5.1 ISSUES PREVIOUSLY ADDRESSED / CONSIDERED LESS THAN SIGNIFICANT

This section summarizes the issues that were either previously addressed in the PXP Phase IV Development Plan EIR (Phase IV EIR) and/or do not warrant further analysis as these impacts are considered less than significant.. As necessary, appropriate mitigation measures for Aesthetics, Cultural Resources, Paleontological Resources, Noise, and Traffic/Circulation have been carried over from the Phase IV EIR and would be incorporated into this SEIR accordingly. All impacts and mitigation measures associated with resource issue areas are discussed in further detail.

5.1.1 Aesthetics

The project is located in the Arroyo Grande Oil Field in Price Canyon, approximately three miles northeast of the City of Pismo Beach. Price Canyon is a scenic, rural valley amid rolling hills dotted with scattered oak trees. However, Price Canyon Road is not officially a designated as a scenic highway. The Union Pacific Railroad and Pismo Creek both parallel Price Canyon Road and the proposed project area to the east. Land uses in the vicinity of the project are primarily livestock grazing.

Price Canyon provides considerable scenic value due to the combination of grazing pastures, stands of mature oaks, the Pismo Creek watershed, rolling hills, and steep cliffs that are complimented by varying shades of brown, green, and gray. Although the existing oilfield interrupts the scenic value of this canyon, the overall aesthetic quality of the area is relatively high.

The Phase IV EIR analyzed Key Viewing Areas in association with implementation of that project. These represented views of operations existing at the time from different vantage points along Price Canyon Road.

The primary County policy documents that govern aesthetic issues in the project areas are the Inland Area Framework for Planning, the Agriculture and Open Space Element, and the County General Plan. The Energy and Extractive Areas Combining designation, which covers the project area, includes those areas designated as Rural Lands (i.e. Price Canyon/Ormonde Road Oilfield (EX)). These operations should not be expanded into adjacent land use categories or existing operations intensified without full review through a public hearing process. The scenic value of the Price Canyon should also be protected as an entry to the City of Pismo Beach.

Price Canyon Road is a north-south improved two-lane County road which extends from the City of Pismo Beach to State Route 227. Price Canyon Road bisects the Arroyo Grande Oil Field site and provides direct access to the site at the entrance located opposite Ormonde Road. The key viewing area in question is located several hundred yards further north and opposite an existing entrance to the site.

Construction of the new water reclamation facility and related structures would remove existing vegetation (including large oaks) and result in exposed soils during grading. Minor

slumping of cut slopes could also occur during construction. Grading and removal of existing vegetation would represent a short-term change and would require approximately 5.6 acres of ground disturbance and minimal to moderate grading. Furthermore, presence of construction equipment would also result in short-term minor aesthetic impacts. Construction-related equipment and associated activities would be most visible during construction of proposed pipeline routes to Pismo Creek and to proposed offsite re-use areas. As such, construction of the proposed project may result in temporary visual impacts to motorists traveling along Price Canyon Road, nearby residences, and passengers on Amtrak passenger trains traveling along the Union Pacific Railroad tracks through Price Canyon.

Because construction of the proposed project would take place within the previously analyzed project area, no mitigation of construction-related impacts to visual resources is necessary; however, implementation of the proposed project would require removal of 26 coast live oaks, which could reduce the visual quality of the area. As similar long-term impacts were identified in the Phase IV EIR, mitigation measures identified in that document's Biological Resources section would be similarly employed for the proposed project. In addition, Mitigation Measure BIO-6 (Section 5.3 - Biological Resources) from this SEIR would be implemented to reduce long-term impacts from removal of vegetation to the visual quality of the project area.

In addition, the project would introduce new facilities (e.g. air strippers) which may be visible from Price Canyon Road. The area of the water reclamation facility would generally be hidden by the existing topography.

On-site analysis determined that only the air strippers, which would be 14 feet in diameter and 70 feet in height, may be visible from Price Canyon Road; however, the proposed towers are not expected be silhouetted against the sky. This conclusion is based on the fact that the elevation of the building pad with existing and higher 85-foot towers, which would be in close proximity to the air strippers, is not silhouetted. Due to the potential visibility of these proposed towers to travelers on Price Canyon Road and associated potential impacts to the visual quality of surrounding slopes containing native vegetation (i.e. oak woodland), a painting color scheme would be incorporated into the project description (see Section 3.4.2), intended to blend in with the natural landscape. Additionally a lighting plan consistent with the existing use, including height limits and shielding requirements would also be incorporated into the project description to minimize any new aesthetic impacts due to lighting.

In summary, the new structures would generally not be highly visible either from Price Canyon Road or from nearby residences. The window of visual opportunity to the water reclamation facility would be several seconds or less based on typical motorist speeds along Price Canyon. Additionally, Price Canyon would be the only roadway in the area which could offer a view of the affected area and this view would last approximately three seconds at typical roadway speeds. Furthermore, new facilities associated with the proposed project would be constructed in an industrial area that is already heavily developed in oil-field operations. The new structures would not silhouette against the skyline, would be partially obscured by intervening topography and vegetation and would be considered consistent with the surrounding site. Given the short viewing frequency, intervening topography and vegetation, and plans for a

painting (color) and lighting scheme designed to blend into the surrounding site, aesthetic impacts are considered less than significant.

5.1.2 Agricultural Resources

The project area is located within the County's "Energy and Extractive Resource" area and does not include any agricultural operations. Properties adjacent to the project area support agricultural uses, and may potentially use the treated water produced by the proposed project for irrigation of non-edible crops; however, at this time, no formal agreements for re-use have been made concerning production of treated water. As such, the proposed project would not adversely affect agricultural resources in the area. Rather, for the purposes of this analysis, it is assumed that re-use of treated water for agricultural irrigation would occur in the future. Re-use of treated water may potentially represent a beneficial impact to agricultural resources outside of the PXP property, as well as to groundwater resources, as re-use would result in an overall reduction to the drawdown of local groundwater supply for the life of the project. The produced water would not be treated to drinking water standards; therefore, water re-use would be limited to only agricultural users. Additionally, no significant impacts were identified in the Phase IV EIR.

5.1.3 Cultural Resources

Two cultural resources reports were prepared for the Phase IV EIR. These were entitled “Phase One Archaeological Surface Survey for the Shell Western E&P Project, Price Canyon Oil Field, San Luis Obispo, CA and “Results of Addendum Archaeological Surface Survey for a 65 Acre Area of the Plains Exploration and Production Phase IV Project, Price Canyon, San Luis Obispo County, CA, conducted by Robert O. Gibson, (1992, 2003), and review conducted by Mr. Gibson of the proposed project. The first survey conducted in 1992 included about 200 acres and the second survey performed in 2003 included 65 acres. Additionally, a Heritage Study was prepared as an addendum for the Phase IV area itself. Various recorded prehistoric sites in the project area were discussed and mapped.

The Information Center reported that since 1977, three previous surveys had been conducted, Robert Hoover (1977, 1978) and W.B. Sawyer (1989) and had identified three prehistoric archaeological sites (SLO-353, SLO-652, and SLO-1266) and one historic archaeological site, the Corral de Piedra (Stone Corral). Site records were updated for the Hoover sites: SLO-353 and SLO 652. These two sites are part of the same site that has been divided by Price Canyon Road. The construction of this road, done prior to 1964, also unearthed three Chumash burials.

SLO-353. SLO-353 is a prehistoric site, located east of Price Canyon Road and first recorded in 1963 by H.L. and L.D. Wadhams. It was re-recorded in 1969 by Charles Dills and again in 1977 by Robert Hoover. The site measures about 200 meters east-west and 150 meters north-south. The site contains a concentration of weathered small shellfish fragments consisting of at least nine species from both sandy beach and rocky coast environments (probably Pismo Beach and Shell Beach areas). Ground stone and chipped stone tools and debitage (by-products from stone tool manufacture) were present in low to medium densities.

One projectile point (arrowhead) may be stemmed form suggesting a Middle period occupation perhaps 1,000 to 2,500 years ago.

At the eastern part of the site is a 15 by 20 meter sandstone outcrop that contains at least 18 bedrock mortars. A second small outcrop has two additional mortars.

SLO-652. SLO-652 is located west of Price Canyon Road and would have originally been connected to SLO-353 before the road was cut. This site was first recorded by Charles Dills in 1972 and measures about 150 meters east-west and 200 meters north-south. The northern 1/3 of the site contains a concentration of weathered shellfish fragments (same species as SLO-353) in a dark gray to black sandy soil. The other 2/3 of the site consists of trace to low densities of chipped stone materials with rare shell fragments.

One larger and three smaller low bedrock outcrops contain mortar depressions that are, overall, deeper than the outcrop at SLO-353 but fewer in number. The main shell concentration is located just north of the larger rock outcrop.

In 1977 Robert Hoover directed subsurface testing at SLO-652. Two 1 by 1 meter test units were excavated and 200 soil samples were collected for pH analysis. The test units recovered burnt rock, chert flakes and cores, boiling stones, small shell fragments and bone. Projectile and biface knife fragments suggest Middle period of occupation for both sites (1,000 to 3,000 years old).

SLO-1266. SLO-1266 is a small prehistoric site recorded in 1989 by W. B. Sawyer. It is located just north of Tiber Canyon Road and consists of a gentle sloping terrace measuring 50 by 100 meters. Noted were a concentration of chert flakes with rare shell fragments (same at the other two sites), burnt rock and some bedrock mortars. No new information was gathered in the 1992 survey.

5.1.3.1 Impacts and Mitigation from the Original Phase IV EIR

As the proposed project would take place entirely within the Phase IV project area, no new impacts to cultural resources, including archaeological sites, are anticipated. The pipelines are located above ground and the route would be designed to avoid existing resources. Under the Phase IV EIR, significant impacts were identified if construction activities were to disturb any of the above-listed archaeological sites. The proposed Pismo Creek outfall and optional re-use pipelines would not intersect archaeological resource sites previously identified under the Phase IV EIR. However, in the event construction of the proposed project results in inadvertent damage to historic, cultural, archaeological, and/or human remains, Mitigation Measure CUL-1 shall be carried over and incorporated into the proposed project. Impacts are considered less than significant after implementation of this mitigation.

