projections for the City based on an anticipated 6% annual growth rate from 2002 to 2010, and a 3.7% growth rate after 2010. The 6% growth rate was based on known planned residential buildout in the City, and the 3.7% growth rate was used to approximately achieve full General Plan buildout population projections in 2020. The City's projections indicate a population of 21,592 in 2011 (end of General Plan analysis period) and 30,000 in 2020.

The portion of the Diablo Grande project to be served by the WWMP (Diablo Grande Phase 1) is anticipated to house about 6,300 new residents (3 residents in each of the 2,100 dwelling units).

10.1.2 HOUSING

According to the 2000 U.S. Census figures, there were a total of 150,807 housing units in Stanislaus County in 2000, with 145,150 of these being occupied (3.8% vacancy rate). In 2000, the City of Patterson had a total of 3,262 housing units with 3,146 of these being occupied (3.6% vacancy rate). The total number of dwelling units in the City has grown from an estimated 2,700 in 1990 to the 3,262 recorded by the 2000 U.S. Census (City of Patterson 2001a). The 1991 City of Patterson General Plan projects 7,789 new housing units would be constructed at General Plan buildout.

The portion of Diablo Grande to be served by the WWMP (Diablo Grande Phase 1) is anticipated to include about 2,100 new housing units.

According to the *Draft Regional Housing Needs Assessment for Stanislaus County and its Cities* published by the Stanislaus Council of Governments (StanCOG), with the exception of the City of Hughson, every jurisdiction in Stanislaus County, including the City of Patterson, has excess/vacant housing units (StanCOG 2002). The most recent DOF statistics for Patterson (DOF 2003b) show a vacancy rate of 3.56%, which is not substantially different from the 2000 U.S. Census rate of 3.6%. StanCOG estimated the average annual household growth rate for Stanislaus County and the City of Patterson for the 1990-2000 period to be 1.48% and 2.06%,

respectively, and for the 2001-2008 planning period to be 1.82% and 2.83%, respectively (StanCOG 2002).

10.2 Environmental Impacts

10.2.1 Thresholds of Significance

Implementation of the Patterson WWMP would have a significant impact if it would:

- induce substantial population growth in an area, either directly (e.g., by proposing new homes and business), or indirectly (e.g., through extension of roads or other infrastructure); or
- displace substantial numbers of people or existing housing, necessitating the construction of replacement housing elsewhere.

10.2.2 First-Phase Expansion

Impact 10-1

First-Phase Expansion - Population Growth During Construction. *Construction of Phase 1 of the proposed project would generate approximately 15 to 20 construction jobs in and near the City during the peak construction period. This temporary increase in employment would not be expected to generate any substantial new population in the area or generate the need for substantial additional housing for construction workers. Project construction would thus result in a* ***less-than-significant*** *impact.*

Project construction activities would occur on-and-off throughout the Phase 1 construction period, estimated to occur from October 2003 through 2004. During the peak of construction; it is estimated that between 15 and 20 construction workers would be employed in the construction of the wastewater treatment plant expansion, percolation ponds, and project pipelines. Fewer construction workers would be employed during non-peak periods. According to the 2000 Census data, 443 residents in the City of Patterson and 13,943 residents in Stanislaus County are employed in the construction industry (U.S. Census 2002). This existing number of residents in the City and County who are employed in the construction industry would likely be sufficient to meet the demand for construction workers that would be generated by the proposed project. Because construction workers serving the proposed project can be expected to come from the City of Patterson, and nearby communities in the county, substantial population growth or increases in housing demand in the City and the region as a result of these jobs is not anticipated. Furthermore, even if some construction workers from outside the region were employed at the project site, construction workers typically do not change residences when assigned to a new construction site, so it is not

anticipated that there would be any substantial permanent relocation of these construction workers to the City of Patterson. The proposed project would therefore not be expected to generate the need for substantial additional housing in the City during construction. Because of these conditions, impacts related to population growth and housing demand associated with project construction are considered less than significant.

Impact 10-2

First-Phase Expansion - Induce Permanent Population Growth. *Construction of the first-phase of the proposed project would not develop new homes or businesses or generate new jobs that would result in a substantial direct increase in population. The population impacts of the proposed project would thus be* ***less than significant.***

Phase 1 of the proposed project does not include the construction of new housing or businesses, and thus would not result in any substantial direct increase in population in the project area. Operation of Phase 1 project facilities would require approximately two new City employees. In 2000, there were 4,277 jobs in the City of Patterson (U.S. Census 2002). Project-related jobs would represent approximately 0.05% of the jobs in the City. This minimal increase in jobs would not be sufficient to substantially increase the population or the demand for housing in the Patterson area. Because the proposed project would not induce a substantial direct increase in population growth, this impact is considered less than significant.

Indirect impacts associated with increases in population and housing resulting from projects to be served by the WWMP are discussed in Section 12.2, Growth-Inducing Impacts.

Impact 10-3

First-Phase Expansion - Displace Existing Housing. *Construction of Phase 1 of the proposed project could result in the displacement of a small number (less than 5) of existing homes. This number of displaced homes is not considered substantial and the impact is considered* ***less than significant.***

Sewer line construction associated with the proposed project would occur in existing road and utility rights-of-way; therefore, no displacement of existing housing would occur. Wastewater treatment plant infrastructure improvements would occur in the footprint of the existing plant and would not displace any homes. Depending on which percolation pond sites are ultimately selected, construction of the percolation ponds could displace a small number of residences (i.e., estimated to be fewer than 5). The displacement of fewer than 5 residences is not considered substantial. Further, owners of these homes would be compensated for the value of the home and property needed for the project. Therefore, the proposed project would result in a less-than-significant housing displacement impact.

10.2.3 GENERAL PLAN BUILDOUT

Impact 10-4

General Plan Buildout - Population Growth During Construction. *Construction of the General Plan buildout portion of the proposed project would generate approximately 15 to 20 construction jobs in and near the City during the peak construction period. This temporary increase in employment would not be expected to generate any substantial new population in the area or generate the need for substantial additional housing for construction workers. Project construction would result in a* ***less-than-significant*** *impact.*

Project construction activities would occur on-and-off throughout the General Plan buildout construction period. The exact construction schedule for future expansion has not been determined. During the peak of construction, it is estimated that between 15 and 20 construction workers would be employed in the construction of the wastewater treatment plant expansion, percolation ponds, and project pipelines. Fewer construction workers would be employed during non-peak periods. According to the 2000 Census data, 443 residents in the City of Patterson and 13,943 residents in Stanislaus County are employed in the construction industry (U.S. Census 2002). Anticipated job and population growth in the City of Patterson and the County would result in increases in the number of construction workers by the time construction of the General Plan Buildout phase of the project begins. The number of residents in the City and County who would be employed in the construction industry would likely be sufficient to meet the demand for construction workers that would be generated by the proposed project. Because construction workers serving the proposed project can be expected to come from the City of Patterson, and nearby communities in the County, substantial population growth or increases in housing demand in the City and the region as a result of these jobs is not anticipated. Furthermore, even if some construction workers from outside the region were employed at the project site, construction workers typically do not change residences when assigned to a new construction site, so it is not anticipated that there would be any substantial permanent relocation of these construction workers to the City of Patterson. The proposed project would therefore not be expected to generate the need for substantial additional housing in the City during construction. Because of these conditions, impacts related to population growth and housing demand associated with project construction are considered less than significant.

Impact 10-5

General Plan Buildout - Induce Permanent Population Growth. *Construction of the General Plan Buildout portion of the proposed project would not develop new homes or businesses or generate new jobs that would result in a substantial direct increase in population. The population impacts of the proposed project would thus be* ***less than significant.***

The General Plan Buildout portion of the proposed project does not include the construction of new housing or businesses, and thus would not result in any substantial direct increase in population in the project area.

Impacts associated with increases in population and housing resulting from projects to be served by the WWMP are discussed in Section 12.2, Growth-Inducing Impacts.

Operation of project facilities associated with the General Plan Buildout portion of the proposed project would require approximately two new employees. In 2000, there were 4,277 jobs in the City of Patterson (U.S. Census 2002). The City of Patterson General Plan estimates that 14,006 new employees would be added to the City by the completion of General Plan buildout. Therefore, roughly 15,000 to 18,000 jobs would be located in the City by the time the General Plan Buildout phases of the WWMP. Project-related jobs would represent approximately 0.01% of the jobs in the City at that future time. This minimal increase in jobs would not be sufficient to substantially increase the population or the demand for housing in the Patterson area. Because the proposed project would not induce a substantial direct increase in population growth, this impact is considered less than significant.

Impact 10-6

General Plan Buildout - Displace Existing Housing. *Construction of the General Plan Buildout portion of the proposed project could result in the displacement of a small number (less than five) of existing homes. This number of displaced homes is not considered substantial and the impact is considered* ***less than significant.***

Sewer line construction associated with the proposed project would occur in existing road and utility rights-of-way; therefore, no displacement of existing housing would occur. Wastewater treatment plant infrastructure improvements would occur in the footprint of the existing plant and would not displace any homes. Depending on which percolation pond sites are ultimately selected, construction of the percolation ponds could displace a small number of residences (i.e., estimated to be fewer than five). The displacement of fewer than five residences is not considered substantial. Further, owners of these homes would be compensated for the value of the home and property needed for the project. Therefore, the proposed project would result in a less-than-significant housing displacement impact.

10.3 Mitigation Measures

10.3.1 First-Phase Expansion

No mitigation measures are necessary for the following less-than-significant impacts.

10-1: First-Phase Expansion - Population Growth During Construction
10-2: First-Phase Expansion - Induce Permanent Population Growth
10-3: First-Phase Expansion - Displace Existing Housing

10.3.2 General Plan Buildout

No mitigation measures are necessary for the following less-than-significant impacts.

10-4: General Plan Buildout - Population Growth During Construction
10-5: General Plan Buildout - Induce Permanent Population Growth
10-6: General Plan Buildout - Displace Existing Housing

10.4 Level of Significance After Mitigation

The proposed project would not result in any significant population and housing impacts. Therefore, no mitigation measures are required.

11 CUMULATIVE IMPACTS

11.1 CEQA REQUIREMENTS FOR CUMULATIVE IMPACT ANALYSIS

This EIR provides an analysis of cumulative impacts of the proposed project, as required by State CEQA Guidelines §15130. Cumulative impacts are defined in State CEQA Guidelines §15355 as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts." A cumulative impact occurs from "the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time" (State CEQA Guidelines §15335[b]).

Consistent with State CEQA Guidelines §15130(a), the discussion of cumulative impacts in this EIR focuses on significant or potentially significant cumulative impacts. State CEQA Guidelines §15130(b) provides, in pertinent part:

> The discussion of cumulative impacts shall reflect the severity of the impacts and their likelihood of occurrence, but the discussion need not provide as great detail as is provided for the effects attributable to the project alone. The discussion should be guided by the standards of practicality and reasonableness, and should focus on the cumulative impact to which the identified other projects contribute rather than the attributes of other projects that do not contribute to the cumulative impact.

The cumulative impact analysis in this EIR is based on "(a) list of past, present, and probable future projects producing related or cumulative impacts" (State CEQA Guidelines §15130[b][1][A]). The related projects that are considered for the purposes of cumulative analysis in this EIR are hereinafter referred to as the "cumulative projects." These projects are described below.

11.1.2 CUMULATIVE PROJECTS

Bright Development: Approved 137-unit residential development in the City of Patterson.

Creekside Annexation: Approved annexation including 646 acres of mixed-use residential development in the Heartland Ranch (formerly known as Patterson Ranch), Walker Ranch, Creekside Meadows developments, and on the Cascario property.

Patterson Gardens: Approved master planned community annexation with about 987 residential units, a school site, and approximately 302,500 square feet of commercial, retail, and office uses.

Keystone Pacific Business Park: Approved 224-acre business park with approximately 2.5 million square feet of flex, light industrial, and distribution/warehouse uses. The Keystone Pacific Business Park will be located in Stanislaus County, adjacent to the City's western boundary.

West Patterson Business Park Master Development Plan Area: Approved 820-acre business park plan area that would include approximately 9 million square feet of warehouse, manufacturing/light industrial, office, retail/commercial, highway commercial, and hotel/motel land uses, including the Keystone Pacific Business Park described above. This plan area is located in Stanislaus County, adjacent to the City's western boundary.

City of Patterson General Plan Buildout Areas: Buildout of the City's General Plan is expected to occur by around 2020, and would include residential, commercial, and institutional land uses.

Diablo Grande Specific Plan Area: Diablo Grande is an approved 2,000-acre planned residential and resort community consisting of approximately 2,100 residences, six golf courses, resort hotel and conference facilities, a Town Center, a research campus, and commercial centers in unincorporated Stanislaus County. The site has historically been used for grazing.

Senior Multi-family Project: Approved ±50-unit senior housing development in the City of Patterson. It is expected to be constructed within 1 to 2 years.

Fink Road Landfill: Stanislaus County is considering various alternatives for expanding its Fink Road Landfill near Crows Landing. Potential expansion areas include unirrigated non-native grasslands, and some orchards. No Williamson Act lands are expected to be converted.

Crows Landing Naval Air Station: Stanislaus County is planning to convert the Crows Landing Naval Air Station to a general aviation airport and business park. The site includes approximately 1,500 acres of farmland.

Westley 20-acre General Plan Amendment: Stanislaus County is considering a proposed amendment to its General Plan to allow development of a 20-acre highway commercial center north of the Westley I-5 interchange, adjacent to the existing highway commercial center.

Exhibit 11-1 depicts the approximate locations of the cumulative projects. The cumulative projects are described below.

11.1.3 Cumulative Impact Analysis

Impact II-1

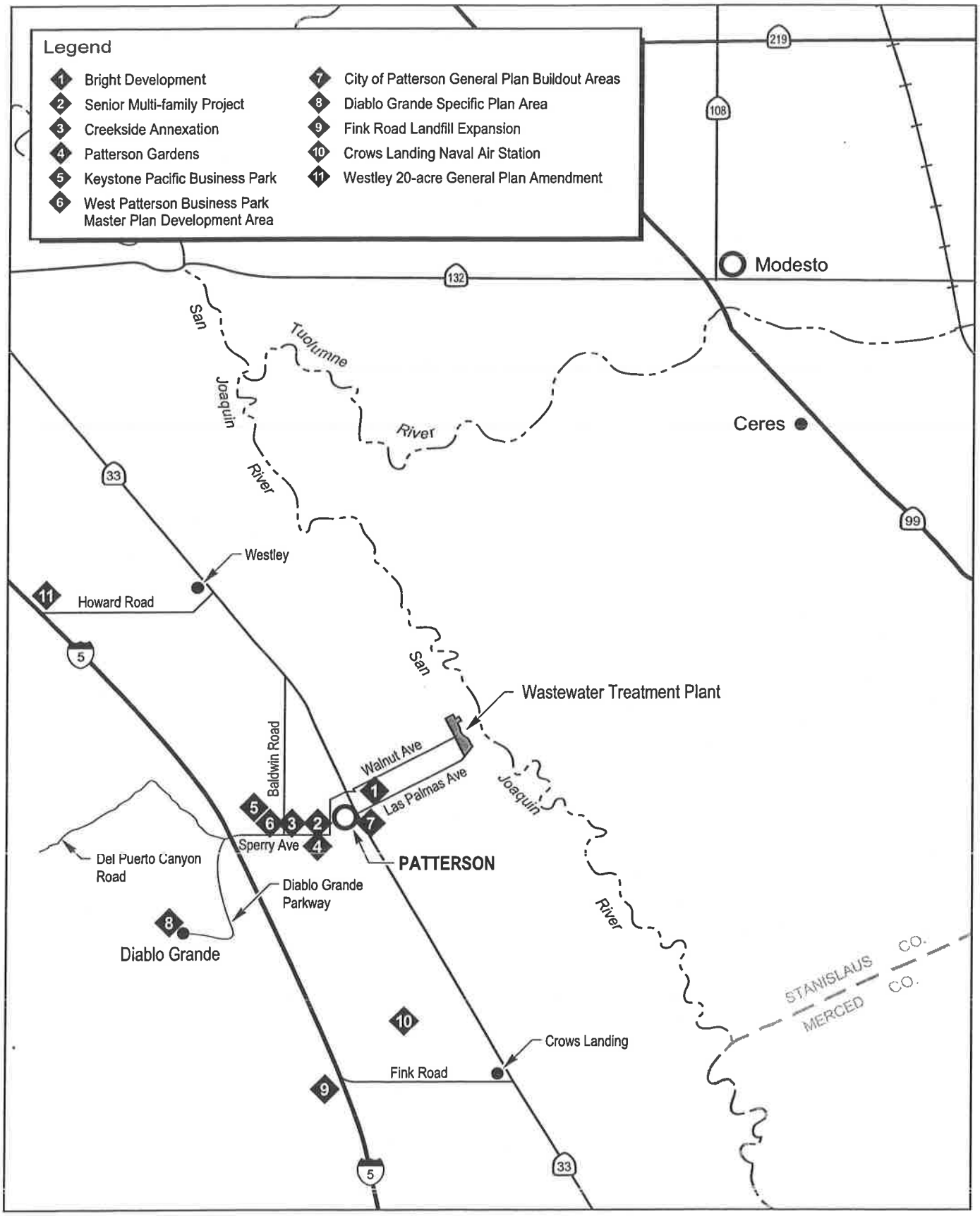
Cumulative - Loss of Prime Agricultural Land. *Implementation of the proposed Wastewater Master Plan would contribute to the cumulative loss of prime agricultural land in Stanislaus County. This is a* ***significant*** *cumulative impact.*

At full buildout of the General Plan, implementation of the proposed Wastewater Master Plan would convert up to 400 acres of farmland for disposal pond land uses. Over the past decade, there has been a loss of about 577 acres of prime farmland to the Creekside residential developments in the West Patterson area. The West Patterson projects would contribute an additional 1,125 acres to that cumulative loss. Countywide, it would contribute to a known loss of about 2,900 acres between 1992 and 1998. Buildout of the City's General Plan in the East-North and East-South areas would convert up to 1,500 acres of farmland, and conversion of the Crows Landing Naval Air Station would also be expected to convert an unknown acreage of farmland. The cumulative impact of the loss of prime agricultural land for expansion of the wastewater treatment facility would be a significant, irreversible and unavoidable impact of the Wastewater Master Plan.