Mitigation Measure CUL-1: In the event that unknown cultural remains are encountered anywhere within the project area during construction, activities shall be terminated or redirected to another area until a qualified archaeologist can be retained to evaluate the potential significance of the finds in a Phase 2 archaeological significance investigation or PXP shall have

the option to relocate work permanently without need to conduct further studies at that location. Relocation of work and any subsequent archaeological investigation would be done in consultation with the County of San Luis Obispo. If the remains are significant and cannot be feasibly avoided, then a Phase 3 data recovery mitigation program shall be performed by a qualified archaeologist, and all construction activity within the site and 150-foot buffer area shall be monitored by a qualified archaeologist and Native American monitor. All Phase 3 significance assessments and Phase 3 mitigation activities shall be funded by the applicant.

5.1.4 Paleontological Resources

For the Phase IV EIR, Cogstone Resource Management conducted paleontological reconnaissance surveys over ten days from July 17 to August 28, 2003. The survey was conducted on foot and both samples and representative fossils were collected. The survey covered all of the proposed Phase IV project area plus a large portion of the PXP lease holding in the Arroyo Grande Oilfield.

The field surveys of the PXP holdings within the Arroyo Grande Oil Field identified five fossil-bearing sites. Fossils found during these surveys were whales (mandible, bone fragments), seal/sea lion (fibula), shrimp (burrows), shark (tooth) and bony fish (tooth). The shark tooth may represent an unnamed species. Only one of these five sites is located within the Phase IV project area, near well pad Maino 18J, where fossil whale and seal/sea lion bones were found.

5.1.4.1 Impacts and Mitigation from the Original Phase IV EIR

The presence of both vertebrate and invertebrate fossils in the major submembers of the Edna Member of the Pismo Formation indicates that these entire geological units have the potential to contain scientifically important vertebrate and invertebrate fossils. A paleontological mitigation monitoring plan addressing the potential for grading and excavation activities to uncover and adversely affect paleontological resources was developed and implemented for the Phase IV project (see Mitigation Measure PAL-1). Although the proposed project is highly disturbed by oil field operations for the Phase IV project, the mitigation monitoring plan would also apply to the SEIR as potential adverse affects on paleontological resources are highly site-specific. The most likely potential impact that could occur would be from accidental discovery of fossils; however, due to the level of disturbance at the project site (including roadways), this is considered unlikely. Mitigation measure PAL-1 would be applied in the event paleontological resources are discovered during land-disturbing activities. Impacts are considered less than significant after implementation of this mitigation.

Mitigation Measure PAL-1: Prior to ~~approval of the project~~construction, the applicant shall retain a qualified paleontologist to implement the paleontological mitigation monitoring plan developed for the Phase IV EIR that includes the following:

1. Prior to construction, the applicant would retain a qualified paleontologist to implement the mitigation plan and maintain professional standards of work;

2. A qualified monitor would perform full-time monitoring of all grading, enlargement of pads and all other open excavation work in native sediments. Monitoring would include inspection of exposed surfaces and microscopic examination of matrix. The monitor would have authority to divert grading away from exposed resources temporarily in order to recover the specimens and contextual data. PXP shall have the option to relocate work permanently without need to conduct further studies at that location. Relocation of work and any subsequent paleontological investigation would be done in consultation with the County of San Luis Obispo. Cooperation and assistance from on-site personnel would greatly assist timely resumption of work in the area of the discovery;

3. If the discovery meets the criteria for a fossil locality, formal locality documentation activities would be performed;

4. If microfossil localities are discovered, locality documentation activities shall include the collection of matrix material for processing. These activities may include use of equipment to excavate fossil-containing soils, and establishment of stockpiles away from the construction area. Testing of stockpiles shall consist of screen washing small samples (200 pounds) to determine if fossils are present. Productive tests shall result in screen washing of additional matrix from the stockpiles to a maximum of 6000 pounds per locality;

5. Fossils recovered shall be prepared, identified and cataloged, and donated to an accredited repository approved by the County of San Luis Obispo. Any resources determined not to meet significance criteria shall be offered to local schools for use in educational programs; and,

6. The principal investigator shall prepare monthly progress reports to be filed with the applicant and the County of San Luis Obispo. The principal investigator shall prepare a final report to be filed with the applicant and the County of San Luis Obispo. The report shall include a list of resources recovered; documentation of each site/locality, interpretation of resources recovered and shall include all specialists' reports as appendices.

5.1.5 Noise

The noise generation at the proposed project site consists of existing oil field facilities and operations. Noise-sensitive receptors within the region of influence of the proposed project include scattered single-family residences located north of the proposed project near Corral de Piedra Road, houses to the northwest located along State Route 227, and homes to the south of the project site in Pismo Beach located along ridge tops with a view to the north. These scattered residential areas are generally a mile or more away from the project area and tend to be located within moderate to steeply sloping topography.

5.1.5.1 Impacts and Mitigation from the Original Phase IV EIR

Short-term impacts from the proposed project would consist of noise generated by construction equipment, vehicles associated with grading, excavation/trenching, and erection of structures. Long-term impacts are generally not anticipated as operations associated with production of treated water would be introduced into an area of existing oil field operations. No substantial increase in truck trips per day would occur as a result of the project. Per the Initial Study prepared for the water reclamation facility, there are no project facilities that would substantially increase noise levels over current levels in the project area. Noise impacts that may be generated during construction and operation of the proposed project would be consistent with the existing industrial noise environment in the area. Standard construction noise mitigation would apply. Impacts are considered less than significant after implementation of this mitigation.

Mitigation Measure NOI-1: No use of heavy equipment or vehicles for the purpose of construction activities shall occur between the hours of 7 p.m. and 7 a.m., to the extent feasible.

5.1.6 Traffic and Circulation

The analysis procedures used in this study to determine roadway operational levels are based on information previously documented in the 2001 Traffic and Circulation Study for the Stocker Resources Arroyo Grande Oil Field Phase IV Project, prepared by Associated Transportation Engineers (ATE). The report provides information relative to existing and future traffic conditions within the study area adjacent to the project site, and evaluates impacts related to both the construction and ongoing operations phases of the proposed project.

ATE analyzed the operational characteristics of the roadway segments within the study area based on standard engineering roadway design capacities. ATE identified construction-related traffic as a less than significant impact, using an estimate of 138 total daily trips at worst-case. Existing volumes for the street segments in the study area were obtained from machine counts completed in August 2001 by ATE and from Caltrans (Caltrans, 2000). Cumulative effects of the project with 2021 forecasts were shown to be less than significant. Comparison of the existing ADT volumes and the corresponding design capacity for each roadway segment shows that all of the study-area roadways currently operate acceptably in the LOS A-C range. Considering the conclusions of the Phase IV EIR, the relatively small increase in the ADT beyond what was analyzed by ATE, traffic impacts are considered less than significant.

5.1.6.1 Impacts and Mitigation from the Original Phase IV EIR

Based on the traffic analysis prepared for the Phase IV EIR, the LOS for the project area roadway segments analyzed would not be degraded. Truck trips are discussed in detail in Section 3.4.4. Although specific routes to the project area not yet established, it is expected that trucks would be using Price Canyon Road via U.S. 101, or Highway 227. Entering and exiting of construction vehicles during installation of the proposed water reclamation facility may reduce traffic safety on Price Canyon Road during the A.M. and P.M. peak hour. As such,

Mitigation Measure TRA-1, contained in the Phase IV EIR, shall be carried over and implemented, resulting in less than significant impacts:

Mitigation Measure TRA-1:

- Trucks (delivery, hauling and transportation trucks) should be scheduled outside the a.m. and p.m. peak period (7:00 to 9:00 a.m. and 4:00 to 6:00 p.m.) to the extent feasible (no increase in trucks trips would occur during the a.m. and p.m. peak periods)[1];
- Construction related traffic shall use on-site roads wherever possible; and,
- Warning signs shall be placed on Price Canyon Road prior to construction to notify through traffic of trucks entering and exiting the site.

5.1.7 Additional Issues with No Impact

The following issues were deemed to have no impacts during preliminary environmental analysis conducted as part of the initial application phase of the Phase IV Development Plan, which is consistent with the currently proposed project:

- **Population/Housing** - The proposed project would not substantially alter the location, distribution, density, or growth rate of the human population of an area. The proposed project would not adversely affect existing housing, or create a demand for additional housing;
- **Public Services** - The project would not have an effect upon, or result in, a need for new or altered public services;
- **Energy** - The proposed project would not result in the use of substantial amounts of fuel or energy or substantially increase demand upon existing sources of energy above that currently required and proposed by the approved Phase IVE Expansion project, or require the development of new sources of energy;
- **Utilities** - The proposed project would not result in a need for new systems, or substantial alterations to existing utilities; and,
- **Recreation** - The proposed project would not affect the quality or quantity of existing recreational opportunities.

[1] This shall include trucks traveling onto Highway 101 from Price Canyon Road.

5.2 AIR QUALITY

5.2.1 Setting

5.2.1.1 Climate and Meteorology

Coastal San Luis Obispo County is characterized by mild weather throughout the year. Due to its location near the coast, the Pacific Ocean plays a key role in moderating temperatures. Summers are mild and often characterized by early morning and afternoon fogs. Winters are usually cool and wet with the rainy season extending from late November to early April.

The nearest climatic data station to the project site is in the City of San Luis Obispo. The minimum average temperature recorded at the San Luis Obispo station from 1950 to 1980 is 41.7 degrees Fahrenheit in January. The maximum average temperature is 78.7 degrees Fahrenheit in September for the same period. The average annual rainfall, recorded from 1950 to 1980, is 23.00 inches at San Luis Obispo.

Existing air quality data provided in Table 5.2-2 and in this section is from the San Luis Obispo station; however, according to the screening-level HRA provided for the proposed project's air stripper towers (included in Appendix D), the San Luis Obispo Air Pollution Control District (APCD) has indicated that neither this station, nor the station located in Grover Beach accurately represent meteorological conditions at the Arroyo Grande Oil Field, due to differences in wind flow. Although it has been previously recommended that a station be installed at this location to obtain more site-specific air quality data, there is not currently one available for this analysis. Thus, data provided by the San Luis Obispo station represents the best available air quality data at this time.

Airflow plays an important role in the movement and dispersion of air pollutants in the San Luis Obispo region. The speed and direction of local winds are controlled by 1) the location and strength of the Pacific High pressure system and other global patterns, 2) topographical factors, and 3) circulation patterns resulting from temperature differences between the land and sea.

During the spring and summer, when the Pacific High attains its greatest strength, onshore winds from the northwest generally prevail during the day. As evening approaches, onshore winds die down, and the wind direction reverses with weak winds flowing down the coastal mountains and valleys to form light easterly breezes.

In the fall, onshore surface winds decline and the marine layer grows shallow, allowing an occasional reversal to a weak offshore flow. This along with the diurnal alteration of land-sea breeze circulation, can sometimes produce a "sloshing" effect. Under such conditions, pollutants may accumulate over the Pacific Ocean and subsequently be carried back onshore with the return of sea breezes.

In the atmosphere, air temperatures normally decrease as altitude increases. At varying distances above the earth's surface, however, a reversal of this temperature gradient can occur. Such a condition, which is called an inversion, is simply a warm layer of air over a layer of cooler air. Inversions can have the effect of limiting the vertical dispersion of air pollutants, trapping them near the earth's surface.

Several types of inversions are common to the San Luis Obispo area. Weak surface inversions are caused by radiational cooling of air in contact with the cold surface of the earth at night. In valleys and low lying areas, this condition is intensified by the addition of cold air flowing down from hills and pooling on valley floors. Surface inversions are common throughout the County during winter months, particularly on cold mornings. As the morning sun warms the earth and air near the ground, the inversion lifts, gradually dissipating throughout the day.

During the summer, subsidence inversions can occur when the summertime presence of the Pacific high pressure cell can cause the air mass aloft to sink. As the air descends, compressional heating warms the air to a higher temperature than the air below. This highly stable atmospheric conditioning can act as a nearly impenetrable lid to the vertical mixing of pollutants. Subsidence inversions can persist for one or more days, causing air stagnation and the buildup of pollutants.

5.2.1.2 Air Pollution Control

Air pollution control is administered on three governmental levels in the project area. The United States Environmental Protection Agency (EPA) has jurisdiction under the Federal Clean Air Act to develop Federal air quality standards and to require individual states to prepare State Implementation Plans to attain these standards.

The California Environmental Protection Agency, Air Resources Board (ARB) has jurisdiction under the California Health and Safety Code and the California Clean Air Act to develop California air quality standards, to require regional plans to attain these standards, and to coordinate the preparation by local air districts of plans required by both the Federal and State Clean Air Acts. ARB is also responsible for the development of state emission standards for mobile and stationary emission sources.

The Air Pollution Control District (APCD) shares responsibility with the ARB for ensuring that all State and Federal ambient air quality standards are attained within the County. The APCD has jurisdiction under the California Health and Safety Code to develop emission standards (rules) for the County, issue air pollution permits, and require emission controls for stationary sources in the County. The APCD is also responsible for the attainment of State and Federal air quality standards in the County.

5.2.1.3 Air Quality Standards

Air quality standards are specific concentrations of pollutants that are used as thresholds to protect public health and the public welfare. The EPA has developed two sets of standards; one to provide an adequate margin of safety to protect human health and the second to protect

the public welfare from any known or anticipated adverse effects. At this time, sulfur dioxide is the only pollutant for which the two standards differ.

ARB has developed air quality standards for California, which are generally lower in concentration than the Federal standards. California standards exist for ozone, carbon monoxide, nitrogen dioxide, PM_{10}, visibility, sulfates, lead, hydrogen sulfide and vinyl chloride.

In July 1997, EPA finalized new health-based ozone and particulate matter (PM) standards. However, due to several lawsuits the standards were not fully implemented until February 2001. The new Federal ozone standard is based on a longer averaging period (8-hour vs. 1-hour), recognizing that prolonged exposure is more damaging. The new Federal PM standard is based on finer particles (2.5 microns and smaller vs. 10 microns and smaller), recognizing that finer particles may have a higher residence time in the lungs and cause greater respiratory illness. In 2002, the ARB lowered the annual standards for PM_{10} and $PM_{2.5}$ in response to the Children's Environmental Health Protection Act. Table 5.2~~4~~-1 lists the applicable State and Federal air quality standards.

Table 5.2-1. Ambient Air Quality Standards

Pollutant	Averaging Time	State Standard	Federal Standard
Ozone	1-Hour	0.09 ppm	--
	8-Hour	0.07 ppm	0.08 ppm
Carbon Monoxide (CO)	1-Hour	20 ppm	35 ppm
	8-Hour	9.0 ppm	9.0 ppm
Nitrogen Dioxide (NO_2)	1-Hour	0.18~~25~~ ppm	--
	Annual Avg.	0.030 ppm	
Inhalable Particulate Matter ($PM_{2.5}$)	24-Hour	--	35 ug/m3
	Annual Arithmetic Mean	12 ug/m3	15 ug/m3
Inhalable Particulate Matter (PM_{10})	24-Hour	50 ug/m3	150 ug/m3
	Annual Arithmetic Mean	20 ug/m3	50 ug/m3
Sulfur Dioxide (SO_2)	1-hour	0.25 ppm	--
	24-Hour	0.04 ppm	0.14 ppm

Source: California Air Resources Board (www.arb.ca.gov)

5.2.1.4 Effects of Air Pollution

The primary chemical compounds that are considered pollutants emitted into or formed in the atmosphere include ozone, oxides of nitrogen, sulfur dioxide, hydrocarbons, carbon monoxide, and particulate matter.

Ozone is formed in the atmosphere through a complex series of chemical reactions generally requiring light as an energy source. Ozone is a pungent, colorless gas that is a strong irritant and attacks the respiratory system. Respiratory and cardiovascular diseases are

aggravated by exposure to ozone. A healthy person exposed to high concentrations of ozone may experience nausea, dizziness, and burning in the chest. Ozone also damages crops and other vegetation.

Oxides of nitrogen (NO_x) which are considered pollutants include nitric oxide (NO) and nitrogen dioxide (NO_2). NO is colorless and odorless and is generally formed by combustion processes combining atmospheric oxygen and nitrogen. NO_2 is a reddish-brown irritating gas formed by the combination of NO and oxygen in the atmosphere or at the emission source. Both NO and NO_2 are considered ozone precursors because they react with hydrocarbons and oxygen to produce ozone. Exposure to NO_2 may increase the potential for respiratory infections in children and cause difficulty in breathing even among healthy persons and especially among asthmatics.

Sulfur dioxide (SO_2) is a colorless, pungent, irritating gas which affects the upper respiratory tract. Sulfur dioxide may combine with particulate matter and settle in the lungs, causing damage to lung tissues. Sulfur dioxide may combine with water in the atmosphere to form sulfuric acid that may fall as acid rain, damaging vegetation.

Hydrocarbons include a wide variety of compounds containing hydrogen and carbon. Many hydrocarbons (known as reactive organic gases [ROG]) react with NO and NO_2 to form ozone. Generally, ambient hydrocarbon concentrations do not cause adverse health effects directly, but result in ozone formation.

Carbon monoxide (CO) is a colorless, odorless gas generally formed by incomplete combustion of hydrocarbon-containing fuels. Carbon monoxide does not irritate the respiratory tract, but does interfere with the ability of blood to carry oxygen to vital tissues.

Particulate matter consists of a wide variety of particle sizes and composition. Generally, particles less than 10 microns (PM_{10}) are considered to be pollutants because they accumulate in the lung tissues and may contain toxic materials which can be absorbed into the system.

5.2.1.5 Baseline Air Quality

In January 2004, the San Luis Obispo County portion of the SCCAB was designated as an attainment area for the State 1-hour ozone standard (0.09 ppm). However, in 2006, attainment designations became based on the 8-hour State ozone standard (0.070~~07~~ ppm) and the San Luis Obispo portion of the SCCAB was considered a non-attainment area. The area is also designated a non-attainment area for suspended particulate matter less than 10 microns in diameter (PM_{10}). Both of these pollutants are measured at San Luis Obispo monitoring station. The county (primarily the Paso Robles station) typically exceeds the State ozone (O3) standard at least once per year. The San Luis Obispo station, however, has not recorded a violation of the State 1-hour ozone standard since April 8, 1989.

Air quality in San Luis Obispo County is currently monitored at eight public agency and private sector monitoring stations located throughout the County. The nearest station is located

in Grover Beach approximately three miles south of the project site. However, the air quality monitored at the South Higuera Street station in the City of San Luis Obispo is more representative of the project site because the location is more similar than Grover Beach (i.e., inland valley with less cloud cover and higher temperatures). The Higuera Street station is located approximately six miles north of the project site. This station monitors ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, and PM_{10} levels. However, monitoring began in 2005, and 2004 data is from the Marsh Street station in San Luis Obispo. Table 5.2~~1~~-2 presents the maximum pollutant concentrations that were recorded at this station from 2004 through 2006.

High ozone levels in San Luis Obispo County have occasionally been traced to air pollutants transported from other air basins, such as the South Coast Air Basin, the San Francisco Bay Area, and the San Joaquin Valley. The frequency with which long-range transport of pollutants affects local air quality has not been definitively established. However, most exceedances of the State ozone standard measured in the County are the result of local emissions and adverse meteorology.

5.2.1.6 Air Quality Management

The California Clean Air Act (CCAA), adopted in 1988, requires all air pollution control districts and air quality management districts in the state to adopt and enforce regulations to achieve and maintain air quality that is within the State air quality standards. San Luis Obispo County has been declared a "moderate" nonattainment area for the State ozone standard. The County did not meet the December 31, 1997 deadline to attain the State 1-hour ozone standard; therefore, should have been reclassified as a “serious” nonattainment area. However, the ARB determined that a change in classification would not result in a more expeditious attainment of the standard. The County is also considered a nonattainment area for the State PM_{10} standard.