Impact II-2

Cumulative - Impacts to San Joaquin Kit Fox. *The proposed project and related cumulative projects would result in disturbance of San Joaquin kit fox habitat and could result in injury or death of individual kit foxes. This is considered a* ***significant*** *cumulative impact.*

The western portion of the project area, between the Delta-Mendota Canal and I-5, is thought to be used by San Joaquin kit fox as a movement corridor between populations to the north and south (USFWS 1998). Disturbance of this corridor and construction of movement barriers has occurred as a result of increasing development, particularly in association with expansion of existing communities and development of new communities near the I-5 corridor. Although implementation of the Patterson Wastewater Master Plan would not result in loss of kit fox habitat or construction of permanent movement barriers, it could temporarily restrict movement and would pose a limited risk for individual kit foxes to be injured or killed during construction. Future development within this movement corridor for the Westley 20-acre General Plan amendment, the West Patterson Business Park Plan Area, the Keystone Pacific Business Park, and the Fink Road Landfill Expansion will result in a variety of adverse effects



Source: EDAW Inc. 2003

Cumulative Projects

EXHIBIT 11-1

City of Patterson Wastewater Master Plan EIR

G 2T008.01 3/03

0 2.5 5 MILES

NORTH

EDAW

to kit fox, including temporary disturbance of habitat, permanent loss of habitat, and potential loss of individuals. Therefore, the proposed project could contribute considerably to a significant cumulative impact to the San Joaquin kit fox.

Impact II-3

Cumulative - Impacts to Swainson's Hawk. *The proposed project and related projects would result in loss of foraging habitat for Swainson's hawks, and could also result in disturbance and loss of active Swainson's hawk nests. This is considered a* ***significant*** *cumulative impact.*

The project area provides a large amount of high-quality Swainson's hawk foraging habitat. Loss of high-quality foraging habitat has been identified as one of the prime management issues facing Swainson's hawks in the Central Valley (CDFG 1994, Woodbridge 1998). Swainson's hawks are also known to nest in the project vicinity. Active nests could be directly or indirectly affected by construction during the breeding season, potentially resulting in loss of nests. Loss of Swainson's hawk foraging habitat and loss of an active nest would be considered significant impacts. Future development in the project vicinity will result in loss of foraging habitat. Patterson Gardens, Keystone Pacific Business Park, and the West Patterson Business Park Plan area would convert 945 acres of agricultural land that may provide Swainson's hawk foraging habitat (City of Patterson 2003). Once fully developed, the Creekside Annexation will have converted approximately 646 acres of agricultural land that also provides foraging habitat (City of Patterson 1994). Buildout of the City's General Plan in the East-North and East-South areas would convert up to 1,500 acres of farmland that provides suitable forgaing habitat for Swainson's Hawk, and conversion of the Crows Landing Naval Air Station would also be expected to convert an unknown acreage of foraging habitat. The likelihood of Swainson's hawks nesting in the West Patterson project area is considered low; however, suitable nest trees are located within the project area (City of Patterson 2003). The City's General Plan buildout area and Crows Landing Naval Air Station could also support suitable nesting trees. Therefore, the proposed project could contribute considerably to a significant cumulative impact related to loss of foraging habitat for Swainson's hawk and disturbance and loss of active nests.

Impact II-4

Cumulative - Impacts to Other Nesting Birds. *The proposed project and related projects could result in disturbance and loss of active raptor nests and tricolored blackbird colonies. This is considered a* ***significant*** *cumulative impact.*

Grasslands and agricultural crops that provide foraging habitat for raptors and other birds have been, and continue to be, lost as a result of land conversion for development and conversion of farmland to crops unsuitable as foraging habitat for raptors and tricolored blackbirds (e.g., vineyards and orchards). Because considerable foraging habitat for raptors and tricolored blackbirds is still regionally available and the species are relatively common and

widespread, this loss of foraging habitat is not a critical issue. However, raptors and tricolored blackbirds could also nest in the project vicinity and could be affected by project construction. Nests of these species could be directly or indirectly affected by construction during the breeding season, potentially resulting in loss of nests. Potential nesting habitat for loggerhead shrike and California horned lark in the project site is limited and of marginal quality, and these species would not be substantially affected. None of the related projects are expected to result in significant impacts to tricolored blackbird, but they could result in loss of active raptor nests. Loss of an active raptor nest would be considered a significant impact. Suitable raptor nest trees and burrowing owl nesting habitat are located within the West Patterson project area (City of Patterson 2003), the City's General Plan buildout area, and the Diablo Grande Specific Plan Area. The Crows Landing Naval Air Station could also provide suitable raptor nesting habitat. Burrowing owl surveys conducted by EDAW biologists in 1999 at the Fink Road Landfill Expansion area documented at least one nesting pair. Therefore, the proposed project would contribute considerably to a significant cumulative impact to these species.

Impact **II-5**

Cumulative - Impacts to Aquatic Habitats and Associated Species. *The proposed project and related projects would result in disturbance of Salado Creek and the wastewater treatment ponds and could affect special-status species supported by these habitats. This is considered a* ***significant*** *cumulative impact.*

A large percentage of the Waters of the U.S. and wetlands in California have been lost to land conversion, particularly to development and agricultural uses. A small portion of Salado Creek, a Water of the U.S., would be directly affected by construction of the Diablo Grande sewer line. Construction of this sewer line and the lift station in the western portion of the study area could also indirectly affect that portion of Salado Creek and associated riparian and oak vegetation as a result of runoff and subsequent sedimentation during construction activities. This portion of the creek provides habitat for sensitive amphibians (California tiger salamander, California red-legged frog, foothill yellow-legged frog, and western spadefoot), which could also be affected by construction. Conversion of existing disposal ponds at the wastewater treatment plant could affect another aquatic species, the western pond turtle, through stranding. Disturbance and loss of aquatic habitats and associated sensitive amphibians and reptiles would be a significant impact. Development of the Patterson Gardens would impact approximately 0.36 acres of Salado Creek (City of Patterson 2003), and development of the City's General Plan buildout area could affect the creek. Expansion of the wastewater treatment facilities associated with the West Patterson projects could affect riparian habitats and western pond turtle (City of Patterson 2003), and implementation of the Diablo Grande Specific Plan could affect aquatic and riparian habitats and associated special-status species. EDAW biologists determined approximately 3.8 acres of jurisdictional Waters of the U.S. would be lost as a result of the Fink Road Landfill expansion. Therefore, the proposed

project would contribute considerably to a significant cumulative impact to jurisdictional habitats and special-status aquatic species.

Impact II-6

Cumulative - Impacts to Other Special-status Species. *Related projects could substantially affect other special-status species, but the proposed project would not result in such impacts. Therefore, this impact would be considered* ***less than significant.***

The remaining special-status species are not expected to be substantially affected by the project. There is no suitable habitat for any of the special-status plants or Valley elderberry longhorn beetle. San Joaquin whipsnake, mountain plover, double-crested cormorant, and San Joaquin pocket mouse are known to or could occur in the project area. However, habitat for these species is of marginal quality and is regionally abundant. Related projects and future development in the project vicinity could result in significant cumulative impacts to these species. However, because the proposed project is not expected to result in substantial effects on these species, its contribution to any significant cumulative impacts would be less than cumulatively considerable and, therefore, would be less than significant.

Impact II-7

Cumulative - Increases in Regional Criteria Pollutants. *The proposed Wastewater Master Plan would serve growth already planned for in the City of Patterson and the Diablo Grande Specific Plan area. Therefore, the proposed project would not be anticipated to result in an increase in regional emissions that would conflict with the emissions inventories used for air quality attainment planning purposes. However, because the region is already designated non-attainment for various pollutants, including ozone and* PM_{10}*, even minor increases in these emissions of these pollutants and/or precursors could contribute on a cumulative basis to the region's overall non-attainment conditions. As a result, this cumulative impact would be considered* ***potentially significant.***

As previously mentioned, the proposed project is located within the jurisdiction of the SJVAPCD, which is currently designated as a severe nonattainment area for the national and state ozone (1-hour) standards and serious nonattainment for the state fine particulate matter (PM_{10}) standard. The SJVAPCD has adopted several air quality plans, each of which were developed to attain and maintain compliance with the national and state air quality standards as required by the Clean Air Act (CAA). The air quality attainment plans present comprehensive strategies to reduce nitrogen oxides (NO_X), reactive organic gases (ROG), and PM_{10} emissions from stationary, area, mobile, and indirect sources. Such strategies include the adoption of rules and regulations, enhancement of SJVAPCD CEQA participation, implementation of a new and modified indirect source review program, adoption of local air quality plans, and stationary, mobile, and indirect source control measures (SJVAPCD 2001).

The air quality attainment plans are based, in part, on the projected population growth identified in the community and regional plans coupled with the cumulative impact from current and proposed development projects. Furthermore, proposed projects resulting in an increase in population or employment growth beyond that identified in regional or community plans may result in an increase in vehicle miles traveled (VMT) and thus lead to an increase in mobile source emissions, which may conflict with the SJVAPCD's air quality planning efforts. Consequently, an increase in VMT beyond that projected in area plans could result in a significant adverse incremental effect on the region's ability to attain and/or maintain state and national ambient air quality standards.

As discussed in Section 12.2 of this EIR (Growth-Inducing Impacts), implementation of the City's Wastewater Master Plan would serve growth already planned in the City of Patterson and the Diablo Grande Specific Plan area. Therefore, the proposed project would not be anticipated to result in an increase in regional emissions that would conflict with the emissions inventories used for air quality attainment planning purposes. However, because the region is already designated non-attainment for various pollutants, including ozone and PM_{10}, even minor increases in these emissions of these pollutants and/or precursors could contribute on a cumulative basis to the region's overall non-attainment conditions. As a result, this cumulative impact would be considered potentially significant.

11.2 Cumulative Mitigation Measures

No cumulative mitigation measures are necessary for the following less-than-significant cumulative impact.

11-6: Cumulative - Impacts to Other Special-status Species

Cumulative mitigation measures for significant and potentially significant cumulative impacts are provided below.

11-1 Cumulative - Contribute to the California Farmland Conservancy Fund. The City will implement Mitigation Measure 5-1.

11-2 Cumulative - Reduction of Cumulatively Considerable Impacts to San Joaquin Kit Fox. WHWD will implement Mitigation Measure 6-2.

11-3 Cumulative - Reduction of Cumulatively Considerable Impacts to Swainson's Hawk. The City will implement Mitigation Measure 6-3.

11-4 Cumulative - Reduction of Cumulatively Considerable Impacts to Other Nesting Birds. The City and WHWD will implement Mitigation Measures 6-6, 6-7, and 6-8.

11-5 Cumulative - Reduction of Cumulatively Considerable Impacts to Aquatic Habitats and Associated Species. The City and WHWD will implement Mitigation Measures 6-4, 6-5, and 6-10.

11-7 Cumulative - Regional Criteria Pollutant Reduction Measures. The City will implement Mitigation Measure 8-1.

11.3 Level of Significance after Mitigation

11.3.1 Farmland Conversion

Mitigation Measure 11-1 would encourage the preservation of prime farmland in Stanislaus County, but would not reduce the project's contribution to cumulative farmland conversion impacts to a less-than-considerable level. Impact 11-1, therefore, would remain cumulatively significant and unavoidable. It should be noted that the City of Patterson is researching the cost of contributing to the California Farmland Conservancy Fund. If the contribution is considered to be cost prohibitive for the proposed project, this mitigation measure would be considered infeasible and would not be implemented.

11.3.2 Biological Resources

Mitigation Measures 11-2, 11-3, 11-4, and 11-5 would reduce the project's contribution to cumulative biological resource impacts to a less-than-considerable level. The project's contribution to cumulative impacts on biological resources would be less than significant.

11.3.3 Air Quality

Because the region is already designated non-attainment for various pollutants, including ozone and PM_{10}, even minor increases in these emissions of these pollutants and/or precursors could contribute on a cumulative basis to the region's overall non-attainment conditions. Mitigation Measure 11-7 would reduce the project's contribution of regional criteria pollutants, but not to a less-than-considerable level. Impact 11-7, therefore, would remain cumulatively significant and unavoidable.

12 OTHER CEQA-MANDATED SECTIONS

12.1 SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS

CEQA Section 21100(b)(2) provides that an EIR shall include a detailed statement setting forth "[i]n a separate section...[a]ny significant effect on the environment that cannot be avoided if the project is implemented." Accordingly, this section provides a summary of significant environmental impacts of the City of Patterson's proposed Wastewater Master Plan (WWMP) that cannot be mitigated to a less-than-significant level. Significant unavoidable environmental impacts of the proposed project, as identified in Chapters 4 through 11 of this EIR, are summarized in this section.

Impact 5-1

First-Phase Expansion - Conversion of Farmland to Non-Agricultural Uses. *Construction of the City's percolation ponds for the first-phase expansion would result in the conversion of up to 125 acres of state and federally classified Prime Farmland to non-agricultural uses. This is considered a* ***significant*** *impact.*

Impact 5-4

General Plan Buildout - Conversion of Farmland to Non-Agricultural Uses. *Construction of additional percolation ponds to serve General Plan buildout would result in the conversion of up to 275 acres of state and federally classified Prime Farmland to non-agricultural uses. This is considered a* ***significant*** *impact.*

Impact 8-3

First-Phase Expansion - Long-Term Odor Impacts. *The proposed project would result in increased odor-generating potential associated with the operation of the wastewater facility due to the increased area of proposed percolation ponds that could affect nearby residents. This is a* ***potentially significant*** *impact.*

Impact 8-6

General Plan Buildout - Long-Term Odor Impacts. *Expansion of the wastewater treatment facilities to serve buildout of the General Plan would result in increased odor generating potential due to the increased area of proposed percolation ponds that could affect nearby residents. This is a* ***potentially significant*** *impact.*

Impact II-1

Cumulative - Loss of Prime Agricultural Land. *Implementation of the proposed Wastewater Master Plan would contribute to the cumulative loss of prime agricultural land in Stanislaus County. This is a* ***significant*** *cumulative impact.*

Impact II-7

Cumulative - Increases in Regional Criteria Pollutants. *The project would not promote or result in any substantial increase in growth in the project area, because the City's Wastewater Master Plan would serve growth already planned for in the City of Patterson and the Diablo Grande Specific Plan area. Therefore, the proposed project would not be anticipated to result in an increase in regional emissions that would conflict with the*

emissions inventories used for air quality attainment planning purposes. However, because the region is already designated non-attainment for various pollutants, including ozone and PM_{10}, even minor increases in these emissions of these pollutants and/or precursors could contribute on a cumulative basis to the region's overall non-attainment conditions. As a result, this cumulative impact would be considered ***potentially significant.***

Mitigation Measures 5-1 and 5-4 would encourage the preservation of prime farmland in Stanislaus County, but would not reduce farmland conversion impacts to a less-than-significant level. Impacts 5-1 and 5-4, therefore, would remain significant and unavoidable. It should be noted that the City of Patterson is researching the cost of contributing to the California Farmland Conservancy Fund. If the contribution is considered to be cost prohibitive for the proposed project, this mitigation measure would be considered infeasible and would not be implemented.

Implementing Mitigation Measures 8-3 and 8-6 would keep odors to a minimum. Although the frequency of occurrence and duration of exposure to odors would be substantially reduced, detectable levels of odorous emissions at nearby residences would still be expected to occur on an occasional basis given the close proximity of nearby residences. As a result, potential increases in odorous emissions would be considered a significant and unavoidable impact.

Mitigation Measure 11-1 would encourage the preservation of prime farmland in Stanislaus County, but would not reduce the project's contribution to cumulative farmland conversion impacts to a less-than-considerable level. Impact 11-1, therefore, would remain cumulatively significant and unavoidable. It should be noted that the City of Patterson is researching the cost of contributing to the California Farmland Conservancy Fund. If the contribution is considered to be cost prohibitive for the proposed project, this mitigation measure would be considered infeasible and would not be implemented.

Because the region is already designated non-attainment for various pollutants, including ozone and PM_{10}, even minor increases in the emissions of these pollutants and/or precursors could contribute on a cumulative basis to the region's overall non-attainment conditions. Mitigation Measure 11-7 would reduce the project's contribution of regional criteria pollutants, but not to a less-than-considerable level. Impact 11-7, therefore, would remain cumulatively significant and unavoidable.

12.2 GROWTH-INDUCING IMPACTS

12.2.1 INTRODUCTION

State CEQA Guidelines (§15126(d)) require that an EIR evaluate the growth-inducing impacts of a proposed project as follows:

> Discuss the way in which a proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects which would remove obstacles to population growth (a major expansion of a waste water treatment plant might, for example, allow for more construction in service areas). Increases in the population may tax existing community service facilities, requiring construction of new facilities that could cause significant environmental effects. Also, discuss the characteristic of some projects which may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. It is not assumed that growth in an area is necessarily beneficial, detrimental, or of little significance to the environment.

A project can have direct and/or indirect growth inducement potential. Direct growth inducement would result if a project involved construction of new housing. Indirect growth inducement would result if a project resulted in: substantial new permanent employment opportunities (e.g., commercial, industrial or governmental enterprises); a substantial construction effort with substantial short-term employment opportunities that indirectly stimulate the need for additional housing and services to support the new employment demand; and/or removal of an obstacle to additional growth and development, such as removing a constraint on a required public utility or service, such as wastewater treatment.

Growth inducement itself is not an environmental effect, but may lead to environmental effects. Such environmental effects may include increased demand on other community and public services and infrastructure, increased traffic and noise, degradation of air or water quality, degradation or loss of plant or animal habitats, or conversion of agricultural and open space land to urban uses.