Table 5.2-2. Summary of Air Quality Standard Exceedances

Year	Marsh St. 2004	Higuera St. 2005	Higuera St. 2006
Ozone 1-hour (ppm)			
Worst Hour	0.073	0.072	0.070
Number of State Exceedances (Days > 0.09 ppm)	0	0	0
Ozone 8-hour (ppm)			
Worst 8-hour Period	0.070	0.063	0.059
Number of State Exceedances (Periods > 0.08 ppm)	0	0	0
Carbon Monoxide (ppm)			
Worst 8-Hour Period	1.49	0.071	0.78
Number of State Exceedances (Hours>20 ppm)	0	0	0
Number of State Exceedances (8 hours>9 ppm)	0	0	0

Table 5.2-2. (Continued)

Year	Marsh St. 2004	Higuera St. 2005	Higuera St. 2006
$PM_{2.5}$ (micrograms/cubic meter)			
Worst Sample	19.4	11.4	24.2
Number of Federal Exceedances (Samples>65 ug/m3)	0	0	0
PM_{10} (micrograms/cubic meter)			
Worst Sample	35.0	32.0	72.0
Number of State Exceedances (Samples>50)	0	0	1

Source: California Air Resources Board (www.arb.ca.gov)

In response to the requirements of the CCAA, the San Luis Obispo County APCD prepared the 1991 Clean Air Plan (CAP) to provide a framework for the attainment of State air quality standards by the earliest practicable date. The CAP is a comprehensive planning document intended to facilitate attainment and maintenance of the State ozone standard. The 1995 CAP was developed as a comprehensive update to the 1991 CAP and was expected to bring the County into attainment of the State ozone standard by the end of 1997.

The 1995 CAP described the pollutants that affect County air quality, the sources of those pollutants, and future year emissions that are anticipated under current growth trends. Based on this information, the 1995 CAP also provides a control strategy for reducing emissions of ozone precursors. Included in the 1995 CAP are a number of land use and circulation management policies and programs that have already been implemented to reduce vehicular air emissions. Additional measures recommended for adoption include trip reduction programs and telecommuting.

A second update to the 1991 CAP was developed in 1998, as a continuation of the 1995 CAP and proposes no new control measures for adoption. The 1998 CAP was expected to bring the County into attainment with the State 1-hour ozone standard by 2003.

The CAP was revised again in 2001, but did not include any new emissions control measures. However, emissions of ROG and NOx are expected to decline through the year 2015, and attainment of the State ozone standard should occur in the near term. In January 2004, the San Luis Obispo County portion of the SCCAB was designated as an attainment area for the State 1-hour ozone standard (0.09 ppm). However, in 2006, attainment designations became based on the 8-hour State ozone standard (0.070~~07~~ ppm) and the San Luis Obispo portion of the SCCAB was considered a non-attainment area. Maximum concentrations of other criteria pollutants are currently within Federal and State standards.

5.2.1.7 Global Climate Change

Global climate change (GCC) is a change in the average weather of the earth, which can be measured by wind patterns, storms, precipitation, and temperature. Although the issue of GCC is a widely accepted theory, the extent of the change from anthropogenic (human activity related) sources remains in debate.

Gases that trap heat in the atmosphere are often called greenhouse gases (GHG), analogous to the way in which a greenhouse retains heat. Common GHG include water vapor, carbon dioxide, methane, nitrous oxides, chlorofluorocarbons, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, ozone, and aerosols. GHG are emitted by both natural processes and human activities. The accumulation of GHG in the atmosphere regulates the earth's temperature. Without the natural heat trapping effect of GHG, the earth's surface would be about 34 degrees Centigrade (°C) cooler (CAT 2006). However, it is believed that emissions from human activities, such as electricity production and vehicle use, have elevated the concentration of these gases in the atmosphere beyond the level of naturally occurring concentrations.

In 2006, the California State Legislature adopted AB 32, the California Global Warming Solutions Act of 2006. AB 32 focuses on reducing GHG in California. GHG as defined under AB 32 include: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. AB 32 requires the ARB, the State agency charged with regulating statewide air quality, to adopt rules and regulations that would achieve greenhouse gas emissions equivalent to statewide levels in 1990 by 2020. On or before June 30, 2007, ARB is required to publish a list of discrete early action greenhouse gas emission reduction measures that can be implemented by 2010.

The ARB, the California Environmental Protection Agency, and other governmental agencies with jurisdiction have not yet developed guidelines on how to prepare a CEQA impact assessment for a project's Greenhouse gas (GHG) contribution to GCC. The State Legislature enacted and the Governor signed Assembly Bill (AB) 32, the Global Warming Solutions Act of 2006, which charged ARB to develop regulations on how the state would address GCC.

At this time, CEQA does not provide any regulatory guidance on how to address potential impacts of global climate change, and AB32 defers CEQA consideration of GHG as a subsequent phase of this legislation. AB32 also directs the ARB as the agency to determine appropriate measures to mitigate for GHG, which may or may not include measures directed at new land use development subject to CEQA. At this time, further analysis of this project's impacts is considered speculative given that there is no empirical evidence available at the present to evaluate this issue further under CEQA for individual or cumulative impacts. While project impacts on GCC are not considered significant, mitigation measures have been included per recommendations from the APCD to address both short-term and long-term air quality impacts (see Sections 5.3.1.2 and 5.3.1.3). Using emissions factors from "California's Greenhouse Gas Inventory" and EMFAC2007, GHG emissions were estimated and included in Table 5.2-3 for informational purposes. GHG emissions have not been added to the impact

analysis as they do not have adopted CEQA impact thresholds. For detailed GHG emissions per specific piece of equipment, refer to Appendix D.

Table 5.2-3. GHG Emissions Inventory

GHG	Lbs./day	Tons/Quarter	Total Tons
CO2	16,818.3	551.9	1513.7
CH4 (methane)	0.9	0.02135	0.0854
N2O (Nitrous oxide)	0.1235	0.0029	0.0115

Source: EMFAC2007 and California 's Greenhouse Gas Inventory

5.2.1.8 Existing Facilities

PXP currently operates approximately 130 production wells, 40 steam injections wells, an oil dehydrations plant, gas processing plant, produced water disposal and softening plant, a casing vent recovery flare, two casing vapor recovery compressors, two truck loading racks, four 2,000 barrel storage tanks, one Co-Generation plant, and four steam generators.

Based on the 2005 emission inventory prepared for the APCD, these facilities emit 15.3 tons per year NOx and 10.8 tons per year ROG. For the year 2006, annual compliance testing of PXP's gas turbine cogeneration plant reports 2.4 pounds per day NOx and 3.6 pounds per day ROG emissions. This facility produces 1.4 megawatts of electricity and 950 barrels of steam. The gas turbine is fired on purchased natural gas and utilizes Xonon catalytic combustor to minimize NOx emissions (PXP, 2007).

5.2.1.9 Proposed Facilities

The proposed project would include new air strippers that would generate operational emissions for the life of the proposed project (see Impacts AQ-5 and AQ-6). These proposed facilities are discussed in more detail in Chapter 3.0 – Project Description.

5.3.1 Impact Analysis

5.3.1.1 Thresholds of Significance

Significance thresholds have been developed by the San Luis Obispo County APCD and contained within the *CEQA Air Quality Handbook* (San Luis Obispo County APCD, 2003). Specifically, project emissions are considered potentially significant impacts if any of the following thresholds are exceeded:

1. Operational Impacts:

Reactive Organic Gases (ROG), NO_x, SO_2, PM_{10}	10 lbs/day
CO	550 lbs/day

The APCD considers impacts significant and requires more stringent environmental review for projects exceeding 25 lbs/day of ROG, NO_x, SO_2 and PM_{10} emissions, or 550 lbs/day CO emissions.

2. Construction Impacts:

ROG and NO_x	185 lbs/day or 2.5 tons/quarter
PM_{10}	2.5 tons/quarter

The APCD requires Best Available Control Technology (BACT) for construction equipment for projects with ROG or NOx emissions between 2.5 and 6.0 tons per quarter and requires BACT plus further mitigation for projects with emissions exceeding 6.0 tons per quarter.

3. Consistency:

Large projects must be found to be consistent with the District's CAP. The APCD notes that a consistency analysis is required for the following types of projects: general plan updates and amendments, specific plans, area plans, large residential subdivisions and large commercial/industrial developments. The proposed project is not one of the types listed; therefore, a CAP consistency analysis is not required.

4. Health Risk:

The APCD has established health risk threshold values under the Air Toxics “Hot Spots” Information and Assessment Act. These values trigger community notification and a risk reduction plan.

- Cancer Risk: 10 in a million lifetime cancer risk (continual 70 year exposure);
- Non-Cancer Acute Hazard: acute hazard index greater than or equal to 1.0 (sum of acute hazard hourly index of each pollutant with similar adverse health effects); and
- Non-Cancer Chronic Hazard: chronic hazard index greater than or equal to 1.0 (sum of chronic hazard annual index of each pollutant with similar adverse health effects).

5. Odors:

APCD Rule 402 states “A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property.” Violation of Rule 402 is considered a significant impact.

5.3.1.2 Short-Term Impacts

Impact AQ-1: Construction activity would generate air emissions that may adversely impact local and regional air quality.

Discussion: The emissions of construction equipment and vehicles would be short-term and consist of fugitive dust and exhaust emissions. A worst-case peak day and peak quarter construction emissions inventory was prepared for comparison to the thresholds of significance (see Table 5.2-3 and Appendix D).

Construction would generally consist of building pad grading, and installation of storage/chemical tanks, air strippers, and other appurtenances. The construction period is expected to last approximately 3 quarters, or 180 days, with 30 work days for site preparation and 150 work days of construction.

Construction equipment specifications were obtained from PXP and incorporated into the model along with existing emissions factors (see Appendix D). Several assumptions were made for the air model to estimate emissions. Because emissions factors for several pieces of equipment were not available, substitutes were obtained by using factors from similar horsepower-rated equipment. Additionally, several load factors were based on averages from composite load factors taken from the Median Life, Annual Activity, and Load-Factor Values for Nonroad Emissions Modeling Report (EPA, 2004). See Appendix D, for the air modeling emissions results per piece of equipment.

Table 5.2-4~~3~~ summarizes total emissions per day and per quarter, based on the quantity of each piece of equipment to be used during operation. Emissions estimates presented in Table 5.2-4~~3~~ represent a worst-case scenario without mitigation (i.e., emissions reduction factors).

In summary, construction emissions would exceed the APCD's daily and quarterly significance thresholds for NOx and is considered a significant impact to regional air quality (see Table 5.2-4~~3~~). As such, mitigation for NOx and PM_{10} for the Phase IV EIR would be applied to the proposed project (see Mitigation Measure AQ-1(A)). A variety of mitigation measures have been included, which would quantifiably reduce emissions, depending on which measures are implemented. Additionally, standard mitigation for the control of fugitive dust (i.e., PM_{10}) would be required (Mitigation Measure AQ-1(B)).

Table 5.2-4~~3~~. Construction Emissions Estimates

Equipment	Quantity	Pounds per day			ton/qtr.		
		NOx	ROG	PM_{10}	NOx	ROG	PM_{10}
Motor grader	1	13.5	1.9	0.6	0.4	0.1	0.0
Backhoe	2	13	1.2	0.8	0.4	0.0	0.0
Hydrocrane F-750	4	41.2	5.2	2.8	1.4	0.2	0.1
Manlift 40LF	4	45.6	4	2	1.5	0.1	0.1
28-ton hydrocrane RT	1	10.3	0.9	0.7	0.3	0.0	0.0
100-ton Hydrocrane	1	11.1	1	0.7	0.4	0.0	0.0
210-Ton Hydrocrane	1	11.5	1	0.7	0.4	0.0	0.0
D9 Dozer	2	47.6	4.6	11.4	1.6	0.2	0.4

Table 5.2-4. (Continued)

Equipment	Quantity	Pounds per day			ton/qtr.		
		NOx	ROG	PM_{10}	NOx	ROG	PM_{10}
Concrete Mixer Truck	3	17.4	1.8	4.2	0.6	0.1	0.1
980 Loader	1	5.7	0.5	0.4	0.2	0.0	0.0
Compactor 54" drum	1	5.4	0.5	0.4	0.2	0.0	0.0
Air Compressor 185	2	12.4	1.4	0.6	0.4	0.0	0.0
Welding Rig	10	40	3	2	1.3	0.1	0.1
Welding Machine	10	36	4	2	1.2	0.1	0.1
Onroad vehicles	23	0.6	0.2	0.0	0.0	0.0	0.0
Totals		**311.3**	**31.2**	**29.3**	**10.3**	**0.9**	**0.9**

1 Total number of construction days, including site preparation, will last approximately 180 work days (i.e., approximately 3~~2~~ quarters).

2 Onroad vehicles include 23 vehicles operating at the same time at worst-case scenario at an overall average speed of ~~40~~ 35 miles per hour. Vehicles include 15-passenger van, ¾-ton pickup and 1-ton utility truck. See Appendix ~~12.2~~D for tabular data.

3 "0.0" represents values rounded up to the nearest decimal point and does not indicated a level of absolute zero

4 Emissions estimates represent *worst-case* scenario without mitigation.

Source: EPA 1991, 2004

Impact Category: Class: 2

Threshold of Significance: 2, 3

Mitigation Measure AQ-1:

A. Equipment Emission Control Measures. According to Rule 402~~204~~ of the APCD Handbook of Rules and Regulations, an Authority to Construct permit shall require the use of Best Available Control Technology (BACT) where emissions of subject air contaminants would be 25 pounds~~tons~~ per day~~year~~ or more (which is applicable to NOx). Prior to construction, a Nitrogen Oxide Emissions Reduction and Monitoring Plan shall be developed using the previously implemented Monitoring Plan for the Phase IV EIR, approved by the County and fully implemented. The Plan shall specify the emissions control measures to be implemented on each emission source, the expected reduction for each criteria pollutant, the period the emissions control measures are to be in place, and a quarterly summary of the emissions reductions. The summary shall include sufficient information for the APCD to verify the emissions reductions have occurred. Potential emission reduction measures shall include, but not be limited to, a combination of the following:

- All mobile construction equipment shall use engines certified by the EPA and ARB to meet Tier 2 emission standards as listed in Title 40 Part 89 of the Code of Federal Regulations and employ Currently Verified Technologies per the ARB;

- All portable equipment shall be registered under the Statewide Portable Equipment Registration Program and implement all emissions and reporting requirements (if a piece of equipment is 50 horsepower or greater, and is not registered under the ARB state program, it will need an APCD permit);
- Installation of diesel reduction catalyst/catalyzed diesel particulate filter system (25 to 40 percent NOx reduction); and,
- Use of PuriNOx fuel by Lubrizol (15 percent NOx reduction).

B. Dust Control Measures. Dust generated by construction activities shall be kept to a minimum by full implementation of the following measures.

- During clearing, grading, earth moving, excavation, or transportation of cut or fill materials, water trucks or sprinkler systems shall be used to prevent dust from leaving the site and to create a crust after each day's activities cease;
- During construction, water trucks or sprinkler systems shall be used to keep all areas of vehicle movement damp enough to prevent dust from leaving the site. At a minimum, this would include wetting down such areas in the morning and after work is completed for the day. Watering frequency may need to be increased~~and~~ whenever wind exceeds 15 miles per hour;
- Stockpiled earth material shall be sprayed or covered as needed to minimize dust generation;
- During construction, the amount of disturbed area shall be minimized, and onsite vehicle speeds should be reduced to 15 mph or less;
- Consistent with the County Land Use Ordinance and SWPPP, all e~~E~~xposed ground areas that are planned to be reworked at dates more than one month after initial grading during the rainy season (i.e., Oct. 15 to April 15) shall be sown with a fast-germinating native grass seed and watered until vegetation is established;
- After clearing, grading, earth moving, or excavation is completed, the entire area of disturbed soil shall be treated immediately by watering or revegetating or spreading soil binders to minimize dust generation until the area is paved or otherwise compacted so that dust generation is minimized;
- Grading and scraping operations shall be suspended when wind speeds exceed 20 mph (one hour average);
- Rumble pads (minor road obstructions designed to dislodge accumulated earth material from trucks) with spray washers shall be installed and maintained at all construction entrances; ~~and,~~
- All roadways associated with construction activities ~~should be paved as efficiently as possible.~~ shall be paved or utilize some other technique to control dust (i.e. water or APCD-approved soil stabilizer); and,

- The contractor or builder shall designate a person or person to monitor the dust control program and to order increased watering, as necessary, to prevent transport of dust offsite. Their duties shall include holidays and weekend periods when work may not be in progress. The name and telephone number of such persons shall be provided to the APCD prior to land use clearance for map recordation and finished grading of the area.

C. ~~Emissions Offsets~~CEQA Off-site Mitigation. Project emissions remaining following implementation of the above mitigation measures shall be offset through contribution to an off-site mitigation fund. The fund is managed by the APCD and used to finance regional emission reduction projects such as bikeways, vehicle scrapping programs, diesel bus conversions, agricultural engine replacements and similar activities. Therefore, project emissions would be offset on a regional basis through PXP-funded off-site projects that would result in emissions reductions. Based on past experience, the APCD has determined that $8,500 is required per ton NOx reduced. These funds would be used by the APCD to purchase clean-burning engines and other equipment/facilities that would result in a decrease in emissions in the County. The financial contribution shall be based on offsetting excess emissions (greater than 2.5 tons NOx per quarter) at $8,500 per ton.

Residual Impacts

Impact Category = Class 3. NOx and fugitive dust emissions can feasibly be reduced below the threshold of significance. As such, impacts are significant, but mitigable.

Impact AQ-2: Diesel fuel combustion associated with project construction activity would generate emissions of toxic air contaminants (TACs).

Discussion: The combustion of diesel fuel in truck engines (as well as other internal combustion engines) produces exhaust containing a number of compounds that have been identified as hazardous air pollutants by EPA and TACs by the ARB. PM from diesel exhaust has recently been identified as a TAC, which has prompted ARB to develop a Final Risk Reduction Plan (released October 2000) for exposure to diesel PM. Based on ARB Resolution 00-30, full implementation of emission reduction measures recommended in the Final Risk Reduction Plan would result in a 75 percent reduction in the diesel PM Statewide inventory and the associated cancer risk by 2010, and an 85 percent reduction by 2020 in the diesel PM inventory and potential cancer risk.

The emissions of construction equipment and vehicles would be short-term, lasting only for the duration of the water reclamation facility construction phase. Diesel PM emissions would be up to 29.3 pounds per day (PM_{10} in Table 5.2-3 less fugitive dust). These emissions would be much less than the APCD's 185 pounds per day threshold. Therefore, construction-related PM emissions specific to diesel engines are considered a less than significant impact.

Impact Category: Class 3

Threshold of Significance: 2

Mitigation Measures: None required.

Impact AQ-3: Fugitive dust generated by construction or relocation/demolition activity may contain asbestos and/or lead and result in exposure of the public to these~~is~~ TACs.

Discussion: As discussed in the Phase IV EIR, the project site is located within the Pismo Formation, a sedimentary geologic unit, which is not expected to include ultramafic or asbestos-containing materials. According to the County Geologist, the potential for encountering asbestos-containing materials is very low. As required by the APCD, contingency measures (see Mitigation Measure AQ-3) have been included to address issues regarding relocation of existing pipelines and/or demolition activities, in the event they are necessary.

Impact Category: Class 2~~3~~

Threshold of Significance: 4

Mitigation Measure~~s: None required.~~

~~AQ-3~~A. In the event utility pipelines are scheduled for removal or relocation, or building(s) are removed or renovated, the project shall be subject to various regulatory jurisdictions, including the requirements stipulated in the National Emission Standard for Hazardous Air Pollutants (40CFR61, Subpart M – asbestos NESHAP). These requirements include, but are not limited to: 1) notification requirements to the District, 2) asbestos survey conducted by a Certified Asbestos Inspector, and, 3) applicable removal and disposal requirements of identified ACM.

~~AQ-3~~B. In the event demolition activities are required as part of project construction, ~~approval of~~ a lead work plan shall be prepared and submitted to ~~by~~ the APCD for review and approval ~~shall required and must be submitted~~ ten days prior to the start of demolition. Depending on the lead-removal method, an APCD permit may be required. Proof of APCD approval and/or authorization shall be submitted to the County prior to start of demolition.