Growth inducement may exacerbate potential impacts if the growth is not consistent with the land use plans and growth management plans and policies for the area affected. Local land use plans provide for land use development patterns and growth policies that are intended to allow for the orderly expansion of urban development supported by adequate urban public services, such as water supply, roadway infrastructure, sewer service, and solid waste service. A

project that is in conflict with local land use plans could induce adverse environmental impacts and impacts to other public services that have not been previously considered.

The section below presents the proposed project's projections of future wastewater treatment/disposal demand, and determines whether these demand estimates are consistent with the growth projections of applicable land use plans. Following this discussion is a summary of the potential growth-inducing effects that could result from growth that would be supported by implementation of the WWMP.

12.2.2 WWMP Wastewater Treatment/Disposal Demand Estimates

As part of the WWMP preparation effort, estimates of future wastewater treatment/disposal demand were developed to determine the capacity requirements of facilities necessary to serve existing and planned development in the project area. At issue in regard to growth-inducing impacts is whether these demand estimates are consistent with the growth projections in applicable land use plans, and thus whether the proposed project would be able to provide service for an equivalent or greater amount of development than that already planned.

Phase 1 of the proposed WWMP implementation project would increase the City's wastewater treatment and disposal capacity by 1.25 million gallons per day (mgd). Of this capacity, 0.5 mgd would be allocated to serve the remainder of the Creekside development, the first-phase of the Keystone Business Park, and Patterson Gardens. Wastewater generated by Phase 1 of Diablo Grande is currently projected to total approximately 0.71 mgd. If actual flows are higher, the City would accommodate up to 0.75 mgd of wastewater from Diablo Grande Phase 1. Table 12-1 below compares WWMP service allocated to each project or area, and the estimated service demand for each project/area based on past planning documents and CEQA analyses.

Wastewater treatment/disposal demand shown in Table 12-1 for the Creekside, Patterson Gardens, Keystone Business Park, and West Patterson Business Park developments is based on estimates provided in the *West Patterson Projects EIR* (City of Patterson 2003). Demand for the remainder of the Creekside development was calculated by taking the overall project demand (404,500 mgd) and multiplying it by the percentage of housing units remaining to be constructed (598 units remaining of 1,348 total = 44%). Approximately 89,450 mgd would be accommodated by the current remaining capacity of the plant. Therefore, approximately 90,000 mgd of the proposed first-phase expansion would accommodate the remainder of the Creekside developments. Demand for the portion of the Keystone Business Park developed during Phase 1 of the WWMP was calculated by taking the overall demand expressed in the

West Patterson Projects EIR (136,500 mgd) and multiplying it by the percentage of the total project acreage to be constructed during Phase 1 (150 of 224 total acres = 67%).

Table 12-1
WWMP Wastewater Service Demand and Capacity Allocation

Development Served by WWMP	Phase 1 Demand (mgd)	Phase 1 Allocation (mgd)
Creekside Development [1]	90,000	500,000
Patterson Gardens	318,500[2]	
Keystone Business Park	91,500[3]	
West Patterson Business Park	0	0
East Area Development[4]	0	0
City of Patterson Total	**500,000**	**500,000**
Diablo Grande	709,800	750,000
Total Service Area	**1,209,800**	**1,250,000**

[1] Flows not already served by the plant's remaining capacity.
[2] Demand estimates are from the West Patterson EIR; source Lee & Ro, Inc., 2002
[3] Based on 150 of 224 total acres (67%) built during Phase 1
[4] Includes East-North Area and East-South Area
Source: Lee & Ro. 2002.

The demand for wastewater treatment and disposal previously planned for in the West Patterson area that would be served by Phase 1 of the WWMP is 500,000 mgd. The service to be allocated to this area is 500,000 mgd. The allocated service is therefore consistent with the growth/service demand projections previously planned for in the West Patterson Projects EIR and the City of Patterson General Plan (as amended in 2003).

The Diablo Grande Specific Plan EIR estimated that the average daily demand for wastewater treatment/disposal for Phase 1 of the project (the area to be served by the Patterson WWMP) would be 0.6 mgd, with maximum daily demand reaching 1.4 mgd. The EIR identifies the construction of a wastewater treatment plant with 1.4 mgd capacity to serve Phase 1 of the Diablo Grande project. Wastewater generated by Phase 1 of Diablo Grande is currently projected to total approximately 0.71 mgd. If actual flows are higher, the City would accommodate up to 0.75 mgd of wastewater from Diablo Grande Phase 1. Although the available 0.71 mgd exceeds the 0.6 mgd average daily demand anticipated in the Diablo Grande Specific Plan EIR, it does not exceed the 1.4 mgd peak demand estimated in the EIR. The WWMP capacity allocated to the Phase 1 of Diablo Grande is considered consistent with the growth/service demand projections previously planned in the Diablo Grande Master Plan EIR.

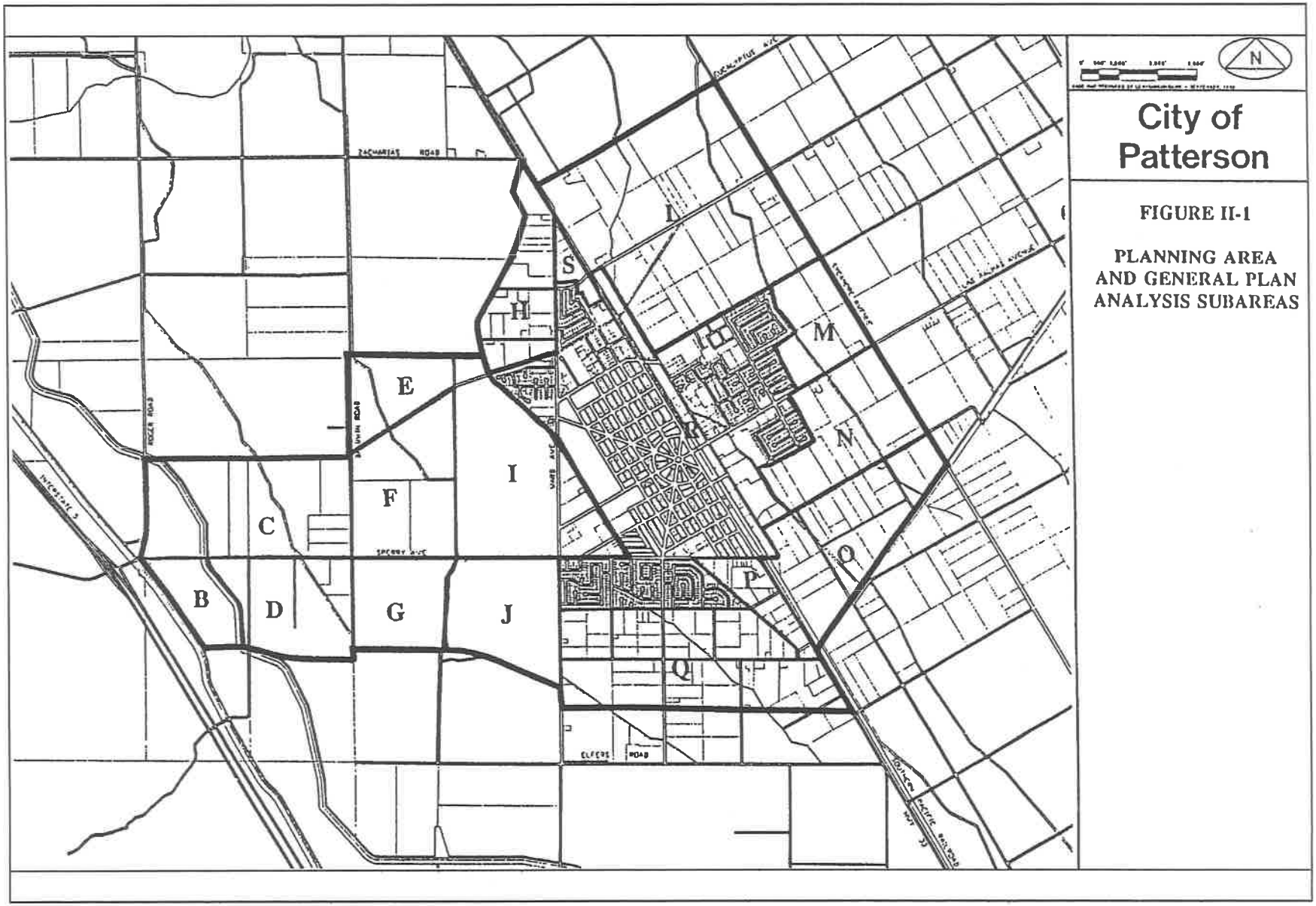
As discussed in Chapter 2 (Project Description), the WHWD is constructing a 100,000-gpd treatment plant at Diablo Grande to serve Phase 1 of Unit 1. After construction of the Diablo Grande sewer line, the WHWD would bypass its wastewater treatment plant when the City's wastewater treatment facility begins treating Diablo Grande wastewater. The WHWD wastewater treatment facility would remain on site, and might be used occasionally to pretreat wastewater sent to the City's wastewater treatment plant from the onsite winery. Although not proposed as part of the project, the WHWD wastewater treatment plant could represent a margin of excess wastewater treatment capacity (up to 100,000 gpd) beyond the capacity needed for Phase 1 of the Diablo Grande Specific Plan. No development within Diablo Grande is approved beyond Phase 1. Therefore, the WHWD plant would not induce growth beyond what has already been planned and approved for Diablo Grande.

At full buildout of the WWMP the treatment capacity of the City's wastewater treatment/disposal system would be 4.1 mgd. Of this capacity, up to 0.75 mgd would be allocated to Diablo Grande, leaving approximately 3.3 mgd to serve the City of Patterson sphere of influence. The 1991 City of Patterson General Plan estimated 4.0 mgd of service demand at full buildout. The service capacity proposed in the WWMP is slightly less than this estimate because demand estimates have been refined based on project-specific information available for Creekside and West Patterson Projects areas. However, because the capacity proposed in the WWMP is less than anticipated in the City of Patterson General Plan, the WWMP would not allow for additional growth not already planned in the General Plan.

Based on the discussion above, implementation of Phase 1 and full buildout of the WWMP would serve growth already planned in the City of Patterson and the Diablo Grande Specific Plan area. The WWMP would not support or promote growth at densities, or in areas, that have not already been planned for in the City of Patterson General Plan, related project-specific EIRs, and the Diablo Grande Specific Plan. The proposed project would therefore not promote or result in any substantial increase in growth in the project area.

12.2.3 Growth Inducement Potential

The proposed project would remove a key obstacle to growth (i.e., sewer capacity). This growth has already been planned by the City of Patterson and Stanislaus County. The 1991 City of Patterson General Plan anticipates development in the East-North Area (Planning Areas H, I, and S) (see Exhibit 12-1), East-South Area (Planning Areas M-Q), Creekside project area (Planning Areas E, F, and I), the Patterson Gardens site (Planning Areas G and J), and much of the West Patterson Business Park Area (Planning Areas B, C, and D).



Source: Patterson 1992

City of Patterson Planning Areas

EXHIBIT 12-1

City of Patterson Wastewater Master Plan EIR
G 2T008.01 3/03

0 3000 6000 FEET

NORTH

EDAW

The Creekside area underwent project-level CEQA review in 1993 and the proposed land use plan for the project area was determined to be essentially identical to the City of Patterson General Plan land use designations. Development densities associated with the project were found to be similar to those allowed under the City's General Plan, and the General Plan contains policies to address the anticipated growth.

In 2002, Patterson Gardens and Keystone Pacific Business Park, and the West Patterson Business Park Master Development Plan area underwent project- and program-level CEQA review, respectively. Planned development in the areas addressed previously in the 1991 City of Patterson General Plan was found not to be substantially different from what was anticipated in the General Plan. Amendments to the General Plan to accommodate the differences were approved by the City in January 2003. Approval of General Plan amendments to annex the Keystone Pacific Business Park site and a portion of the West Patterson Business Park Master Plan area into the City's sphere of influence also occurred in January 2003. On February 26, 2003, the Local Agency Foundation Commission (LAFCO) approved the annexation and on March 20, 2003, the Stanislaus County Planning Commission voted to recommend County Board of Supervisors approval. On April 15, 2003, the Board of Supervisors voted to approve the annexation.

The portion of the Diablo Grande Project to be served by the WWMP (Diablo Grande Phase 1) underwent CEQA review as part of the Diablo Grande Specific Plan. The Diablo Grande Specific Plan EIR, a Supplement to the EIR, and necessary zoning and General Plan amendments to support Phase 1 development, were approved by Stanislaus County in December 1999.

Wastewater treatment/disposal service is one of the most basic utilities required to support urban development. The proposed project would expand municipal wastewater collection/treatment facilities within large portions of the project area not currently served by municipal systems, and would expand such facilities within portions of the project area already served by municipal systems. The provision of new/expanded wastewater treatment/disposal services would remove one obstacle to further urban growth and development in the project area, and would therefore be considered growth inducing.

While the proposed project would remove wastewater treatment/disposal capacity as an obstacle to growth within the project area, growth in this area has already been planned for and approved in the City of Patterson General Plan (as amended) and the Diablo Grande Specific Plan (as amended). Implementation of the proposed project would not alter the location or amount of growth and development envisioned in local planning documents, and would in fact help implement many of the specific wastewater treatment/disposal facilities

proposed in the City of Patterson General Plan, EIRs for projects within the General Plan area, and the Diablo Grande Specific Plan.

The proposed WWMP provides for wastewater infrastructure planning for the incorporated City of Patterson, its sphere of influence, Diablo Grande, and the West Patterson Business Park Master Development Plan area. The WWMP does not propose to size pipelines or treatment facilities to serve any development beyond these areas, and thus would not directly induce growth beyond the WWMP area.

The proposed project would help accommodate growth projected for the City and in the Diablo Grande project area, as described in the City of Patterson General Plan EIR, the Creekside Annexation EIR, the West Patterson Projects EIR, and the Diablo Grande Specific Plan EIR. A number of significant impacts associated with this growth are identified in these prior EIRs, many of which are unavoidable. Significant impacts identified in these four EIRs are summarized below. If an EIR did not identify a significant impact for a particular environmental issue area, the EIR is not identified in the discussion of that issue area.

a) **Earth Resources:** Of the EIRs covering the proposed WWMP service area, only the Diablo Grande Specific Plan EIR identifies significant impacts related to earth resources. Significant impacts could occur related to unstable cut and fill slopes, erosion, seismic activity, shrink swell soils, and corrosive soils. Each of these impacts would be reduced to a less-than-significant level after mitigation. An additional significant impact was identified related to the extensive alteration of existing topography to accommodate the proposed project. This impact is considered significant and unavoidable.

b) **Surface Water Quality:** The City of Patterson General Plan EIR identifies water quality impacts via short-term pollutant discharges during construction and grading and long-term increases in pollutants from urban stormwater discharges and potential impacts associated with possible future discharges of treated wastewater to the San Joaquin River (not proposed in the WWMP). However, implementation of applicable general plan policies would result in these impacts being considered less than significant.

   The West Patterson Projects EIR and the Diablo Grande Specific Plan EIR identify water quality impacts associated with stormwater discharges during project construction and operation. The Diablo Grande Specific Plan EIR also describes water quality impacts related to irrigation with treated wastewater, potential releases of treated wastewater into creeks, and use of septic systems for up to 100 home lots. These each represent a significant impact that would be reduced to a less-than-

significant level after mitigation. Additionally, some of these impacts would not occur with implementation of the WWMP.

c) **Groundwater:** The West Patterson Projects EIR identifies several significant groundwater impacts. The first impacts are associated with contaminants reaching groundwater supplies through potential damage to existing wells during construction, or the improper construction and operation of new wells. However, mitigation reduces these impacts to a less-than-significant level. A significant impact would also be caused by the disposal of large quantities of concentrated brine, resulting from treatment of groundwater to serve the projects. This impact is considered significant and unavoidable because the specific water treatment process, and hence the most appropriate disposal method, is not known. In addition, the pumping of groundwater to serve the project area, and other existing and planned water use in the City, could create a severe "cone of depression" beneath the City's well field. Although mitigation is identified to minimize this impact, it cannot be mitigated to a less-than-significant level, and is considered significant and unavoidable. Significant unavoidable impacts were also identified for various other water supply options evaluated in the EIR (surface water, new well supplies).

The Diablo Grande Specific Plan EIR identifies groundwater impacts related to the improper use of fertilizers and pesticides contaminating groundwater, and providing for project water demand resulting in the depletion of local aquifers. The impact related to groundwater contamination can be mitigated to a less-than-significant level; however, impacts to local aquifers associated with supplying water to the project site are considered significant and unavoidable.

d) **Flooding/Drainage:** The City of Patterson General Plan EIR identifies that, while not eliminating the potential for flooding, policies in the City of Patterson General Plan provide for minimizing flood hazards in conjunction with new development. In addition, the City adopted a floodplain management ordinance in 1988 that institutes development standards for construction within the designated floodplain. Therefore, if the policies and ordinance are implemented appropriately, impacts related to flooding hazard would be less than significant.

The West Patterson Projects EIR identifies significant flooding impacts associated with placement of housing in areas subject to flooding from Salado Creek and the potential for exacerbating local flooding conditions through the creation of impervious surfaces. These impacts would be reduced to a less-than-significant level through mitigation. The Diablo Grande Specific Plan EIR describes a significant flooding impact related to

increased surface water runoff resulting in localized flooding if the drainage system is not adequately sized. The project could also add cumulatively to flooding problems downstream. Mitigation measures reduce these impacts to a less-than-significant level.

e) **Air Quality:** The EIRs for the City of Patterson General Plan, the West Patterson Projects, the Creekside Annexation, and the Diablo Grande Specific Plan all indicate that implementation of the projects would result in significant unavoidable impacts related to mobile source air emissions. The Creekside Annexation EIR also describes a significant unavoidable impact associated with cumulative fugitive dust and stationary source emissions.

The Creekside Annexation EIR and the Diablo Grande Specific Plan EIR both indicate significant air quality impacts associated with construction emissions that would be reduced to a less-than-significant level after mitigation. The Diablo Grande Specific Plan EIR also attributes a significant air quality impact to odors and toxic air pollutants that could be generated at or near the project site. This impact would be reduced to a less-than-significant level after mitigation.

f) **Noise:** The City of Patterson General Plan EIR indicates that impacts could occur via conflicts between land uses and traffic noise. However, the General Plan includes policies, standards, and programs to avoid noise-related impacts from existing uses and new development. Any impacts would therefore be less than significant.

The EIRs for the West Patterson Projects, Creekside Annexation, and Diablo Grande Specific Plan each identify significant impacts related to potential noise conflicts between sensitive receptors and one or more nearby noise sources (construction, traffic, agriculture, light industrial). The EIRs each indicate that these impacts would be reduced to a less-than-significant level after mitigation.

g) **Land Use:** The Creekside Annexation EIR identifies potential conflicts between proposed development and adjacent agricultural operations as a significant impact. Although mitigation is available, it would not reduce the impact to a less-than-significant level. The Diablo Grande Specific Plan EIR identifies a significant land use impact related to growth inducement along Oak Flat Road near I-5. The impact is mitigated to a less-than-significant level. Loss of large areas of open space associated with implementation of the Diablo Grande project is considered a significant unavoidable land use impact.

h) **Population/Housing:** The West Patterson Projects EIR identifies a significant population and housing impact associated with the project inducing substantial growth in a currently undeveloped area, thus requiring extension of major infrastructure. This would be mitigated through the developers paying their fair share of infrastructure and service costs.

i) **Utilities:** The EIRs for the City of Patterson General Plan, the Creekside Annexation, the West Patterson Projects, and Diablo Grande each indicate that implementation of the respective projects would create a demand for one or more utilities beyond existing capacity or available delivery infrastructure (e.g. water, wastewater treatment/disposal, stormwater conveyance, electricity, natural gas). Each EIR identifies that utility impacts would be reduced to a less-than-significant level through planned provision of necessary service and/or delivery infrastructure.

j) **Aesthetics:** The EIRs for the City of Patterson General Plan and the Creekside Annexation indicate that the respective projects would result in significant light and glare impacts that would be reduced to a less-than-significant level after mitigation. Both EIRs also identify significant impacts related to general changes in views associated with project implementation. In the City of Patterson General Plan EIR, this impact is considered significant and unavoidable. The Creekside Annexation EIR provides mitigation for the impact sufficient to reduce it to a less-than-significant level. In the Diablo Grande Specific Plan EIR, visual impacts associated with changes in views are considered significant. Some aspects of the impact may be mitigated to a less-than-significant level, while others are considered significant and unavoidable.

k) **Terrestrial Biology:** The City of Patterson General Plan EIR indicates that plan implementation would result in the loss of habitat for Swainson's hawk and other threatened, endangered, and sensitive species (special-status species). However, if various general plan policies that would protect these resources are implemented appropriately, the impacts would be considered less than significant. The EIRs for the West Patterson Projects, Creekside Annexation, and the Diablo Grande Specific Plan also identify impacts to special-status species and wetlands and riparian habitat. These would represent significant impacts reduced to a less-than-significant level after mitigation. The Diablo Grande Specific Plan EIR also describes significant, but mitigatable, impacts related to the loss of oak woodlands, disruption of streams used as wildlife movement corridors, adverse effects from grazing, increases in wildlife road kills, introduction of exotic plant species, and introduction of domestic dogs and cats that could harass/prey on wildlife. Significant unavoidable wildlife impacts are identified in the Diablo Grande Specific Plan EIR regarding overall loss of habitat,

creating barriers to wildlife movement, human disturbance to nesting raptors at cliff sites, and mortality to San Joaquin kit fox and loss of kit fox habitat.

l) **Cultural Resources:** The City of Patterson General Plan EIR identifies that impacts to cultural resources could occur through demolition or alteration of historically significant buildings and disturbance of unknown/subsurface archeological resources. However, implementation of General Plan policies intended to preserve cultural resources would keep these impacts at a less-than-significant level. Both the Creekside Annexation EIR and the Diablo Grande Specific Plan EIR identify the disturbance of currently unrecorded/unknown cultural resources as a significant impact, that would be reduced to a less-than-significant level after mitigation. An additional impact related to the increased potential for looting/vandalism of nearby cultural resource sites is described in the Diablo Grande Specific Plan EIR. This is also a significant impact that would be reduced to a less-than-significant level after mitigation.

m) **Health and Safety:** The West Patterson Projects EIR identifies a potentially significant impact associated with the release of hazardous chemicals during demolition of existing structures. This impact is mitigated to a less-than-significant level. The Creekside Annexation EIR identifies significant impacts related to potential contaminated sites near, or on the project site and the use and storage of hazardous materials during project construction and operation. Mitigation would reduce these impacts to a less-than-significant level. The Diablo Grande Specific Plan EIR identifies impacts associated with the potential for hazardous waste to occur on the project site and the possibility of sludge produced at the proposed water treatment plants contaminating soil or groundwater if it is improperly disposed of. These would represent significant impacts that would be reduced to a less-than-significant level after mitigation.

n) **Traffic:** The City of Patterson General Plan EIR indicates that significant traffic impacts would occur, and for some of these impacts mitigation would not be economically feasible, or could not be feasibly implemented by the City alone (e.g., southern bypass expressway). The West Patterson Projects EIR identifies that the proposed development would result in significant traffic impacts, and all but the cumulative traffic impacts on I-5 could be reduced to a less-than-significant level with mitigation. The EIRs for both the Creekside Annexation and the Diablo Grande Specific Plan identify significant traffic impacts on local roadways, but these impacts can be mitigated to a less-than-significant level.

o) **Public Services:** The EIRs for the City of Patterson General Plan, West Patterson Projects, Creekside Annexation, and the Diablo Grande Specific Plan each indicate that

implementation of the proposed project would create significant demands for one or more public services (police, fire, school, medical services, library, landfill capacity). Each EIR indicates that these impacts would be considered less than significant through payment of developer fees to provide these services, planned provision of these services by the developer or others, and other mitigation.

p) **Fisheries:** The Creekside Annexation EIR identifies potential aquatic wildlife/fisheries impacts associated with degradation of water quality in Salado Creek, and potentially the San Joaquin River. The Diablo Grande Specific Plan EIR includes a similar impact related to drainages and ponds at the project site. These impacts would be reduced to a less-than-significant level after mitigation.

q) **Agricultural Resources:** The EIRs for the City of Patterson General Plan, West Patterson Projects, and Creekside Annexation each identify the conversion of agricultural land and cancellation of Williamson Act contracts as significant unavoidable impacts. The Diablo Grande Specific Plan EIR describes the loss of rangeland as a significant and unavoidable impact.

The City of Patterson, as lead agency for this WWMP, the City of Patterson General Plan, the Creekside Annexation, and the West Patterson Projects adopted findings and statements of overriding considerations addressing all environmental impacts associated with these plans and projects. Stanislaus County also adopted findings and a statement of overriding considerations for the Diablo Grande project. This WWMP EIR discloses the potential environmental impacts the City and the County have already accepted with respect to the growth that this WWMP would accommodate.

12.3 Significant Irreversible Environmental Changes

CEQA §21100 subsection (b) paragraph (2) provides that an EIR shall include a detailed statement setting forth "[i]n a separate section... [a]ny significant effect on the environment that would be irreversible if the project is implemented." However, a discussion of significant irreversible environmental effects need only be included in EIRs for three types of projects as listed in CEQA §21100.1. Specifically, CEQA §21100.1 subsection (a) requires that a discussion of significant irreversible environmental effects be included in an EIR prepared in connection with "[t]he adoption, amendment, or enactment of a plan, policy, or ordinance of a public agency." Because the proposed project is a master plan for expansion of the City's wastewater infrastructure to serve planned growth through buildout of the City's General Plan and to accommodate wastewater from the approved Diablo Grande Specific Plan area, a discussion of significant irreversible environmental changes is provided in this section.

State CEQA Guidelines §15126.2(c) provides the following guidelines for analyzing the significant irreversible environmental changes of a project:

> Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highway improvement which provides access to a previously inaccessible area) generally commit future generations to similar uses. Also irreversible damage can result from environmental accidents associated with the project. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified.

While any new development would increase the demand for non-renewable natural resources (e.g., petroleum, natural gas), the proposed project is not of sufficient size to consume resources at a substantially increased rate. Therefore, the effects would be less than significant. Given that less-than-significant, project-level impacts related to the consumption of natural resources are anticipated, these potentially irreversible changes would not be considered significant.

Other irreversible environmental impacts related to the proposed Wastewater Master Plan are addressed in Chapter 5 (Agricultural Conversion), Chapter 6 (Biological Resources), Chapter 8 (Air Quality), Chapter 9 (Water Quality and Surface Hydrology), and Section 12.2 (Growth-Inducing Impacts).

The proposed project would result in phased conversion of up to 400 acres of farmland over about a 20-year period. It is conceivable that the proposed percolation ponds could be reclaimed to farmland if use of the ponds were discontinued in the future. The proposed Wastewater Master Plan, however, includes permanent use of the ponds. This significant unavoidable impact, therefore, is considered irreversible. Conversion of up to 400 acres of farmland would also result in the loss of high-quality Swainson's hawk foraging habitat (e.g., alfalfa and fallow fields). Although irreversible, project-specific mitigation measures would reduce this impact to a less-than-significant level. Expansion of the wastewater treatment facilities would result in increased odor-generating potential due to the increased area of proposed percolation ponds that could affect nearby residents. This irreversible cumulative impact would be considered significant and unavoidable. The proposed project would not be anticipated to result in an increase in regional emissions that would conflict with the emissions inventories used for air quality attainment planning purposes. However, because the region is already designated non-attainment for various pollutants, including ozone and PM_{10}, even minor increases in these emissions of these pollutants and/or precursors could contribute on a

cumulative basis to the region's overall non-attainment conditions. As a result, this irreversible cumulative impact would be considered significant and unavoidable.

Section 12.2 (Growth-Inducing Impacts) provides a thorough discussion of secondary impacts related to the potential of the Wastewater Master Plan to induce growth within the City's sphere of influence and the within the Diablo Grande Specific Plan area. Many secondary impacts would be irreversible. Examples of irreversible secondary effects of the proposed Wastewater Master Plan include: degradation of air quality related to increased emission of stationary and mobile source pollutants; increased noise from mobile and stationary sources; farmland conversion and potential conflicts between planned development and agricultural operations; new sources of light and glare related to planned new development; changes in existing views; loss of habitat for Swainson's hawk and other special-status species; loss of oak woodlands and potential loss of wetland and riparian habitat; release of hazardous chemicals from demolition of existing strictures and the storage and use of hazardous materials during construction and operation; increased vehicle traffic; and potential effects on aquatic wildlife and fisheries from potential water quality degradation. As discussed in Section 12.2, some of these secondary irreversible effects would be mitigated to a less-than-significant level, while others are considered significant and unavoidable.

13 ALTERNATIVES TO THE PROPOSED PROJECT

13.1 INTRODUCTION TO ALTERNATIVES ANALYSIS

The analysis of alternatives is an important element of the EIR process. State CEQA Guidelines §15126.6(a) requires an evaluation of "... a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives." As stated in Chapter 2, the primary objectives of the proposed Wastewater Master Plan and Diablo Grande Sewer Line project are to:

- continue to provide wastewater services at a reasonable rate for approved and planned growth in the City and its sphere of influence through the General Plan buildout year of 2020;
- provide wastewater services at a reasonable rate to Phase One of the approved Diablo Grande Specific Plan project in Stanislaus County;
- minimize the number of wastewater treatment plants serving the Diablo Grande Specific Plan project to consolidate management, disposal and permitting of the facilities; and
- reduce the cost of wastewater facility improvements needed to serve the City and the Diablo Grande Specific Plan project by WHWD's participation in the combined facility improvements and by using the City's existing maintenance and facility infrastructure to serve the Diablo Grande Specific Plan project.

Alternatives are used to determine whether a variation of the proposed project would reduce, or eliminate, significant project impacts within the basic framework of the objectives. State CEQA Guidelines §15126.6(f) specifies that the range of alternatives is governed by the "rule of reason," requiring evaluation of only those alternatives "necessary to permit a reasoned choice." Further, an EIR "... need not consider an alternative whose effect cannot be reasonably ascertained and whose implementation is remote and speculative" (State CEQA Guidelines §15126.6(f)(3)).

State CEQA Guidelines §15126.6(e) requires that, among other alternatives, a "no project" alternative be evaluated in comparison to the proposed project. State CEQA Guidelines §15126.6(e)(2) requires that the no project analysis "discuss the existing conditions ... 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." Accordingly, two no project alternatives are analyzed in this EIR: No Project/No Diablo Grande Connection and No Project/No Expansion of Treatment Capacity.

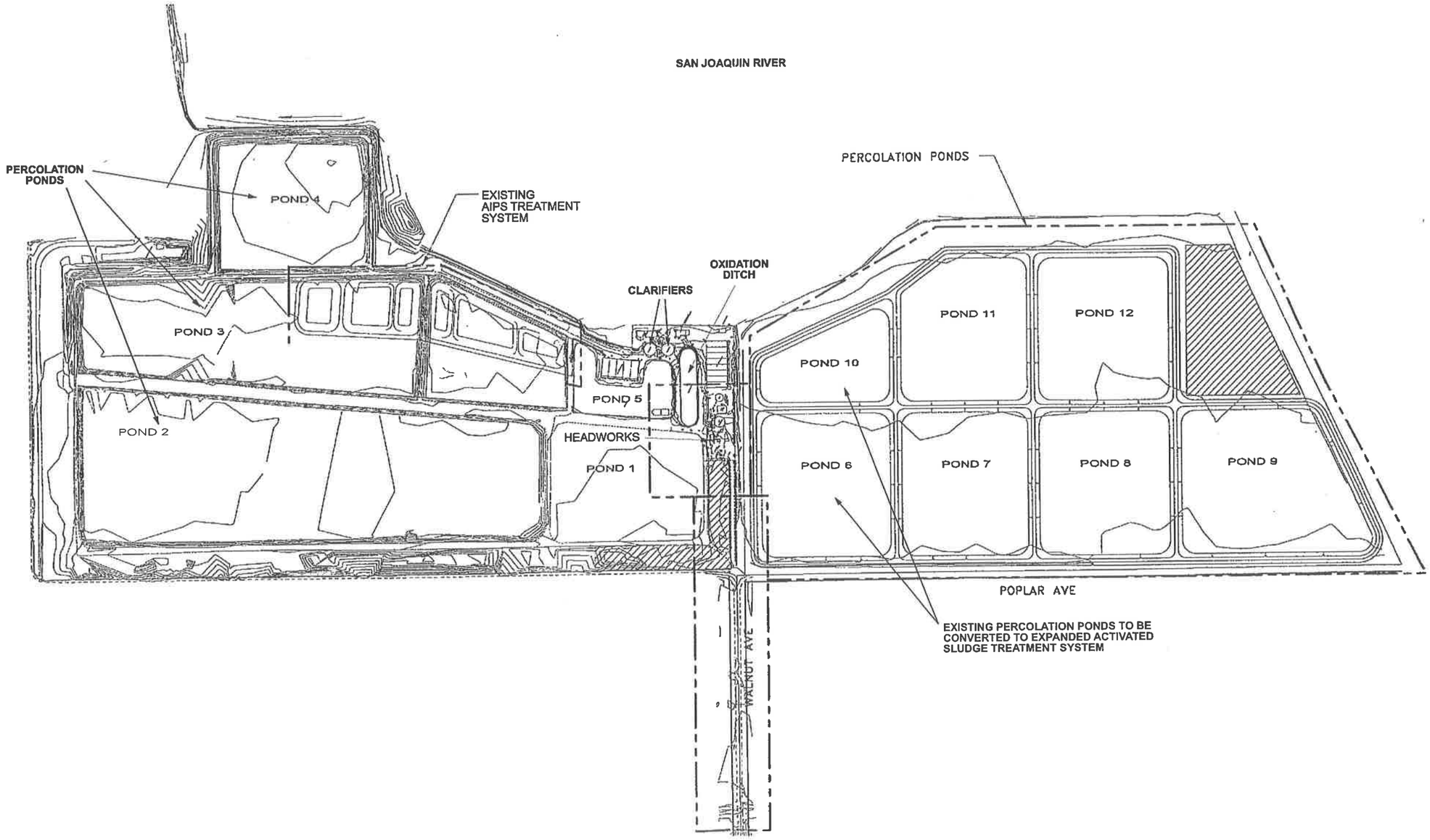
Other alternatives considered and evaluated below fall within three general categories: reduced project alternatives, alternative locations, and alternative treatment and disposal alternatives. The General Plan Buildout/No Diablo Grande Connection Alternative and the first-phase expansion with Diablo Grande/No General Plan Buildout Alternative are reduced project alternatives. Alternative location alternatives include the Alternative Location - Wastewater Treatment Plant Expansion, Alternative Location - Percolation Ponds, and Regional Treatment Facility alternatives. The alternative treatment and disposal alternatives include the Activated Sludge Alternative, Land Disposal of Secondary Treated Wastewater, Water Re-use/Tertiary Treatment, and River Discharge of Treated Wastewater alternatives. Descriptions of project alternatives are provided below.

Potential environmental impacts for each alternative are provided in comparison to the proposed project. The advantages and disadvantages of each alternative, compared to the proposed project, are presented. Any significant environmental impacts created exclusively by an alternative are also identified.