5.3.1.3 Long-Term Impacts

Impact AQ-4: Operation of the proposed water reclamation facility would increase the number of heavy truck trips to and from the proposed project site, resulting in increased emissions

Discussion: Based on a 25-ton per truck hauling and delivery capacity, liquid chemical deliveries are anticipated at two per week, plus one to two truck trips per week for solid chemical deliveries and three to four truck trips per week to haul waste to a Class II disposal site; therefore, a total of eight heavy-duty truck trips would be added to local

roadways during project operations. Operational emissions thresholds for ROG (10 lbs/day) and CO (550 lbs/day) would be applicable. The addition of eight heavy-duty truck trips per week (assuming diesel fuel) would produce emissions of ROG and CO well below operational emission thresholds. Impacts would be less than significant.

Impact Category: Class 3

Threshold of Significance: 1

Mitigation Measures: None required.

Impact AQ-5: Operation of the proposed water treatment facility would result in emissions of contaminants into the atmosphere which may result in a health risk to local residents.

Discussion: A facility-wide Health Risk Assessment (HRA) was recently completed and included the TAC emissions from the proposed water treatment plant. TAC emissions considered included existing and proposed steam generators, the gas turbine, proposed heaters and air strippers, existing gas plant emissions, existing storage tanks, existing loading racks and fugitive hydrocarbons. The HRA assumes that all TACs contained in water to be treated is released to the atmosphere. The HRA was completed using Hotspots Analysis and Reporting Program (HARP v. 1.3) developed by the ARB. Cancer and non-cancer (acute and chronic) health impacts were estimated using guidelines developed by the Office of Environmental Health Hazard Assessment. Ground level pollutant concentrations and resulting health risk was calculated for 13 residences and a school in the project area. Cancer and non-cancer health risks at the three most impacted receptors are provided in Table 5.2-5. The significance threshold for health risk is a cancer risk 10 per million, and hazard index of 1.0. The results of the HRA indicate that health risk associated with PXP operations, including the proposed water treatment facility would be less than significant. In addition, the facility would not be subject to BACT under APCD Rule 219 as the cancer health risk would be less than 1 per million and a hazard index less than 0.1.

Table 5.2-5. Summary of the Health Risk Assessment

Receptor	Cancer Risk (per million)	Chronic Hazard Index	Acute Hazard Index
Residence 1	0.39	0.031	0.073
Residence 2	0.70	0.042	0.066
Residence 3	0.80	0.036	0.048

~~**Impact AQ-5**: Operation of the proposed water treatment facility would result in emissions of ROGs, ammonia, and other TACs from air strippers.~~

~~**Discussion:** A screening-level Health Risk Assessment (HRA) was conducted on the projected emissions from the proposed air stripper exhaust proposed as part of the project. Two different scenarios, one assuming six stacks and the other assuming one stack, were performed; however, the volume of water introduced into the stacks is the same regardless of number of stacks. Using the worst-case assumption of 24 hours a day, 7 days a week exhaust, it was determined that risks for cancers and Chronic and Acute Health Indexes were below significance thresholds. Please refer to Appendix D, for detailed HRA results and emissions calculations.~~

~~The following table summarizes the constituent emissions analyzed in the screening-level HRA, with the volume of water analyzed being emitted from three stacks. It assumes that air strippers would be running for 24 hours per day at worst-case.~~

~~Table 5.2-4. Air Stripper Emissions~~

~~**Pollutant**~~	~~**Lbs/day**~~
~~Acetone*~~	~~0.12~~
~~Ammonia*~~	~~139.92~~
~~Methyl Ethyl Ketone~~	~~0.06~~
~~Benzene~~	~~0.00005~~
~~Xylene~~	~~0.0001~~
~~Chlorobenzene~~	~~0.00007~~
~~Ethylbenzene~~	~~0.00002~~
~~Napthalene~~	~~0.00003~~
~~Toluene~~	~~0.00002~~
~~**Totals**~~	~~**ROG = 0.06**~~
	~~**ALL = 140.1**~~

~~* Acetone and Ammonia are not classified as ROGs.~~

~~CEQA thresholds for ROGs would not be exceeded; however, APCD Rule 219 would be applicable to the proposed project. The purpose of Rule 219 is to provide a mechanism for evaluating potential toxic impacts of TACs from new, modified, and relocated sources pursuant to devices or processes where an APCD permit is required. The proposed project would need to meet the requirements of Rule 219 in order to obtain an Authority to Construct/Permit to Operate (ACPO) from the APCD. This would be accomplished with implementation of Mitigation Measure AQ-5(A).~~

~~Per APCD Rule 429, ammonia emissions from control devices installed to meet the requirements of this Rule shall not exceed 10 ppm based on a one (1) clock hour average at three percent (3%) oxygen on a dry basis. Although air stripper emissions were below applicable thresholds, the ACPD will require that these emissions be offset to the extent feasible via Mitigation Measure AQ-5(B).~~

Impact Category: Class 3~~2~~

Threshold of Significance: ~~1,~~ 4

Mitigation Measures: None required.

~~**Mitigation Measure AQ-5:**~~

~~A. As part of permitting for the proposed air strippers (New Source Review), the APCD would require PXP to include provisions for meeting the permit requirements concerning sampling and testing protocol for air stripper emissions per Rule 204;~~

~~B. PXP shall apply Toxics BACTs such as carbon canisters or toxics scrubbers, depending on what is reasonably available at the time of permit application. As part of the permit application, PXP shall state what they intend to implement in terms of BACTs to the satisfaction of the APCD.~~

~~**Residual Impacts:**~~

~~Impact Category = Class 3. Mitigation Measure AQ-5 would reduce impacts resulting from air stripper emissions to a less than significant level.~~

Impact AQ-6: Due to the high levels of ammonia emissions (see Table 5.2-4) from the air strippers, the impact of related odors is considered an air quality issue.

Discussion: Per APCD Rule 402, which deals with nuisance, ammonia odors could potentially create a significant impact due to the high levels of emissions predicted by the screening-level HRA. Thus, the air strippers' emissions must be incorporated into the Odor Monitoring and Complaint Response Plan incorporated as part of the Phase IV EIR. This plan included various contingency measures, programs and procedures designed to address detectable odors and chronic odor complaints. If odors associated with ammonia become a monitoring issue, BACT measures such as carbon canisters or scrubbers may be implemented to the satisfaction of the APCD.

Impact Category: Class 2

Threshold of Significance: 5

Mitigation Measure AQ-6: PXP shall incorporate the issue of ammonia odors into the existing Plan referenced above.

Residual Impacts

Impact Category = Class 3. Odor control mitigation for ammonia would reduce impacts to a less than significant level.

5.3.1.4 Cumulative Impacts

A cumulative analysis of operational emissions includes the steam generator peak day emissions estimated for the Phase IV EIR, and the screening-level HRA emissions estimates. NOx and CO would not be applicable to the cumulative impact, as these pollutants would not be released by the air strippers. However, the remaining constituents analyzed by the previous HRA, including ROGs, would result in cumulative emissions (at Phase IV build-out) as summarized in Table 5.2-5. "All other ROGs" includes those estimated in Table 5.4-4 of the Phase IV EIR, plus the constituents listed in Table 5.4-4 of this SEIR which are not listed below. All but two of the constituents listed in Table 5.2-5 are considered ROGs; those not classified as ROGs include acetone and ammonia.

Table 5.2-6~~5~~. Operational Cumulative Emissions Estimates

Pollutant	lbs./year~~day~~
Benzene	6.61~~0.00765~~
Naphthalene	32.06~~0.02203~~
Toluene	6.09~~0.01202~~
All other ROGs	8,748.58~~19.86~~
Total	**8,793.34 (1.1 tons/qtr)~~19.9~~**

Ongoing cumulative projects in the project area include the Tentative Tract Map no. 2388 (Spanish Springs) and Tract 2554 (PVP Investments), which would result in the development of low density residential land uses, a hotel, golf course and vineyards. These land uses would result in cumulative air emissions associated with construction equipment, motor vehicle use (visitors and residents), agricultural equipment use, golf course maintenance equipment use and space heating. These air emissions would likely exacerbate the air quality impacts of the proposed project. However, these cumulative impacts would not alter the significance of air quality impacts of the project. Construction and operational emissions from cumulative projects in Price Canyon would be subject to similar mitigation measures as for the proposed project, and would reduce emissions to the extent feasible; therefore, impacts are considered less than significant.

5.3 BIOLOGICAL RESOURCES

The purpose of this section is to assess potential impacts to biological resources associated with the proposed Plains Exploration and Production (PXP) Arroyo Grande Oil Field Produced Water Reclamation Facility, located directly east and west of Price Canyon Road in San Luis Obispo County. This section includes a review of pertinent literature and field surveys, the results of coordination with resource agencies, discussion and analysis of pertinent regulatory requirements, and an assessment of the impacts of the Proposed Project on biological resources.

5.3.1 Regulatory Setting

This section identifies those plans and policies administered by resource agencies pertaining to those biological resources that are known to exist and/or have the potential to occur within the project area.

5.3.1.1 Special-Status Species

Federal Authority. The Federal Endangered Species Act (FESA), administered by the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS), provides protection to species listed as Threatened (FT) or Endangered (FE), or proposed for listing as Threatened (PFT) or Endangered (PFE). In addition to the listed species, the Federal government also maintains lists of species that are neither formally listed nor proposed, but could potentially be listed in the future. Federal candidate species (FC) include taxa for which substantial information on biological vulnerability and potential threats exist, and are maintained in order to support the appropriateness of proposing to list the taxa as an endangered or threatened species. Federal Species of Concern (FSC) comprise those species that should be given consideration during environmental review.

Section 9 of the FESA prohibits the “take” of any member of a listed species. Take is defined as, “…to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.” Harass is “an intentional or negligent act or omission that creates the likelihood of injury to a listed species by annoying it to such an extent as to significantly disrupt normal behavior patterns that include, but are not limited to, breeding, feeding, or sheltering.” Harm is defined as “…significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering.”

Projects that would result in the take of a Federally listed or proposed species are required to consult with USFWS or NMFS. The objective of consultation is to determine whether the project would jeopardize the continued existence of a listed or proposed species, and to determine what mitigation measures would be required to avoid jeopardy.