13.2 Activated Sludge Alternative

During preparation of this EIR, the City of Patterson submitted a Report of Waste Discharge (RWD) to the Regional Water Quality Control Board (RWQCB) to request authorization for expansion of the City's wastewater treatment facilities. During the subsequent consultation process, the RWQCB requested the City to consider expanding their wastewater treatment capacity using an activated sludge treatment process rather than an Advanced Integrated Pond System (AIPS) process (a detailed description of these two processes in included in Section 2.3 of this EIR). In response to the RWQCB's request, the City is evaluating the environmental effects of an Activated Sludge Alternative at a level of detail sufficient for the City Council to approve this alternative, if desired. Therefore, the environmental analysis of this alternative includes environmental impact conclusions and mitigation measures that facilitate the City of Patterson's review of the Activated Sludge Alternative. The environmental conclusions are based on the analyses performed for the proposed project and provided in Chapters 4 through 11 of this EIR. All mitigation measures recommended for the proposed project that are applicable to the Activated Sludge Alternative would be incorporated into this alternative, and are listed in Section 13.2.2.

The major components of the Activated Sludge Alternative are described in the following text. Exhibit 13-1 presents a conceptual depiction of this alternative.



Source: Lee & Ro, Inc. 2002

EXHIBIT 13-1

Activated Sludge Alternative

City of Patterson Wastewater Master Plan EIR
G 2T008.01 5/03

0 400 800 FEET NORTH

13.2.1 DESCRIPTION

This alternative would be substantially similar to the proposed project. The wastewater collection and disposal systems would be similar to the proposed project. The City would expand its wastewater treatment facilities by approximately 1.25 mgd to accommodate wastewater from approved development (Creekside Meadows, Walker Ranch, Keystone Pacific Business Park, Patterson Gardens, and Diablo Grande), and would continue to expand its wastewater facilities to accommodate buildout of its General Plan. Similar to the proposed project, the 1.25-mgd first phase expansion would require up to 125 acres of land for percolation ponds, and expansion to accommodate General Plan buildout would require up to 275 additional acres.

Under this alternative, however, the City would treat the wastewater using an activated sludge process rather than an AIPS process. The new treatment facility would be constructed at the site of existing Percolation Pond 6, located south of the existing treatment facility and within the boundaries of the wastewater treatment plant. The activated sludge process would be a biological nutrient removal oxidation ditch with a single secondary clarifier. Solids produced from the new activated sludge process would receive additional biological treatment by use of two aerobic digesters. Sludge from the digesters would be dewatered in plastic media sludge drying beds. Supernatant from the digesters would be returned to the headworks of the plant for additional treatment. Coagulant chemical (polymer) would be added as required to thickened sludge from the aerobic digester as it is pumped to the sludge drying beds to enhance dewatering. The drying beds would utilize slotted plastic tiles to enhance drainage. Drainage from the drying beds would be returned to the plant headworks.

All sludge drying beds would be entirely contained in a reinforced concrete structure. To provide additional protection for the shallow groundwater, a 40-mil high-density polyethylene liner would be installed beneath each drying bed structure. Approximately one-third of the beds would be covered to permit operation during wet weather periods. Secondary sludge drying would be accomplished in a self-contained open area. Sludge would be periodically removed from the site and disposed of in a manner compliant with California state law.

The existing influent pump station would be modified to divert a portion of the influent flow to the new treatment process. Flow diverted to the new treatment process would receive preliminary treatment by means of a barscreen and grinders.

13.2.2 Environmental Analysis

Land Use and Planning

Environmental Impacts

The Activated Sludge Alternative would be consistent with the policies of the County General Plan, the City General Plan, and the Diablo Grande Specific Plan. With the Activated Sludge Alternative the percolation ponds and collection system would be the same as the proposed project, and the only land use difference would be the treatment method used at the existing plant. The Activated Sludge Alternative would be similar to the proposed project and would not result in any significant impacts.

Activated Sludge Alternative Impact 4-1: First-Phase Expansion - Consistency with City General Plan Policies. The Activated Sludge Alternative would be consistent with the applicable policies of the City of Patterson General Plan. The project would have no impact related to consistency with this land use plan.

Activated Sludge Alternative Impact 4-2: First-Phase Expansion - Consistency with County General Plan Policies. The Activated Sludge Alternative would be consistent with the applicable policies of the Stanislaus County General Plan. The project would have no impact related to consistency with this land use plan.

Activated Sludge Alternative Impact 4-3: First-Phase Expansion - Consistency with Diablo Grande Specific Plan Policies. The Activated Sludge Alternative would be consistent with all applicable policies of the Diablo Grande Specific Plan. The project would have no impact related to consistency with this land use plan.

Activated Sludge Alternative Impact 4-4: First-Phase Expansion - Consistency with County General Plan Land Use Designation. Neither the proposed percolation ponds nor the Diablo Grande lift station would conflict with the County's General Plan land use designations for their respective sites. The percolation pond sites would be located within the County's General Agriculture District. Similar to the existing percolation ponds at the City's wastewater treatment plant, operation of the proposed percolation ponds would not conflict with agricultural uses on surrounding or nearby land. The Diablo Grande lift station site would be located within the County's Specific Plan 1 land use designation. This designation presupposes that appropriate infrastructure will be provided to support development within the boundaries of a specific plan. The Activated Sludge Alternative, therefore, would be

consistent with County General Plan Land Use designations, and would have no impact related to land use designation consistency.

Activated Sludge Alternative Impact 4-5: General Plan Buildout - Consistency with City General Plan Policies. The Activated Sludge Alternative would be consistent with the policies of the City of Patterson General Plan. The project would have no impact related to consistency with this land use plan.

Activated Sludge Alternative Impact 4-6: General Plan Buildout - Consistency with County General Plan Policies. The Activated Sludge Alternative would be consistent with the policies of the Stanislaus County General Plan. The project would have no impact related to consistency with this land use plan.

Activated Sludge Alternative Impact 4-7: General Plan Buildout - Consistency with Diablo Grande Specific Plan Policies. The proposed project includes an amendment to the DGSP to revise the method for wastewater collection, treatment, and disposal. The Activated Sludge Alternative, therefore, would be consistent with all applicable policies of DGSP. The project would have no impact related to consistency with this land use plan.

Activated Sludge Alternative Impact 4-8: General Plan Buildout - Consistency with County General Plan Land Use Designation. The proposed percolation ponds for General Plan buildout would not conflict with the County's General Agricultural District land use designation. Similar to the existing percolation ponds at the City's wastewater treatment plant, operation of the proposed percolation ponds would not conflict with agricultural uses on surrounding or nearby land. The Activated Sludge Alternative, therefore, would be consistent with the County General Plan Land Use designation, and would have no impact related to land use designation consistency.

Mitigation Measures

No mitigation measures are necessary for the Activated Sludge Alternative which would not result in a significant impact related to Land Use and Planning.

AGRICULTURAL CONVERSION

Environmental Impacts

The wastewater collection and disposal components of the Activated Sludge Alternative would result in the conversion of state and federally classified Prime Farmland and lands currently

under Williamson Act contracts to non-agricultural uses. Because the acreage and location of farmland conversion would not be directly related to the wastewater treatment process selected by the City, the acreage and location of farmland converted under this alternative would be similar to the proposed project. The following impacts would apply to the Activated Sludge Alternative. Please refer to Chapter 5 (Agricultural Conversion) for a more detailed discussion of these impacts.

Activated Sludge Alternative Impact 5-1: First-Phase Expansion - Conversion of Farmland to Non-Agricultural Uses. Construction of the City's percolation ponds for the first-phase expansion would result in the conversion of up to 125 acres of state and federally classified Prime Farmland to non-agricultural uses. This is considered a significant impact.

Activated Sludge Alternative Impact 5-2: First-Phase Expansion - Cancellation of Williamson Act Contracts. Construction of the City's percolation ponds for the first-phase expansion would convert up to 125 acres of land currently under Williamson Act contracts to non-agricultural uses. This is considered a significant impact.

Activated Sludge Alternative Impact 5-3: First-Phase Expansion - Short-Term Impairment of Agricultural Productivity. Construction activities related to expansion of the City's wastewater treatment facilities could substantially impair agricultural productivity of farmland. Substantial impairment of farmland productivity would be a significant impact.

Activated Sludge Alternative Impact 5-4:General Plan Buildout - Conversion of Farmland to Non-Agricultural Uses. Construction of additional percolation ponds to serve General Plan buildout would result in the conversion of up to 275 acres of state and federally classified Prime Farmland to non-agricultural uses. This is considered a significant impact.

Activated Sludge Alternative Impact 5-5:General Plan Buildout - Cancellation of Williamson Act Contracts. The Activated Sludge Alternative with construction of additional percolation ponds to serve General Plan buildout could convert up to 275 acres of land currently under Williamson Act contracts to non-agricultural uses. This is considered a significant impact.

Activated Sludge Alternative Impact 5-6:General Plan Buildout - Short-Term Impairment of Agricultural Productivity. Construction activities related to expansion of the City's wastewater treatment facilities to serve General Plan buildout could substantially impair agricultural productivity of farmland. Substantial impairment of farmland productivity would be a significant impact.

Mitigation Measures

5-1: First-Phase Expansion - Contribute to the California Farmland Conservancy Fund.
5-2: First-Phase Expansion - Comply with Williamson Act Contract Cancellation Procedures.
5-3: First-Phase Expansion - Minimize Impacts to Farmland During Construction.
5-4: General Plan Buildout - Contribute to the California Farmland Conservancy Fund.
5-5: General Plan Buildout - Comply with Williamson Act Contract Cancellation Procedures.
5-6: General Plan Buildout - Minimize Impacts to Farmland During Construction.

These mitigation measures would apply to the Activated Sludge Alternative. Implementing Mitigation Measures 5-2, 5-3, 5-5, and 5-6 would reduce farmland impacts related to Williamson Act contract cancellation and temporary construction activities to a less-than-significant level. Mitigation Measures 5-1 and 5-4 would encourage the preservation of prime farmland in Stanislaus County, but would not reduce farmland conversion impacts to a less-than-significant level because net loss of farmland would still result. Impacts 5-1 and 5-4, therefore, would remain significant and unavoidable. It should be noted that the City of Patterson is researching the cost of contributing to the California Farmland Conservancy Fund. If the contribution is considered to be cost prohibitive, this mitigation measure would be considered infeasible and would not be implemented.

BIOLOGICAL RESOURCES

Environmental Impacts

This alternative could result in similar impacts to biological resources as the proposed project. This alternative only alters the type of treatment method to be used at the existing plant and the area of potential effect remains the same for biological resources as that of the proposed project. The Activated Sludge Alternative could result in impacts to special-status species such as, San Joaquin Kit Fox, Swainson's Hawk, Western Pond Turtle, and Burrowing Owl as discussed in the following impacts. Please refer to Chapter 6 (Biological Resources) for a more detailed discussion of these impacts.

Activated Sludge Alternative Impact 6-1: First-Phase Expansion - Effects on Special-Status Plants. No special-status plants are expected to occur in any of the construction areas. This is a less-than-significant impact.

Activated Sludge Alternative Impact 6-2: First-Phase Expansion - Effects on San Joaquin Kit Fox. Construction of the Diablo Grande sewer line could affect San Joaquin Kit Fox. This is a potentially significant impact.

Activated Sludge Alternative Impact 6-3: First-Phase Expansion - Effects on Swainson's Hawk. Construction of the evaporation/percolation ponds would result in loss of Swainson's hawk foraging habitat. Construction activities for the evaporation/percolation ponds and wastewater collection lines could result in disturbance and loss of active Swainson's hawk nests. This would be considered a significant impact.

Activated Sludge Alternative Impact 6-4: First-Phase Expansion - Effects on Special-status Amphibians. Construction of the Diablo Grande sewer line and pump station could result in indirect effects to California tiger salamander, California red-legged frog, foothill yellow-legged frog, and western spadefoot. This is a potentially significant impact.

Activated Sludge Alternative Impact 6-5: First-Phase Expansion - Effects on Western Pond Turtle. Expansion of the treatment system at the existing wastewater treatment plant could affect western pond turtle. This is a potentially significant impact.

Activated Sludge Alternative Impact 6-6: First-Phase Expansion - Effects on Burrowing Owl. Construction of the Diablo Grande sewer line and pump station, evaporation/percolation ponds, and wastewater collection lines could result in loss of burrowing owl nests. This is a potentially significant impact.

Activated Sludge Alternative Impact 6-7: First-Phase Expansion - Effects on Other Raptors. Construction activities for the evaporation/percolation ponds and wastewater collection lines could result in disturbance and loss of active raptor nests. This would be a significant impact.

Activated Sludge Alternative Impact 6-8: First-Phase Expansion - Effects on Tricolored Blackbird. Construction of the Diablo Grande pump station and sewer line could result in disturbance of nesting tricolored blackbirds. This is a potentially significant impact.

Activated Sludge Alternative Impact 6-9: First-Phase Expansion - Effects on Other Special-status Wildlife. Construction of the Activated Sludge Alternative project could affect suitable habitat for the remaining special-status species. However, similar habitat for these species is abundant in the region. This is a less-than-significant impact.

Activated Sludge Alternative Impact 6-10: First-Phase Expansion - Effects on Sensitive Habitats. Construction of the Diablo Grande pump station and sewer line could affect Salado Creek and other sensitive habitats. Construction of the proposed percolation ponds and effluent force main could affect riparian woodland and a biological mitigation site. This is a potentially significant impact.

Activated Sludge Alternative Impact 6-11: First-Phase Expansion - Conflicts with Policies, Ordinances, or Habitat Conservation Plans. There are no local, regional, or state policies, ordinances, or conservation plans that cover the project area. Therefore, the project would not conflict with any plans. This is a less-than-significant impact.

Activated Sludge Alternative Impact 6-12: General Plan Buildout - Effects on Special-status Plants. No special-status plants are expected to occur in the area affected by General Plan buildout. This is a less-than-significant impact.

Activated Sludge Alternative Impact 6-13: General Plan Buildout - Effects on San Joaquin Kit Fox. San Joaquin Kit Fox is not expected to be affected by General Plan buildout. This is a less-than-significant impact.

Activated Sludge Alternative Impact 6-14: General Plan Buildout - Effects on Swainson's Hawk. Construction of additional evaporation/percolation ponds to serve the General Plan buildout areas could result in loss of Swainson's hawk foraging habitat. Construction activities for the ponds and additional pipelines could result in disturbance and loss of active Swainson's hawk nests. This would be considered a significant impact.

Activated Sludge Alternative Impact 6-15: General Plan Buildout - Effects on Special-status Amphibians. California tiger salamander, California red-legged frog, foothill yellow-legged frog, and western spadefoot are not expected to be affected by General Plan buildout. This is a less-than-significant impact.

Activated Sludge Alternative Impact 6-16: General Plan Buildout - Effects on Western Pond Turtle. Expansion of the wastewater treatment plant to serve the General Plan buildout areas could affect western pond turtle. This is a potentially significant impact.

Activated Sludge Alternative Impact 6-17: General Plan Buildout - Effects on Burrowing Owl. Construction of additional evaporation/percolation ponds and pipelines to serve the General Plan buildout areas could result in loss of burrowing owl nests. This is a potentially significant impact.

Activated Sludge Alternative Impact 6-18: General Plan Buildout - Effects on Other Raptors. Construction of additional evaporation/percolation ponds and pipelines to serve the General Plan buildout areas could result in disturbance and loss of active raptor nests. This would be a significant impact.

Activated Sludge Alternative Impact 6-19: General Plan Buildout - Effects on Tricolored Blackbird. Tricolored blackbird is not expected to be affected by General Plan buildout. This is a less-than-significant impact.

Activated Sludge Alternative Impact 6-20: General Plan Buildout - Effects on Other Special-status Wildlife. The remaining special-status species are not expected to be affected by General Plan buildout. This is a less-than-significant impact.

Activated Sludge Alternative Impact 6-21: General Plan Buildout - Effects on Sensitive Habitats. Construction of additional evaporation/percolation ponds and pipelines to serve the General Plan buildout areas could result in fill of Salado Creek. This is a potentially significant impact.

Activated Sludge Alternative Impact 6-22: General Plan Buildout - Conflicts with Policies, Ordinances, or Habitat Conservation Plans. There are no local, regional or state policies, ordinances or conservation plans that cover the project area. Therefore, the Activated Sludge Alternative would not conflict with any plans. This would be a less-than-significant impact.

Mitigation Measures

6-2: First-Phase Expansion - Protection of San Joaquin Kit Fox.
6-3: First-Phase Expansion - Protection of Swainson's Hawk.
6-4: First-Phase Expansion - Protection of Special-status Amphibians.
6-5: First-Phase Expansion - Protection of Western Pond Turtle.
6-6: First-Phase Expansion - Protection of Burrowing Owl.
6-7: First-Phase Expansion - Protection of Other Raptors.
6-8: First-Phase Expansion - Protection of Tricolored Blackbird.
6-10: First-Phase Expansion - Protection of Sensitive Habitats.
6-14: General Plan Buildout - Protection of Swainson's Hawk.
6-16: General Plan Buildout - Protection of Western Pond Turtle.
6-17: General Plan Buildout - Protection of Burrowing Owl.
6-18: General Plan Buildout - Protection of Other Raptors.
6-21: General Plan Buildout - Protection of Sensitive Habitats.

These mitigation measures would apply to the Activated Sludge Alternative and the level of significance after mitigation would be similar to that of the proposed project, as discussed in Chapter 6 (Biological Resources). Following implementation of the above mitigation measures, no significant impacts to biological resources would remain.

CULTURAL RESOURCES

Environmental Impacts

Potential impacts to cultural resources from the Activated Sludge Alternative would be similar to that of the proposed project. This alternative, like the proposed project, has the potential to adversely affect unidentified subsurface cultural resources as identified below. Please refer to Chapter 7 (Cultural Resources) for a more detailed discussion of cultural resource impacts.

Activated Sludge Alternative Impact 7-1: First-Phase Expansion - Subsurface Cultural Resources. No known significant archaeological or historic sites occur within the proposed project area. However, construction activities related to implementation of the Activated Sludge Alternative for the wastewater master plan project could result in the disturbance of previously unknown subsurface cultural resources. This is a potentially significant impact.

Activated Sludge Alternative Impact 7-2: General Plan Buildout - Unidentified Cultural Resources. Based on archival research conducted for the General Plan Buildout areas, no known significant archaeological or historic resource sites occur within the proposed project area. No field surveys have been conducted in the General Plan Buildout area. The City of Patterson may consider construction of future percolation ponds in an area that has not been surveyed for cultural resources. Therefore, future construction activities for the Activated Sludge Alternative could result in the demolition of or substantial damage to significant cultural resources. This is a potentially significant impact.

Mitigation Measures

7-1: First-Phase Expansion - Construction Cessation If Resources Are Discovered During Ground Disturbing Activities.
7-2: General Plan Buildout - Identify Cultural Resources Prior to and During Future Construction.

The mitigation measures listed above would apply to the Activated Sludge Alternative and would reduce potential impacts to a less-than-significant level.

AIR QUALITY

Environmental Impacts

Impacts to air quality from the Activated Sludge Alternative would be similar to the proposed project. The Activated Sludge Alternative would result in impacts related to construction and increased vehicle use and odor, and are described in the following impact statements. Please refer to Chapter 8 (Air Quality) for a more detailed discussion of impacts to Air Quality.

Activated Sludge Alternative Impact 8-1: First-Phase Expansion - Construction Related Short-Term Air Quality Impacts. Construction activities associated with the Activated Sludge Alternative first-phase expansion would result in the generation of NO_X, ROG, and PM_{10} emissions in addition to the potential airborne entrainment of asbestos associated with demolition of existing structures. This is a significant impact.

Activated Sludge Alternative Impact 8-2: First-Phase Expansion - Regional Emissions Primarily Associated with Increased Vehicle Use. The Activated Sludge Alternative would generate increases in regional pollutants of ROG, NO_X, and PM_{10}, primarily associated with routine maintenance activities and employees commuting to and from the wastewater facility and the Diablo Grande pump station. To a lesser degree, regional increases in volatile organic compounds (VOCs) would occur due to the treatment process. Emissions produced by the proposed project would be below SJVAPCD significance thresholds. This is considered a less-than-significant impact.

Activated Sludge Alternative Impact 8-3: First-Phase Expansion - Long-Term Odor Impacts. The Activated Sludge Alternative would result in increased odor-generating potential associated with the operation of the wastewater facility due to the increased area of proposed percolation ponds that could affect nearby residents and places of assembly. This is a potentially significant impact.

Activated Sludge Alternative Impact 8-4: General Plan Buildout - Construction-Related Short-Term Air Quality Impacts. Construction activities associated with future wastewater treatment facility expansions to serve the General Plan buildout would result in the generation of NO_X, ROG, and PM_{10} emissions in addition to the potential airborne entrainment of asbestos associated with demolition of existing structures. This is a significant impact.

Activated Sludge Alternative Impact 8-5: General Plan Buildout - Regional Emissions Primarily Associated with Increased Vehicle Use. Expansion of the City's wastewater treatment facilities to accommodate General Plan buildout with the Activated Sludge

Alternative would generate increases in regional pollutants of ROG, NO_X, and PM_{10}, primarily associated with routine maintenance activities and employees commuting to and from the wastewater facility. To a lesser degree, regional increases in VOCs would occur due to the treatment process. Emissions produced by the proposed project would be below SJVAPCD significance thresholds. This is considered a less-than-significant impact.

Activated Sludge Alternative Impact 8-6: General Plan Buildout - Long-Term Odor Impacts. Expansion of the wastewater treatment facilities to serve buildout of the General Plan would result in increased odor-generating potential due to the increased area of proposed percolation ponds that could affect nearby residents and places of assembly. This is a potentially significant impact.

Mitigation Measures

8-1: First-Phase Expansion - Regional Criteria Pollutant Reduction Measures.
8-3: First-Phase Expansion - Airborne Odor Reduction Measures.
8-4: General Plan Buildout - Regional Criteria Pollutant Reduction Measures.
8-6: General Plan Buildout - Airborne Odor Reduction Measures.

The mitigation measures listed above would apply to the Activated Sludge Alternative and would mitigate impacts to a level similar to the proposed project. Implementing Mitigation Measures 8-1 and 8-4 would reduce the impacts resulting from emissions associated with construction activities to a less-than-significant level. Implementing the odor reduction measures in Mitigation Measures 8-3 and 8-6 would control odors to a minimum level of detection. However, even though the frequency of occurrence and duration of exposure to odors would be substantially reduced, detectable levels of odorous emissions at nearby residences would still be expected to occur on an intermittent basis given the proximity of these residences to the treatment facilities. As a result, potential increases in odorous emissions would be considered a significant and unavoidable impact.

WATER QUALITY AND SURFACE HYDROLOGY

Environmental Impacts

The effect of the Activated Sludge Alternative on groundwater quality and surface water quality would be similar to the proposed project. The wastewater treatment process selected by the City would not alter the location or size of proposed percolation ponds and expansion facilities. The following impacts would apply to the Activated Sludge Alternative. Please refer

to Chapter 9 (Water Quality and Surface Hydrology) for a more detailed discussion of these impacts.

Activated Sludge Alternative Impact 9-1: First-Phase Expansion - Effects on Groundwater Quality. The City's existing effluent does not adversely affect groundwater quality. Treated effluent generated by the expanded wastewater treatment plant is expected to be similar to the plant's existing treated effluent, except that Diablo Grande wastewater would further dilute salinity concentrations. Expansion of the City's wastewater treatment plant, therefore, would have a less-than-significant impact on groundwater quality.

Activated Sludge Alternative Impact 9-2: First-Phase Expansion - Effects on Surface Water Quality. Increased effluent disposal would not adversely affect the quality of groundwater inflow to the San Joaquin River. The existing effluent-effected groundwater inflow to the San Joaquin River is similar to or better in quality than the background groundwater with regard to salinity, nitrate, total coliform organisms, and trace mineral concentrations. Pathogens would not be expected to affect the water quality of the river, and nitrate loading would continue to be less than background nitrate loading conditions. Expansion of the City's wastewater treatment plant, therefore, would have a less-than-significant impact on surface water quality.

Activated Sludge Alternative Impact 9-3: First-Phase Expansion - Changes in Floodplain Hydraulics. Reducing the floodplain area under post-project conditions by constructing new percolation ponds within the 100-year floodplain would result in no substantial change to water surface elevations or velocities and, thus, would have no substantial effect on river or floodplain hydrology. The project, therefore, would result in a less-than-significant impact related to changes in floodplain hydraulics.

Activated Sludge Alternative Impact 9-4: General Plan Buildout - Effects on Groundwater Quality. The City's existing effluent does not adversely affect groundwater quality. Treated effluent generated by future expansion phases of the wastewater treatment plant is expected to be similar to the plant's existing treated effluent, except that Diablo Grande wastewater would further dilute salinity concentrations. Expansion of the City's wastewater treatment plant to serve General Plan buildout, therefore, would have a less-than-significant impact on groundwater quality.

Activated Sludge Alternative Impact 9-5: General Plan Buildout - Effects on Surface Water Quality. Increased effluent disposal for Phase 2 expansion and General Plan buildout would not adversely affect the quality of groundwater inflow to the San Joaquin River. The existing effluent-effected groundwater inflow to the San Joaquin River is similar to or better in quality

than the background groundwater with regard to salinity, nitrate, total coliform organisms, and trace mineral concentrations. Pathogens would not be expected to affect the water quality of the river, and nitrate loading would continue to be less than background nitrate loading conditions. Expansion of the City's wastewater treatment plant to serve General Plan buildout, therefore, would have a less-than-significant impact on surface water quality.

Activated Sludge Alternative Impact 9-6: General Plan Buildout - Changes in Floodplain Hydraulics. Reducing the floodplain area under post-project conditions by constructing new percolation ponds within the 100-year floodplain would result in no substantial change to water surface elevations or velocities and, thus, would have no substantial effect on river or floodplain hydrology. If new ponds are constructed within the floodplain study areas for future expansion phases, the project would result in a less-than-significant impact related to floodplain hydraulics.

Mitigation Measures

No mitigation measures are necessary for the Activated Sludge Alternative which would not result in a significant impact to water quality or surface hydrology.

POPULATION AND HOUSING

Environmental Impacts

The Activated Sludge Alternative would provide an alternate treatment process for wastewater at the existing treatment plant. The Activated Sludge Alternative would generate approximately the same number of construction jobs as the proposed project. Similar to the proposed project, this alternative would not result in a substantial direct increase in population. This alternative would not change the proposed footprint for First-Phase Expansion or General Plan Buildout facilities and therefore, the impacts to population growth and loss of housing from the Activated Sludge Alternative would be similar to the proposed project and would result in no significant impacts.

Activated Sludge Alternative Impact 10-1: First-Phase Expansion - Population Growth During Construction. Construction of Phase 1 of the Activated Sludge Alternative would generate approximately 15 to 20 construction jobs in and near the City during the peak construction period. This temporary increase in employment would not be expected to generate any substantial new population in the area or generate the need for substantial additional housing for construction workers. Project construction would thus result in a less-than-significant impact.

Activated Sludge Alternative Impact 10-2: First-Phase Expansion - Induce Permanent Population Growth. Construction of the first-phase of the Activated Sludge Alternative would not develop new homes or businesses or generate new jobs that would result in a substantial direct increase in population. The population impacts of the Activated Sludge Alternative would thus be less than significant.

Activated Sludge Alternative Impact 10-3: First-Phase Expansion - Displace Existing Housing. Construction of Phase 1 of the Activated Sludge Alternative could result in the displacement of a small number (less than 5) of existing homes. This number of displaced homes is not considered substantial and the impact is considered less than significant.

Activated Sludge Alternative Impact 10-4: General Plan Buildout - Population Growth During Construction. Construction of the General Plan buildout portion of the Activated Sludge Alternative would generate approximately 15 to 20 construction jobs in and near the City during the peak construction period. This temporary increase in employment would not be expected to generate any substantial new population in the area or generate the need for substantial additional housing for construction workers. Project construction would result in a less-than-significant impact.

Activated Sludge Alternative Impact 10-5: General Plan Buildout - Induce Permanent Population Growth. Construction of the General Plan Buildout portion of the Activated Sludge Alternative would not develop new homes or businesses or generate new jobs that would result in a substantial direct increase in population. The population impacts of the Activated Sludge Alternative would thus be less than significant.

Activated Sludge Alternative Impact 10-6: General Plan Buildout - Displace Existing Housing. Construction of the General Plan Buildout portion of the Activated Sludge Alternative could result in the displacement of a small number (less than five) of existing homes. This number of displaced homes is not considered substantial and the impact is considered less than significant.

Mitigation Measures

No mitigation measures are necessary for the Activated Sludge Alternative which would result in no significant impacts to population or housing.

CUMULATIVE

Environmental Impacts

The cumulative impacts associated with the Activated Sludge Alternative would be similar to the proposed project and are listed below. The Activated Sludge Alternative differs from the proposed project only by the means of treatment processing to be used for wastewater. The Activated Sludge Alternative would be similar to the proposed project in all other proposed project actions and related projects.

Activated Sludge Alternative Impact 11-1: Cumulative - Loss of Prime Agricultural Land. Implementation of the Activated Sludge Alternative would contribute to the cumulative loss of prime agricultural land in Stanislaus County. This is a significant cumulative impact.

Activated Sludge Alternative Impact 11-2: Cumulative - Impacts to San Joaquin Kit Fox. The Activated Sludge Alternative and related cumulative projects would result in disturbance of San Joaquin kit fox habitat and could result in injury or death of individual kit foxes. This is considered a significant cumulative impact.

Activated Sludge Alternative Impact 11-3: Cumulative - Impacts to Swainson's Hawk. The Activated Sludge Alternative and related projects would result in loss of foraging habitat for Swainson's hawks, and could also result in disturbance and loss of active Swainson's hawk nests. This is considered a significant cumulative impact.

Activated Sludge Alternative Impact 11-4: Cumulative - Impacts to Other Nesting Birds. The Activated Sludge Alternative and related projects could result in disturbance and loss of active raptor nests and tricolored blackbird colonies. This is considered a significant cumulative impact.

Activated Sludge Alternative Impact 11-5: Cumulative - Impacts to Aquatic Habitats and Associated Species. The Activated Sludge Alternative and related projects would result in disturbance of Salado Creek and the wastewater treatment ponds and could affect special-status species supported by these habitats. This is considered a significant cumulative impact.

Activated Sludge Alternative Impact 11-6: Cumulative - Impacts to Other Special-status Species. Related projects could substantially affect other special-status species, but the Activated Sludge Alternative would not result in such impacts. Therefore, this impact would be considered less than significant.

Activated Sludge Alternative Impact 11-7: Cumulative - Increases in Regional Criteria Pollutants. The proposed Wastewater Master Plan would serve growth already planned for in the City of Patterson and the Diablo Grande Specific Plan area. Therefore, the Activated Sludge Alternative would not be anticipated to result in an increase in regional emissions that would conflict with the emissions inventories used for air quality attainment planning purposes. However, because the region is already designated non-attainment for various pollutants, including ozone and PM_{10}, even minor increases in these emissions of these pollutants and/or precursors could contribute on a cumulative basis to the region's overall non-attainment conditions. As a result, this cumulative impact would be considered potentially significant.

Mitigation Measures

11-1: Cumulative - Contribute to the California Farmland Conservancy Fund.
11-2: Cumulative - Reduction of Cumulatively Considerable Impacts to San Joaquin Kit Fox.
11-3: Cumulative - Reduction of Cumulatively Considerable Impacts to Swainson's Hawk.
11-4: Cumulative - Reduction of Cumulatively Considerable Impacts to Other Nesting Birds.
11-5: Cumulative - Reduction of Cumulatively Considerable Impacts to Aquatic Habitats and Associated Species.
11-7: Cumulative - Regional Criteria Pollutant Reduction Measures.

Farmland Conversion

Mitigation Measure 11-1 would encourage the preservation of prime farmland in Stanislaus County, but would not reduce the Activated Sludge Alternative's contribution to cumulative farmland conversion impacts to a less-than-considerable level. Impact 11-1, therefore, would remain cumulatively significant and unavoidable.

Biological Resources

Mitigation Measures 11-2, 11-3, 11-4, and 11-5 would reduce the Activated Sludge Alternative's contribution to cumulative biological resource impacts to a less-than-considerable level.

Air Quality

Because the region is already designated non-attainment for various pollutants, including ozone and PM_{10}, even minor increases in the emissions of these pollutants and/or precursors could contribute on a cumulative basis to the region's overall non-attainment conditions.

Mitigation Measure 11-7 would reduce the Activated Sludge Alternative's contribution of regional criteria pollutants, but not to a less-than-considerable level. Impact 11-7, therefore, would remain cumulatively significant and unavoidable.

13.2.3 Conclusions

The Activated Sludge Alternative would result in similar environmental impacts as the proposed project. The mitigation measures listed above for this alternative would reduce most significant environmental impacts to a less-than-significant level. Similar to the proposed project, the Activated Sludge Alternative would result in significant unavoidable project-level impacts related to farmland conversion for construction of the percolation ponds, and the increased odor-generating potential of the percolation ponds. Also similar to the proposed project, the Activated Sludge Alternative would result in significant unavoidable cumulative impacts related to farmland conversion and increases in regional criteria pollutants. This alternative would feasibly meet all project objectives.

13.3 Reduced Project Alternatives

13.3.1 No Project/No Diablo Grande Connection

According to §15126.6(e)(3)(B) of the State CEQA Guidelines, "[i]f disapproval of the project under consideration would result in predictable actions by others, such as the proposal of some other project, this 'no project' consequence should be discussed." As previously discussed, the West Patterson EIR analyzed a two-phase, one-million-gallon-per-day (1-mgd) expansion of the City's wastewater treatment facilities. The following "no project" scenario represents what would be reasonably expected to occur in the foreseeable future if the proposed Wastewater Master Plan and Diablo Grande Sewer Line project were not approved.

Under this alternative, the City would not implement the Wastewater Master Plan as proposed in this EIR, and would not accommodate Diablo Grande wastewater. Accordingly, the WHWD would not construct the Diablo Grande sewer line and lift station. The City would implement the facility expansion project that was analyzed in the certified *West Patterson Projects EIR* (City of Patterson 2003). This alternative would include a two-phase, 1-mgd expansion of approximately 0.5 mgd per phase. The first-phase expansion would serve residential development that is approved or under construction in the Creekside development area, including Creekside Meadows, Walker Ranch I and II, and Shire Place residential projects. It would provide additional capacity to serve the Patterson Gardens proposal and a portion of the Keystone Pacific Business Park. The second-phase expansion would serve the balance of the Keystone Pacific Business Park and future development within the West Patterson

Business Park Plan Area. The project would also include all sewer collection lines to serve Patterson Gardens and the Keystone Pacific Business Park, and approximately 120 acres of percolation ponds required for the proposed expansion. This alternative would not accommodate buildout of the City's General Plan. Diablo Grande wastewater would be treated by onsite wastewater treatment facilities in accordance with the approved Diablo Grande specific plan.