Consultations are conducted under Sections 7 or 10 of FESA depending on the involvement by the Federal government. Section 7 requires agencies to make a finding on all Federal actions, including the approval by an agency of a public or private action, such as the

issuance of a permit pursuant to Section 10/404 of the Clean Water Act, on the potential to jeopardize the continued existence of any listed or proposed species potentially impacted by the action. Section 10 is conducted when there is no Federal involvement in a project except compliance with FESA.

Under Section 7, the USFWS and NMFS are authorized to issue Incidental Take Permits (ITP) for the take of a listed species that results from, but is not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency. The ITP includes measures to minimize the take. Under Section 10(a), the USFWS and NMFS can issue ITPs for non-Federal projects.

The USFWS also administers the Federal Migratory Bird Treaty Act of 1918 (16 USC 703-711). Under the MBTA, it is unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 CFR 10, including feathers or other parts, nests, eggs or products, except as allowed by implementing regulations (50 CFR 21).

State Authority. The California Department of Fish and Game (CDFG) administers a number of laws and programs designed to protect fish and wildlife resources. Principal of these is the California Endangered Species Act of 1984 (CESA - Fish and Game Code Section 2050) that regulates the listing and take of State endangered (SE) and threatened species (ST). Under Section 2081 of CESA, CDFG may authorize the take of an Endangered and/or Threatened species, or candidate species by a permit or Memorandum of Understanding (MOU) for scientific, educational, or management purposes.

CDFG maintains lists of Candidate-Endangered species (SCE) and Candidate-Threatened species (SCT). California candidate species are afforded the same level of protection as listed species. CDFG also designates Species of Special Concern (CSC) that are species of limited distribution, declining populations, diminishing habitat, or unusual scientific, recreational, or educational value. These species do not have the same legal protection as listed species, but may be added to official lists in the future. The CSC list is intended by CDFG as a management tool to call attention to declining populations and focus efforts on decreasing threats to long-term viability.

CDFG administers other State laws designed to protect wildlife and plants. Under Section 3511 of the Fish and Game Code, CDFG designates species that are afforded “fully protected” (FP) status. Under this protection, designated species can only be taken or possessed with a permit. Section 3503 of the Fish and Game Code protects all birds-of-prey, their eggs, and their nests.

CDFG manages the California Native Plant Protection Act of 1977 (Fish and Game Code Section 1900, et seq), which was enacted to identify, designate and, protect rare plants. In accordance with CDFG guidelines, California Native Plant Society (CNPS) 1B list plants are considered “rare” under the Act, and are evaluated in California Environmental Quality Act (CEQA) reports.

Local Authority. Special-status species of the project area are afforded protection by the County of San Luis Obispo under goals and polices contained in the County of San Luis Obispo General Plan, Agriculture & Open Space Element (1998) and the San Luis Bay Area Inland Planning Area Plan (2002). These documents provide a framework of policies designed to protect special-status species and sensitive habitat areas. Project-related adverse impacts on special-status species are considered significant for CEQA purposes.

5.3.1.2 Waters and Wetlands

Federal Authority. The Corps is responsible for the issuance of permits for the placement of dredged or fill material into waters of the United States (waters) pursuant to Section 404 of the Clean Water Act (33 USC 1344). As defined by the Corps at 33 CFR 328.3(a)(3), waters are those that are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide; tributaries and impoundments to such waters; all interstate waters including interstate wetlands; and territorial seas. (Note: Based on the recent U.S. Supreme Court decision in *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers* [2001], and guidance from the U.S. Army Corps of Engineers and U.S. Environmental Protection Agency [2001], the Federal government no longer asserts jurisdiction over isolated waters and wetlands under Section 404 of the Clean Water Act based on the ”migratory bird rule.” Further guidance on the issue of isolated wetlands and waters is expected (U.S. Army Corps of Engineers, 2001).

Wetlands are a special category of waters, and are defined at 33 CFR 328.3(b) as: “...*those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas*.”

In non-tidal waters, the lateral extent of Corps jurisdiction is determined by the ordinary high water mark (OHWM), which is defined as the: “…*line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas*.” (33 CFR 328[e]).

In addition, a wetland definition has been adopted by the U.S. Fish and Wildlife Service to include both vegetated and non-vegetated wetlands, recognizing that some types of wetlands may lack vegetation (e.g., mudflats, sandbar, rocky shores, and sand flats), but still provide functional habitat for fish and wildlife species (Cowardin, et al., 1979). These wetlands are defined as “…*lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. For purposes of this classification, wetlands must have one or more of the following three attributes: (1) at least periodically, the land supports predominantly hydrophytes; (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is non-soil and is saturated with water or covered by*

shallow water at some time during the growing season of each year." Some of the USFWS-defined wetlands are not regulated by the Federal government.

The upper (landward) limit of USFWS-defined wetlands are the boundary between land with predominantly hydrophytic cover and land with predominantly mesophytic or xerophytic cover; the boundary between soil that is predominantly hydric and soil that is predominantly non-hydric; or in the case of wetlands without vegetation or soil, the boundary between land that is flooded or saturated at some time each year and land that is not (Cowardin et al., 1979). The lower limit in inland areas is established at a depth of 6.6 feet below the water surface; unless emergent plants, shrubs, or trees grow beyond this depth, at which the deepwater edge of such vegetation is the boundary (Cowardin et al., 1979).

State and Local Authority. Pursuant to Section 1601 of the California Fish and Game Code, CDFG requires a streambed alteration agreement (SAA) between CDFG and any State or local governmental agency or public utility before the initiation of any construction project that will: 1) divert, obstruct, or change the natural flow or the bed, channel, or bank of any river, stream, or lake; 2) use materials from a streambed; or 3) result in the disposal or deposition of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into any river, stream, or lake.

The California Fish and Game Commission adopted a modification of the USFWS definition of wetlands on March 9, 1987 as its principal means of wetland identification in conjunction with on-site inspections for implementation of the Fish and Game Commission's policy (Rollins, 1987). Unlike USFWS, the CDFG definition only requires the presence of one wetland indicator for an area to qualify as a wetland. CDFG does not have a wetland regulatory program, but advises other state agencies on wetland issues.

County of San Luis Obispo General Plan, Agriculture & Open Space Element identifies a series of unique plant or animal habitats including the following: habitat of rare, endangered or threatened plant or animal species as classified by state and Federal agencies and the California Native Plant Society (CNPS); wetlands and marshes; and sensitive natural communities as identified in the California Department of Fish and Game Natural Diversity Data Base (such as Central maritime chaparral).

The importance of wetlands has long been recognized in the San Luis Obispo County General Plan. However, there is no inventory of the wetland resources in the County, so the identification and protection of these resources most often occurs when a development proposal is submitted on property that may include a wetland.

5.3.2 Setting

The following description of the biological setting is based on a review of pertinent literature and field reconnaissance surveys of the project site. The literature review included the examination of the following documents:

- PXP Arroyo Grande Oil Field Produced Water Reclamation Facility Site Plans (PXP);

- Supplemental Information to Land Use Application, PXP Arroyo Grande Oil Field Produced Water Reclamation Facility (Entrix, 2006);
- Revised Hydrologic, Water Quality, and Biological Characterization of Pismo Creek, PXP Arroyo Grande Oil Field Produced Water Reclamation Facility (Entrix, 2006);
- Final Environmental Impact Report (EIR), PXP Phase IV Development Plan, Arroyo Grande Oil Field (Padre, 2004);
- PXP Phase IV Biological Resources Mitigation Monitoring Report 2006-1 (DWE Principal Ecologists, 2006);
- PXP Arroyo Grande Oil Field Environmental Constraint Map (Firma Consultants, 2007);
- Recovery Plan for the Tidewater Goby (USFWS, 2005);
- CDFG Stream Survey of Pismo Creek (CDFG, 2006);
- Arroyo Grande Creek Watershed Management Plan (Central Coast Salmon Enhancement, 2005);
- Oceano Dunes Protected Fish Species Surveys: Technical Memorandum (HES, 2005); and,
- USGS 7.5-minute topographical maps.

In addition, the California Natural Diversity Database (CNDDB) was queried for records of special-status species within the Pismo Beach and Arroyo Grande NE 7.5 minute quadrangle maps (CDFG, 2007). The categories of special-status species are listed in Tables 5.3-2 and 5.3-4 and the CNDDB report is included under Appendix E. Special-status taxa that are known to exist or have the potential to exist on the project sites were also identified through a review of relevant literature (California Native Plant Society, 2001; and Zeiner et al., 1988; 1990a, b), and previous biological studies in the area (Entrix, 2006; DWE Principal Ecologists, 2006; Firma, 2007). Further, a list of Federally threatened and endangered species potentially occurring within the area was also obtained from the USFWS (see Appendix E).

Field reconnaissance surveys were conducted at the project site for the purpose of identifying the varying vegetation communities/habitat areas, determining typical species associated with the different vegetation communities, identifying and assessing potentially impacted oak trees, and to document occurrences of special-status species and habitats. This included a focused spring botanical survey of all project impact areas, including proposed pipeline routes and pipeline buffer areas, margins and interiors of the proposed Project Site and surrounding habitat areas (i.e., adjacent grasslands, etc.).

Field surveys for wildlife were conducted by walking transects of opportunity through habitat types and recording species observed based on visual observation using 10X42 binoculars, auditory cues (calls and songs), and indirect signs (tracks, scat, skeletal remains, burrows, etc.). In addition, USFWS protocol-level California red-legged frog (CRLF) surveys were conducted within the proposed tempering pond, adjacent stock pond, and within the

proposed outfall location to Pismo Creek including a 500-foot buffer upstream and downstream of the proposed outfall site. Lastly, a reconnaissance-level snorkel survey and preliminary habitat assessment of the creek corridor was conducted with emphasis on the presence/absence of steelhead.