As discussed in Chapter 2 (Project Description), the WHWD has acquired WDRs from the RWQCB for the construction of a 200,000-gallon-per-day (gpd) wastewater treatment facility (Order No. R5-2002-0011). The WDRs allows WHWD to provide tertiary treatment of wastewater generated by the golf courses, a future hotel and conference center, and the first 324 residences of the development, and to discharge the disinfected effluent on the Ranch Golf Course as recycled irrigation water. Subsequent to issuance of the WDRs, WHWD requested a reduction of the permitted capacity of the Diablo Grande wastewater treatment plant to 100,000-gpd, and a modification to allow discharge of treated effluent to irrigate silage crops (i.e., livestock feed) that would be grown within the Diablo Grande Specific Plan area. This 100,000-gpd treatment plant is currently being constructed to serve Phase 1 of Unit 1 of Diablo Grande. Under the proposed project alternative, WHWD would bypass its wastewater treatment plant when the City's wastewater treatment facility begins treating Diablo Grande wastewater. The WHWD wastewater treatment facility would remain onsite, and might be used occasionally to pretreat wastewater sent to the City's wastewater treatment plant. Under the No Project/No Diablo Grande Connection alternative, the WHWD would use this treatment facility, and either expand its capacity to accommodate buildout of Phase One or construct additional package plants to meet this demand. WHWD would provide tertiary treatment of the wastewater, and either discharge the treated effluent to irrigate sileage crops as currently proposed by WHWD, irrigate the golf course as currently occurs in accordance with the Diablo Grande Specific Plan, discharge to nearby streams as stated in the Diablo Grande Specific Plan, or a combination of these disposal methods. Because the potential discharge streams carry relatively small volumes, they would be considered "effluent-dominated" streams. Obtaining a National Pollutant Discharge Elimination System (NPDES) permit for discharge to "effluent-dominated" streams, however, is likely to be difficult and, based on the experience of the EIR preparers, would render this discharge method infeasible at this time.

Because the WHWD wastewater treatment plant is currently under construction, a comparison of the environmental effects of this alternative with those of the proposed project must be related to operation of this plant, and construction and operation of potential additional plants at Diablo Grande. Operation of the WHWD treatment plant(s) would be expected to result in odor impacts similar to the proposed project, but in a different location (i.e., Diablo Grande

rather than the vicinity of the City's treatment plant). Because Diablo Grande wastewater would not be treated and disposed of by the City, the potential for detectable odors near the City's plant would be reduced, but would not be eliminated, because the City's plant would still be expanded to treat wastewater generated by the City. Construction of a new WHWD plant would result in significant but mitigable short-term construction-related emissions, similar to the proposed project. Most of the project region near the City's wastewater treatment plant (where urban development has not occurred) is comprised of farmland. Those areas not in agriculture are located within the floodplain and riparian habitat of the San Joaquin River. Consequently, the construction of new percolation ponds would either adversely affect farmland or natural habitat. Because this alternative would reduce the amount of agricultural land conversion near the San Joaquin River, it would reduce the amount of loss of Swainson's hawk foraging habitat. Because this alternative would not include construction of the Diablo Grande sewer line between the Delta-Mendota canal and I-5, it would not result in potentially significant, but mitigable and temporary impacts related to San Joaquin kit fox.

Although the total acreage of farmland conversion would be less (120 acres of new percolation ponds rather than 125 acres for the first-phase or 400 acres for General Plan buildout), this alternative would still be expected to result in significant impacts related to farmland conversion (unavoidable impacts), loss of Swainson's hawk foraging habitat, short-term construction-related emissions, and odors (unavoidable impacts). This alternative, therefore, would eliminate one significant, but mitigable impact (i.e., San Joaquin kit fox), but would not reduce any significant unavoidable impacts to a less-than-significant level.

13.3.2 General Plan Buildout/No Diablo Grande Connection

Under this alternative, the City would expand its wastewater treatment facilities by approximately 0.5 mgd to accommodate wastewater from approved development: Creekside Meadows, Keystone Pacific Business Park, and Patterson Gardens developments, and would continue to expand its wastewater facilities to accommodate buildout of its General Plan. The 0.5 mgd first-phase expansion would require up to 60 acres of land for percolation ponds. This land conversion would be about half that needed for the first-phase of the Wastewater Master Plan (60 acres instead of 125 acres). Future expansion phases would require approximately 335 acres of land for percolation ponds, instead of the 400 acres required for the proposed Wastewater Master Plan.

Under this alternative, however, the City's wastewater facilities would not be expanded to accommodate Diablo Grande. Diablo Grande wastewater would be treated by onsite wastewater treatment facilities in accordance with their approved specific plan in the manner described in the No Project/No Diablo Grande Connection alternative.

Operation of the WHWD treatment plant(s) would be expected to result in odor impacts similar to the proposed project, but in a different location (i.e., Diablo Grande rather than the vicinity of the City's treatment plant). Because Diablo Grande wastewater would not be treated and disposed of by the City, the potential for detectable odors near the City's plant would be reduced, but would not be eliminated, because the City's plant would still be expanded to treat wastewater generated by the City. Construction of a new WHWD plant would result in significant but mitigable short-term construction-related emissions, similar to the proposed project. Most of the project region near the City's wastewater treatment plant (where urban development has not occurred) is comprised of farmland. Those areas not in agriculture are located within the floodplain and riparian habitat of the San Joaquin River. Consequently, the construction of new percolation ponds would either adversely affect farmland or natural habitat. Because this alternative would reduce the amount of agricultural land conversion near the San Joaquin River, it would reduce the amount of loss of Swainson's hawk foraging habitat. Because this alternative would not include construction of the Diablo Grande sewer line between the Delta-Mendota canal and I-5, it would not result in potentially significant, but mitigable and temporary impacts related to San Joaquin kit fox.

Although the total acreage of farmland conversion would be less than for the proposed project (60 acres of new percolation ponds rather than 125 acres for the first-phase, and 335 acres of new ponds for General Plan buildout rather than 400 acres), this alternative would still be expected to result in significant impacts related to farmland conversion (unavoidable impacts), loss of Swainson's hawk foraging habitat, short-term construction-related emissions, and odors (unavoidable impacts). This alternative, therefore, would eliminate one significant, but mitigable impact (i.e., San Joaquin kit fox), but would not reduce any significant unavoidable impacts to a less-than-significant level.

13.3.3 No Project/No Expansion of Treatment Capacity

As previously discussed, the West Patterson EIR analyzed a two-phase, 1-mgd expansion of the City's wastewater treatment facilities. The City is currently in the process of requesting authorization from the RWQCB to expand its wastewater facilities. Approval has not yet been issued, but the City has received no indication from the RWQCB that the City would not be authorized to expand its facilities. However, in the unlikely circumstance that the City would not receive such approval, the following "no project" scenario would represent the "no project" alternative wherein the existing environmental setting is maintained.

Under this alternative, the City would not expand its collection, treatment, or disposal facilities, and would not accommodate Diablo Grande wastewater. The 0.5-mgd capacity currently remaining at the City's wastewater treatment facility would serve previously

approved development, but would not be sufficient to serve all previously approved development and would not serve buildout of the City's General Plan. Diablo Grande wastewater would be treated by onsite wastewater treatment facilities in accordance with its approved specific plan in the manner described in the No Project/No Diablo Grande Connection alternative.

This alternative would be expected to result in impacts associated with treatment and disposal of Diablo Grande wastewater as described in the Diablo Grande Specific Plan EIR (Stanislaus County 1993), and would eliminate all new environmental impacts related to expansion of the City's facilities and construction of the Diablo Grande sewer line and pump station. This alternative, however, would not be able to serve some development previously approved by the City.

13.3.4 First-Phase Expansion with Diablo Grande/No General Plan Buildout

Under this alternative, the City would expand its wastewater treatment facilities by approximately 1.25 mgd to accommodate wastewater from approved development including: Creekside Meadows, Keystone Pacific Business Park, Patterson Gardens developments, and Diablo Grande. The City would not, however, continue to expand its wastewater facilities to accommodate buildout of its General Plan. This alternative would essentially be the first-phase of proposed Wastewater Master Plan analyzed in this EIR.

The 1.25-mgd expansion would require up to 125 acres of land for percolation ponds. No future expansion phases would occur, so the maximum amount of land conversion for ponds would be about 125 acres.

Most of the project region near the City's wastewater treatment plant (where urban development has not occurred) is comprised of farmland. Those areas not in agriculture are located within the floodplain and riparian habitat of the San Joaquin River. Consequently, the construction of new percolation ponds would either adversely affect farmland or natural habitat. Because this alternative would reduce the amount of agricultural land conversion near the San Joaquin River, it would reduce the amount of loss of Swainson's hawk foraging habitat.

Although the total acreage of farmland conversion would be less than for the proposed project (125 acres of new percolation ponds rather than 400 acres for General Plan buildout), this alternative would still be expected to result in significant impacts related to farmland conversion (unavoidable impacts), loss of Swainson's hawk foraging habitat, short-term

construction-related emissions, and odors (unavoidable impacts). This alternative, therefore, would not reduce any significant unavoidable impacts to a less-than-significant level.

13.4 ALTERNATIVE LOCATIONS

Pursuant to §15126.6(f)(2)(A) of the State CEQA Guidelines, "the key question and first step in analysis [of alternative locations] is whether any of the significant effects of the project would be avoided or substantially lessened by putting the project in another location. Only locations that would avoid or substantially lessen any of the significant effects of the project need be considered for inclusion in the EIR."

13.4.1 ALTERNATIVE LOCATION - WASTEWATER TREATMENT PLANT EXPANSION

The following discussion provides a reasoned basis for not considering other alternative sites for the expanded treatment facilities. The City is proposing expansion of its existing wastewater treatment facility by expanding the advanced integrated pond system (AIPS) within the boundary of its existing wastewater treatment plant. The new AIPS for the first-phase expansion would be constructed on about 19 acres of land where percolation ponds currently exist, and the other improvements (e.g., headworks, pumps, flow meters) would be constructed within previously disturbed areas of the plant. Future expansion of the AIPS would also occur within previously disturbed areas of the plant.

A total of 125 acres of Prime Farmland would be converted to wastewater use for the first-phase expansion, and approximately 400 total acres would be converted for full buildout. Land conversion from pond construction would still occur under this alternative. In addition, 19 acres of land would need to be converted to wastewater use for construction of the new AIPS facility. Most of the project region (where urban development has not occurred) is comprised of farmland. Those areas not in farmland are located within the floodplain and riparian habitat of the San Joaquin River. Consequently, the construction of new treatment facilities outside the existing plant would either adversely affect farmland or natural habitat. The only potentially significant environmental effect that might be avoided by constructing the new treatment facilities at an offsite location would be potential construction-related effects on western pond turtle within the plant's percolation ponds. However, project-specific mitigation measures recommended in this EIR (i.e., pre-construction surveys, construction monitoring, and relocation) would reduce this potentially significant impact to a less-than-significant level. Constructing treatment facilities at an alternative location would be expected to result in similar significant environmental effects as those generated by the proposed project related to air quality, odors, and cultural resources and, depending on the location, could result in more acreage of farmland conversion (unavoidable impacts), and more acreage of Swainson's hawk

foraging habitat loss. Further, given the site's location away from dense development or natural habitat, it may be more ideally sited than most alternative sites to avoid significant effects such as odors that could affect more people, or sites that might adversely affect more biological habitat.

13.4.2 Alternative Location - Percolation Ponds

The proposed wastewater treatment plant expansion would require approximately 125 acres of land for new percolation ponds for the first-phase expansion and 400 acres for General Plan buildout. This EIR fully analyzes the environmental effects of constructing these ponds in several alternative locations. The Patterson area appears to provide a variety of locations for the ponds. The locations selected for analysis in this EIR do not likely represent the only feasible locations, but were identified after consideration of willing property owners, and proximity to the existing wastewater treatment plant.

Because the pond locations selected for the EIR's analysis are not likely to represent the only feasible locations, other alternative pond sites might be considered. Alternative locations, however, would not be expected to avoid or substantially lessen any of the significant effects of the project. Most of the project region (where urban development has not occurred) is comprised of farmland. Most of the farmland in the region is classified as Prime Farmland, and much of it is under Williamson Act contract. The construction of percolation ponds on other farmland parcels would result in similar impacts related to conversion of farmland. Because most farmland in the region is Prime, an alternative location is not expected to avoid or substantially lessen the projects's significant effect on Prime Farmland. It may be feasible to construct the ponds on farmland not subject to a Williamson Act contract. However, the project would still convert up to 400 acres of productive farmland, and would not avoid or substantially lessen the project's significant effect related to farmland conversion. Conversion of farmland in alternative locations would also not be expected to avoid or substantially reduce the loss of Swainson's hawk foraging habitat.

In addition to farmland conversion, constructing percolation ponds at an alternative location would also be expected to result in similar air quality and potential cultural resource impacts to those generated by the proposed project. Further, given the site's location away from dense development, it may be more ideally sited than most alternative sites in the Patterson vicinity to avoid significant land use compatibility effects such as odors that could affect more people. This discussion provides a reasoned basis for not considering additional alternative percolation pond sites, beyond those considered in this EIR.

13.4.3 Regional Treatment Facility Alternative

Another alternative location scenario might include piping a portion of the untreated wastewater generated by the City and Diablo Grande to a regional wastewater facility. No regional facilities are located near Patterson. The City of Modesto's wastewater treatment facility serves the metropolitan Modesto area, which includes the City and nearby urbanized areas of Stanislaus County. The City of Modesto is currently preparing a study to assess the economic feasibility of expanding its wastewater facilities to serve as a regional facility. Alternatives for a regional facility might include one large regional treatment plant, or a variety of secondary treatment plants (Wong, pers. comm., 2003).

The City's domestic wastewater is currently treated at the primary treatment plant, located at the southern end of Sutter Street near the Tuolumne River, about 2 miles southwest of the city center. Settleable and floatable material is removed at the primary treatment plant. The wastewater is then pumped to the City's secondary water quality control plant for secondary treatment. The secondary treatment plant is located adjacent to the east bank of the San Joaquin River about 6 miles southwest of the city center, and about 2 miles north of the City of Patterson's wastewater treatment plant. The secondary treatment reduces the organic load, so the treated effluent wastewater can be used to irrigate fodder crops on 3,000 acres of land owned by the City of Modesto. The secondary treatment plant consists of 3 reactor towers, 156 mechanical aerators, 300 acres of oxidation ponds, 100 acres of recirculation channels, and 600 acres of storage ponds. Water that is not used for irrigation is stored and discharged to the San Joaquin River in the months of October through May, when the river's flow rate is greater and dilution of the treated effluent is higher. The City also maintains a pretreatment program that monitors commercial and industrial facilities to enforce local and federal limits (Modesto 2003). Modesto's primary plant treats an average of 20 mgd. Its existing treatment and disposal facilities currently have minimal additional capacity, and would not be able to accommodate projected flows from Patterson without additional expansion (Wong, pers. comm., 2003).

Because Modesto does not currently have plans to expand its facilities, a detailed discussion of potential environmental impacts would be speculative. However, it is reasonable to assume that, similar to the proposed Wastewater Master Plan, expansion of Modesto's facilities would convert farmland and/or natural habitat, generate air pollutant emissions and odors, and potentially affect cultural resources.

In summary, it is currently not feasible for Modesto's wastewater facility to serve as a regional facility to accommodate wastewater from the City of Patterson and Diablo Grande. Expansion of Modesto's facilities might present regional opportunities in the future, and the City of

Patterson will evaluate such options at that time. A detailed discussion of potential environmental impacts would be speculative. However, it is reasonable to assume that, similar to the proposed Wastewater Master Plan, expansion of Modesto's facilities would convert farmland and/or natural habitat, generate air pollutant emissions and odors, and potentially affect cultural resources.

13.5 Alternative Disposal Methods

13.5.1 Land Disposal of Secondary Treated Wastewater

The City's wastewater treatment plant currently provides undisinfected secondary wastewater treatment, and the City proposes continuation of undisinfected secondary treatment for the expanded treatment plant. Secondary treatment is the standard treatment level for disposal applications where there is a low potential for the public to come into contact with the treated wastewater. Undisinfected secondary treated wastewater can be used to irrigate certain crops. Pursuant to Section 60304(d) of the California Code of Regulations, this type of wastewater can be used for surface irrigation of orchards and vineyards where the recycled water does not come into contact with the edible portion of the crop; non food-bearing trees; fodder and fodder crops and pasture for animals not producing milk for consumption; seed crops not eaten by humans; food crops that must undergo commercial pathogen-destroying processing before being consumed by humans; and ornamental nursery stock and sod farms provided no irrigation with recycled water occurs for a period of 14 days before harvesting, retail sale, or allowing access by the general public.

Therefore, farmers electing to contract with the City to accept treated wastewater for irrigation might need to select other types of crops than they would otherwise choose to grow. Farming of a less economically productive crop could impair the agricultural productivity (i.e., economic productivity) of the farmland. However, because agricultural operations would be allowed to continue, this impact would be considered less than significant.

Up to 250 acres of irrigation land would be needed to dispose of the treated wastewater for the first-phase expansion (about 200 acres per mgd) and up to 560 acres would be needed for General Plan buildout. Land application can only occur when the soil and crop conditions are favorable, so treated wastewater must be stored in ponds until it can be used for irrigation. Approximately 60 acres (about 50 acres per mgd) of storage ponds would be required for the 1.25-mgd first-phase expansion, and a total of about 140 acres would be needed for General Plan buildout.

Most of the project region (where urban development has not occurred) is comprised of farmland. Those areas not in farmland are located within the floodplain and riparian habitat of the San Joaquin River. Consequently, the construction of new storage ponds would either adversely affect farmland or natural habitat. The total acreage of land conversion for storage ponds would be less than the amount of land conversion needed for the proposed percolation ponds. This alternative would be expected to reduce the amount of groundwater currently pumped for irrigation, but would still be expected to result in significant impacts related to farmland conversion (unavoidable impacts), loss of Swainson's hawk foraging habitat, construction noise, short-term construction-related emissions, and odors.

13.5.2 Water Reuse/Tertiary Treatment

Other alternative disposal methods might involve reuse of tertiary treated effluent. Pursuant to Section 60304(a) of the California Code of Regulations, this type of wastewater can be used for a wider variety of crops than secondary treated wastewater; parks and playgrounds; schoolyards; residential landscaping; and unrestricted access golf courses. Up to 250 acres of irrigation land would be needed to dispose of the treated wastewater for the first-phase expansion (about 200 acres per mgd) and up to 560 acres would be needed for General Plan buildout. Land application can only occur when the soil and crop conditions are favorable, so treated wastewater must be stored in ponds until it can be used for irrigation. Approximately 60 acres (about 50 acres per mgd) of storage ponds would be required for the 1.25 mgd first-phase expansion, and a total of about 140 acres would be needed for General Plan buildout.

Patterson has approximately 26 acres of irrigated parks. Therefore, Patterson parks alone could not accept all of the treated effluent generated by the expanded wastewater treatment facility. The remaining effluent would need to be used to irrigate farmland. Because Title 22 of the California Code of Regulations restricts irrigation of certain food crops with tertiary treated wastewater, farmers electing to contract with the City to accept treated wastewater for irrigation might need to select other types of crops than they would otherwise choose to grow. Farming of a less economically productive crop could impair the agricultural productivity (i.e., economic productivity) of the farmland. However, because agricultural operations would be allowed to continue, this impact would be considered less than significant.

Most of the project region (where urban development has not occurred) is comprised of farmland. Those areas not in farmland are located within the floodplain and riparian habitat of the San Joaquin River. Consequently, the construction of new storage ponds would either adversely affect farmland or natural habitat. The total acreage of land conversion for storage ponds would be less than the amount of land conversion needed for the proposed percolation ponds. This alternative would be expected to reduce the amount of groundwater currently

pumped for irrigation, but would still be expected to result in significant impacts related to farmland conversion (unavoidable impacts), loss of Swainson's hawk foraging habitat, construction noise, short-term construction-related emissions, and odors.

13.5.3 River Discharge of Treated Wastewater

The Waste Discharge Requirements (WDRs; Order No. 5-00-146; adopted June 16, 2000) for the City's wastewater treatment facility do not authorize river discharge. The City's wastewater treatment plant, therefore, relies on evaporation/percolation ponds. Evaporation/percolation ponds require large surface areas to provide optimal interface with the atmosphere (for evaporation) and the earth (for percolation). No storage ponds would be required if all effluent is discharged to surface water. A hybrid approach might also include evaporation/ percolation ponds for disposal when river flows are low, and dilution of effluent is reduced, similar to Modesto's facilities.

Approximately 125 acres of land for percolation ponds would be needed for the City's proposed 1.25-mgd, first-phase expansion, and up to 400 total acres of land would be needed for General Plan buildout. Construction of the ponds would result in significant impacts related to farmland conversion (unavoidable impacts), loss of Swainson's hawk foraging habitat, short-term construction-related emissions, and odors. No new storage ponds would be required if all of the treated effluent were discharged to the river, but they would be required if river disposal occurs seasonally. River disposal would require discharge pipes (i.e., outfalls) to the river. It is conceivable that new outfalls could be constructed in a manner that would minimize or avoid impacts to the floodplain and to riparian habitat supported by the San Joaquin River, such as using a jack and bore construction method. It is also conceivable, that mitigation measures could reduce potentially significant impacts related to outfall construction (e.g., vegetation removal, erosion/sedimentation, nesting raptors, temporary loss of Swainson's hawk foraging habitat) to a less-than-significant level.

Because this type of system would discharge effluent directly into the San Joaquin River, under the current regulatory environment for new discharges, it is likely the City's wastewater treatment facility would require upgrading to tertiary treatment. Pursuant to the federal Clean Water Act, the State of California has placed the San Joaquin River on the 303(d) list as a waterbody whose beneficial uses are impaired by certain pollutants (e.g., mercury, diazanon). Tertiary-treated wastewater generally has very low concentrations of these pollutants. Thus, in some instances, river discharge of high-quality tertiary effluent can result in a localized improvement in certain water quality parameters through dilution. In other instances, river discharge can reduce the quality of fish habitat by increasing water temperatures and slightly decreasing dissolved oxygen concentrations. Wastewater treatment facilities can likely include

treatment features to reduce water quality impacts from discharged effluent to a less-than-significant level.

Although technology is expected to be available to reduce the impacts of river discharge to a less-than-significant level, this alternative may be infeasible for other reasons. The Regional Water Quality Control Board (RWQCB) is currently developing Total Maximum Daily Load (TMDL) limitations for several pollutants in the San Joaquin River. Obtaining NPDES permit for river discharge during RWQCB's development of the TMDL plan would likely be difficult and, thus, could render a river discharge alternative infeasible at this time.

Nevertheless, a river discharge system would reduce the acreage of land conversion by approximately 400 acres if all effluent is discharged to the river, and would avoid significant impacts related to farmland conversion. Such a river discharge system would likely reduce significant impacts related to loss of Swainson's hawk foraging habitat, construction noise, short-term construction-related emissions, and odors. However, a river discharge system would likely result in significant, but mitigable, impacts related to disturbance of floodplain and riparian habitat. It is expected that a river discharge wastewater treatment system could be designed that would result in less-than-significant impacts to the quality of the San Joaquin River. Alternatively, seasonal river discharge would require land conversion for disposal ponds, and would be expected to result in similar impacts as the proposed project. Obtaining an NPDES permit for river discharge during RWQCB's development of the TMDL plan, however, is likely to be difficult and, based on the experience of the EIR preparers, would render this alternative infeasible at this time.

13.6 Alternatives Previously Considered and Rejected

Section 15126.6(c) of the State CEQA Guidelines states, "[t]he EIR should also identify any alternatives that were considered by the lead agency but were rejected as infeasible during the scoping process and briefly explain the reasons underlying the lead agency's determination." Because the proposed Wastewater Master Plan represents the culmination of years of wastewater planning efforts by the City, no alternatives to the proposed Wastewater Master Plan were considered and rejected as infeasible during the scoping process.

13.7 Environmentally Superior Alternative

Section 15126.6(e)(2) states "[i]f the environmentally superior alternative is the 'no project' alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives." Table 13-1 provides a comparison of alternatives to the proposed project.

13.7.1 Activated Sludge Alternative

Most of the environmental effects of the proposed project and the Activated Sludge Alternative result from construction and operation of the percolation ponds (i.e., the disposal system), and construction of the Diablo Grande sewer line (i.e., collection system). These project components would be the same for either the proposed project or the Activated Sludge Alternative. Also, the environmental effects related to expansion of the wastewater treatment facilities would be substantially similar for the proposed project and the Activated Sludge Alternative. Therefore, the Activated Sludge Alternative would result in similar environmental impacts as the proposed project and, thus, is not considered environmentally superior to the proposed project. This alternative, however, would feasibly meet all project objectives.

13.7.2 No Project Alternatives

Two no project alternatives are analyzed in this EIR. The No Project/No Expansion of Treatment Capacity Alternative is the environmentally superior alternative, because it would not include expansion of the City's wastewater facilities or construction of the Diablo Grande sewer line. This alternative, therefore, would not result in environmental impacts related to these project components. This alternative would be expected to result in impacts associated with treatment and disposal of Diablo Grande wastewater as described in the Diablo Grande Specific Plan EIR. This alternative does not meet the project objectives, because it would not accommodate approved and planned City growth through General Plan buildout, would not minimize the number of wastewater treatment plants, and would not capture the cost savings afforded by the combined wastewater facilities.

The other no project alternative, the No Project/No Diablo Grande Connection Alternative, is environmentally superior to the proposed project, because it would result in less land conversion for expansion of the City's percolation ponds and would not result in impacts related to construction of the Diablo Grande sewer line. This alternative would be expected to result in impacts associated with treatment and disposal of Diablo Grande wastewater as described in the Diablo Grande Specific Plan EIR. This alternative does not meet the project objectives, because it would not accommodate planned City growth through General Plan buildout, would not minimize the number of wastewater treatment plants, and would not capture the cost savings afforded by the combined wastewater facilities.

13.7.3 Reduced Project Alternatives

The General Plan Buildout/No Diablo Grande Connection Alternative would result in less land conversion for expansion of the City's percolation ponds than the proposed project and would

not result in impacts related to construction of the Diablo Grande sewer line. It is difficult to conclude, however, whether this alternative would be superior to the proposed project, because it would be expected to result in impacts associated with treatment and disposal of Diablo Grande wastewater as described in the Diablo Grande Specific Plan EIR. It can be concluded, however, that this alternative does not meet the project objectives, because it would wastewater treatment plants, and would not capture the cost savings afforded by the combined wastewater facilities.

The first-phase expansion with Diablo Grande/No General Plan Buildout Alternative is environmentally superior to the proposed project, because it would result in less land conversion for expansion of the City's percolation ponds than the proposed project, and would not result in impacts related to onsite wastewater treatment at Diablo Grande. This alternative does not meet all project objectives, because it would not accommodate planned City growth through General Plan buildout.

13.7.4 Alternative Locations

Constructing the project components in alternative locations would not avoid or substantially lessen the significant effects of the project. Constructing the expanded City wastewater treatment plant at an alternative location would result in similar impacts as the proposed project, but would require more land conversion than the proposed project because the new treatment facilities would not be constructed at the existing plant. This alternative would meet the project objectives, but would not be environmentally superior to the proposed project. Constructing the percolation ponds at locations not analyzed in this EIR would result in similar impacts as the proposed project. This alternative would meet the project objectives, but would not be environmentally superior to the proposed project. Because no regional treatment facilities that could treat City and Diablo Grande wastewater exist, this alternative is not feasible at this time.

13.7.5 Alternative Disposal Methods

A river discharge alternative might reduce the amount of land conversion required for percolation ponds, if all treated effluent is discharged to the San Joaquin River. If river discharged were to occur on a seasonal basis like at the City of Modesto's facilities, percolation ponds would be needed for off-season disposal. Regardless of whether river discharge would be seasonal, obtaining an NPDES permit for river discharge during RWQCB's development of the TMDL plan for the San Joaquin River is likely to be difficult and, based on the experience of the EIR preparers, would render this alternative infeasible at this time.

Table 13-1
Comparison of Alternatives to the Proposed Project

Proposed Project	Activated Sludge	No Project/No Diablo Grande Connection	GP Buildout/No Diablo Grande Connection	No Project/No Expansion of Treatment Capacity	First-Phase Expansion with Diablo Grande/No GP Buildout	Alternative Location - Plant Expansion	Alternative Location - Percolation Ponds	Regional Treatment Facility	Land Disposal of Secondary Treated Wastewater	Water Reuse/Tertiary Treatment	River Discharge of Treated Wastewater
Description											
▸ 1.25-mgd, first-phase expansion ▸ Future expansions to serve buildout of City GP ▸ Accommodate Diablo Grande wastewater ▸ Construction of City and Diablo Grande sewer lines ▸ Percolation/evaporation pond disposal	▸ 1.25-mgd, first-phase expansion ▸ Future expansions to serve buildout of City GP ▸ Accommodate Diablo Grande wastewater ▸ Construction of City and Diablo Grande sewer lines ▸ Percolation/evaporation pond disposal	▸ 1.0-mgd expansion ▸ No further expansion for City GP buildout ▸ Onsite treatment for Diablo Grande ▸ No Diablo Grande sewer line ▸ Percolation/evaporation pond disposal for City's wastewater	▸ 0.5-mgd expansion ▸ Future expansions to serve buildout of City's GP ▸ Onsite treatment for Diablo Grande ▸ No Diablo Grande sewer line ▸ Percolation/evaporation pond disposal for City's wastewater	▸ No additional City facility expansion ▸ Onsite treatment for Diablo Grande ▸ No Diablo Grande sewer line	▸ 1.25-mgd, first-phase expansion ▸ No further expansion for City GP buildout ▸ Accommodate Diablo Grande wastewater ▸ Construction of City and Diablo Grande sewer lines ▸ Percolation/evaporation pond disposal	▸ Construction of expanded City treatment plant at an alternative location, rather than modification of existing plant ▸ All other components same as proposed project	▸ Construction of percolation ponds at locations not analyzed in the EIR ▸ All other components same as proposed project	▸ Piping City and Diablo Grande wastewater to a regional facility for treatment and disposal	▸ Disposal of treated wastewater by crop irrigation ▸ Storage ponds constructed	▸ Tertiary treatment of wastewater ▸ Disposal of treated wastewater by crop and/or parkland irrigation ▸ Storage ponds constructed	▸ Tertiary treatment of wastewater ▸ River discharge of treated wastewater
Results of Analysis											
Advantages ▸ Meets all project objectives ▸ Provides regionalization for City and Diablo Grande ▸ Accommodates planned growth **Disadvantages** ▸ Farmland conversion ▸ Loss of Swainson's hawk foraging habitat ▸ Potential temporary impacts to SJ kit fox ▸ Other environmental impacts	**Advantages** ▸ Meets all project objectives ▸ Provides regionalization for City and Diablo Grande ▸ Accommodates planned growth **Disadvantages** ▸ Farmland conversion ▸ Loss of Swainson's hawk foraging habitat ▸ Potential temporary impacts to SJ kit fox ▸ Other environmental impacts	**Advantages** ▸ Less farmland conversion ▸ Reduced loss of Swainson's hawk foraging habitat ▸ No potential temporary impacts to SJ kit fox ▸ Less odor potential **Disadvantages** ▸ Would not serve City GP buildout ▸ Does not meet project objectives ▸ Does not provide regionalization ▸ Environmental impacts would still occur	**Advantages** ▸ Accommodates City GP buildout ▸ Less farmland conversion ▸ Reduced loss of Swainson's hawk foraging habitat ▸ No potential temporary impacts to SJ kit fox ▸ Less odor potential **Disadvantages** ▸ Does not meet project objectives ▸ Does not provide regionalization ▸ Other environmental impacts would occur	**Advantages** ▸ No impacts related to expansion of City facilities (e.g., farmland, biology, odors, etc.) ▸ No potential temporary impacts to SJ kit fox **Disadvantages** ▸ Would not serve City GP buildout ▸ Does not meet project objectives	**Advantages** ▸ Less farmland conversion ▸ Reduced loss of Swainson's hawk foraging habitat ▸ Less odor potential ▸ Provides regionalization for City and Diablo Grande **Disadvantages** ▸ Would not serve City GP buildout ▸ Does not meet project objectives	**Advantages** ▸ Meets project objectives ▸ May avoid significant but mitigable impact related to western pond turtle **Disadvantages** ▸ May result in more impacts to conversion of farmland and/or natural habitat than modification of the existing plant ▸ Would result in similar impacts as proposed project for other issues	**Advantages** ▸ Meets project objectives **Disadvantages** ▸ Would result in similar impacts as proposed project	**Advantages** ▸ Might meet project objectives **Disadvantages** ▸ Not feasible at this time	**Advantages** ▸ Meets project objectives ▸ May result in less groundwater pumping for irrigation **Disadvantages** ▸ Would result in similar impacts as proposed project for other issues	**Advantages** ▸ Meets project objectives ▸ May result in less groundwater pumping for irrigation **Disadvantages** ▸ Would result in similar impacts as proposed project for other issues	**Advantages** ▸ Meets project objectives ▸ Less farmland conversion ▸ Reduced loss of Swainson's hawk foraging habitat ▸ Would eliminates all other impacts related to pond construction **Disadvantages** ▸ Not feasible at this time
Conclusions											
▸ Not environmentally superior ▸ Meets all project objectives	▸ Not environmentally superior ▸ Meets all project objectives	▸ Environmentally superior to proposed project ▸ Does not meet project objectives ▸ Eliminates one significant, but mitigable impact (SJ kit fox) ▸ Does not reduce any significant unavoidable impacts to LTS	▸ Does not meet project objectives ▸ Would not serve City GP buildout ▸ Eliminates one significant, but mitigable impact (SJ kit fox) ▸ Does not reduce any significant unavoidable impacts to LTS	▸ Environmentally superior alternative ▸ Does not meet project objectives ▸ Would not serve City GP buildout ▸ No impacts related to Diablo Grande sewer line or expansion of City facilities	▸ Environmentally superior to proposed project ▸ Does not meet project objectives ▸ Provides regionalization for City and Diablo Grande ▸ Would not serve City GP buildout ▸ Does not reduce any significant unavoidable impacts to LTS	▸ Meets project objectives ▸ May avoid significant but mitigable impact related to western pond turtle ▸ May result in more impacts to conversion of farmland and/or natural habitat ▸ Would result in similar impacts as proposed project for other issues ▸ Does not reduce any significant unavoidable impacts to LTS	▸ Meets project objectives ▸ Would result in similar impacts as proposed project ▸ Does not reduce any significant unavoidable impacts to LTS	▸ Might meet project objectives ▸ Not feasible at this time	▸ Environmentally superior to proposed project ▸ Meets project objectives ▸ May result in less groundwater pumping for irrigation ▸ Does not reduce any significant unavoidable impacts to LTS	▸ Environmentally superior to proposed project ▸ Meets project objectives ▸ May result in less groundwater pumping for irrigation ▸ Does not reduce any significant unavoidable impacts to LTS	▸ Meets project objectives ▸ Not feasible at this time ▸ Less farmland conversion ▸ Reduced loss of Swainson's hawk foraging habitat ▸ Would eliminates all other impacts related to pond construction

EIR = Environmental Impact Report LTS = Less than Significant
GP = General Plan SJ = San Joaquin

Land disposal of secondary- or tertiary-treated wastewater would require a smaller acreage of land conversion for storage ponds than for the disposal ponds proposed in the Wastewater Master Plan. These alternatives, however, would result in similar impacts as the proposed project, and would not reduce any significant unavoidable impacts to a less-than-significant level. These alternatives would be expected to reduce the amount of groundwater currently pumped for irrigation. For this reason, these land disposal alternatives are environmentally superior to the proposed project. However, only the land disposal of secondary-treated wastewater would feasibly meet the project objectives. The cost of providing tertiary treatment for wastewater would not allow the City to provide wastewater services at a reasonable rate and, moreover, would render the project infeasible.

Land disposal of secondary treated wastewater, therefore, is considered the environmentally superior alternative that feasibly meets all the project objectives. Although land disposal (for irrigation) is not currently proposed for the Wastewater Master Plan, the City will consider land disposal alternatives for future disposal applications.

13.7.6 Conclusion

For the reasons discussed above, land disposal of secondary-treated wastewater is considered the environmentally superior alternative that feasibly meets all the project objectives. Although land disposal (for irrigation) is not currently proposed for the Wastewater Master Plan, the City will consider land disposal alternatives for future disposal applications.