California coast live oaks (*Quercus agrifolia*), although not considered to be a sensitive species, represent an essential component of coast live oak woodland, a habitat that is increasingly threatened by development and agriculture along the central California coast. As such, focused oak tree surveys were conducted to identify those oak trees which could potentially be affected by project activities. Trees surveyed were limited to living oak trees located within or immediately adjacent to designated potential impact areas, including those trees expected to be completely removed and/or impacted as a result of project implementation. Surveys included a measurement of oak tree diameter at breast height (DBH) and canopy cover which were recorded on field observation forms (see Appendix E). Additionally, all oak trees were numbered and mapped accordingly. Physical data was collected only on those oak trees considered mature and all saplings were mapped as components of coast live oak woodland habitat. Specifically, oaks classified as mature were greater than 10 cm (3.93 in.) DBH and oaks classified as saplings were less than 10 cm DBH. The following Table 5.3 -1 lists the field surveys performed and the dates they were conducted.

Table 5.3-1. Biological Field Survey Dates

Field Survey Type	Dates Conducted
Botanical Surveys	May 24 & 30, 2007
Oak Tree Survey	May 17, 2007
Wetland Assessment	June 18, 2007
General Wildlife Surveys	May 1 & 8, 2003
Protocol-level CRLF Surveys	April, May, July 2007
Steelhead Snorkel Survey	April 26, 2007
Steelhead Habitat Assessment	May 31,2007`

5.3.2.1 Physical Setting

The project area is located approximately three miles north of the City of Pismo Beach along Price Canyon Road in central San Luis Obispo County. The site is situated within the Outer South Coast Range district of the Central Western California floristic province (Hickman, 1993).

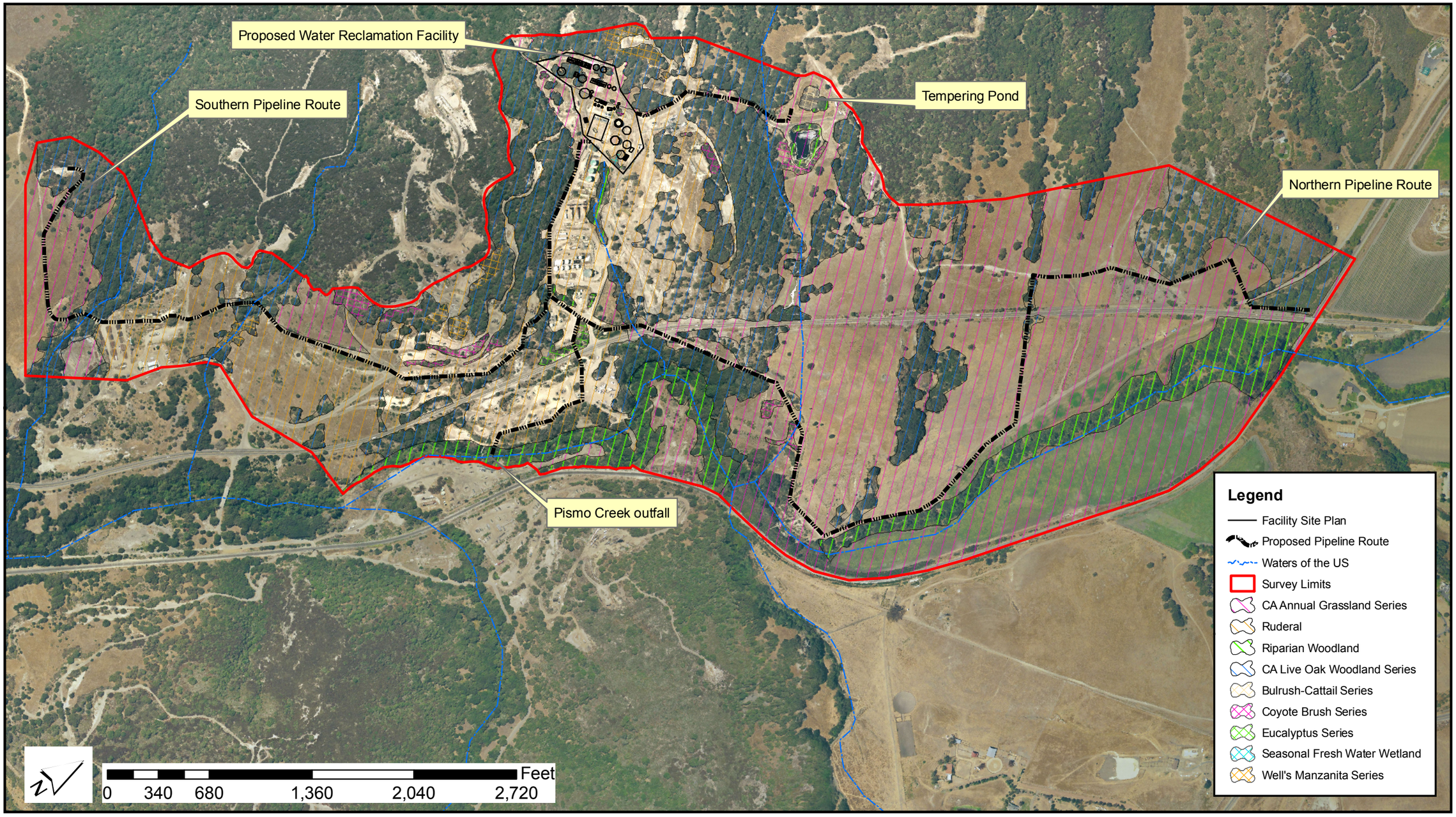
Vegetation. Focused botanical field surveys were conducted by Padre biologists on May 24 and 30, 2007, within the typical spring flowering season of this floristic province (April-May). Based on the results of the botanical field surveys conducted by Padre personnel and results from previous botanical studies of the project area (Padre, 2003), a list of plant species was compiled (see Appendix E) and a map of vegetation communities occurring in the project area was generated (refer to Figure 5.3-1). A total of 127 vascular plant species were identified

during the field survey, which consisted of 69 (52 percent) native taxa and 64 (48 percent) non-native naturalized taxa. The percentage of non-native taxa is greater than for the State as a whole (17.4 percent), reflecting the relatively high level of disturbance associated with well site development and continuing operation and maintenance activities throughout the oil field.

The project site encompasses eight generalized vegetation communities: California Annual Grassland Series, Coyote Brush Series, Well's Manzanita Series, California Live Oak Woodland Series, Riparian Woodland, Streambed/bank, Bulrush-cattail Series, Seasonal Wetland, and Ruderal (disturbed) habitat. Classification of these habitat types or vegetation communities is based primarily on Sawyer and Keeler-Wolf (1995) with several modifications to more accurately characterize existing conditions in the field. The general location of these communities in relation to the project elements is depicted in Figure 5.3-1. The following is a description of each of the vegetative communities occurring within the project site:

- ***California Annual Grassland Series (AG)*.** This community is composed of low-growing native and non-native annual grasses and forbs in areas generally used for grazing, but may be fallow or inactive. Within the proposed Produced Water Reclamation Facility project area, the California annual grassland series was observed in close association with the California live oak woodland series and in areas of low relief. Dominant species included several invasive weedy species such as slender wild oats (*Avena barbata*), ripgut grass (*Bromus diandrus*), Italian thistle (*Carduus pycnocephalus*), red-stem filaree (*Erodium cicutarium*), and black mustard (*Brassica nigra*). This community represents the dominant cover along the proposed pipeline route within the northern portion of the project area (i.e., active cattle grazing area).
- ***Coyote Brush Series (CBS)*.** This community is dominated by coyote brush (*Baccharis pilularis*), a moderate-sized shrub (<2m) with mesophytic leaves and semiwoody stems growing from a woody base. Sub-dominate species included California sagebrush (*Artemisia californica*), black sage (*Salvia mellifera*), sticky monkey flower (*Mimulus aurantiacus*). Arroyo willow (*Salix lasiolepis*) also occurred frequently in association within this community. Coyote brush habitat is present within and adjacent to the project area in scattered locations typically in close association with the California annual grassland, California live oak woodland series, and Well's manzanita series.
- ***Well's Manzanita Series (WMS)*.** This plant community is represented by areas dominated by Well's manzanita (*Arctostaphylos wellsii)*, a broad-leaved sclerophyllous shrub, <3 meter tall, forming dense, often impenetrable stands. This community occurs along the proposed pipeline route located on the southern side of project site and around the proposed construction staging area on south-facing slopes and in close association with rocky outcrops and shallow soils associated with the Edna member of the Pismo formation (i.e., Edna tar sands deposits). It should be noted that this community is referred to as central maritime chaparral within the CNDDB, and is considered a sensitive habitat area of limited distribution.

- ***California Live Oak Woodland Series (OW)*.** California live oak woodland communities are characteristic of the rolling hills and valleys of California's central coast. This habitat is particularly important for its ability to support a wide variety of wildlife species due to its high value as foraging habitat and vegetative cover (e.g., acorn production, forest canopy, etc.). However, because this habitat is frequently lost to agriculture and/or development, oak woodlands have been declining for many years. This situation is aggravated by the long time period required for regeneration of this habitat. As a consequence, oak woodland is considered to be a sensitive resource by San Luis Obispo County. California live oak woodland is considered a climax plant community, which often forms dense, closed-canopies in mesic sites. Within the project site, this community is dominated by coast live oak primarily occurring in dense stands on north-facing slopes. Typical understory species occurring within this community included toyon (*Heteromeles arbutifolia*), California coffee-berry (*Rhamnus californica*), poison oak (*Toxicodendron diversilobum*), and California blackberry (*Rubus ursinus*). As indicated above, this community is prevalent in undisturbed sites throughout the project area.
- ***Riparian Woodland (RW)*.** This community is dominated by shrub-sized (<20 feet high) Arroyo (*Salix lasiolepis)* and yellow willows (*Salix lucida* ssp. *lasiandra*), and occurs along the banks of Pismo Creek and associated drainages, as well as the perimeter of the proposed tempering pond and existing stock pond. Scattered stands of riparian trees, principally western sycamore (*Platanus racemosa*) and black cottonwood (*Populus balsamifera*) are also present along the stream channel of Pismo Creek and surrounding areas. Additionally, coast live oaks are present in some portions of the Pismo Creek riparian corridor and surrounding tributaries. This community corresponds to the Riparian Shrub-Scrub wetland community described by Cowardin et al. (1979). Pismo Creek is perennial coastal stream that flows into the Pacific Ocean at a point approximately 3 miles south of the project area. It is characteristic of a Central coast steelhead/speckled dace stream (A2635) under the inland waters classification system developed by Moyle and Ellison (1991). Species abundance can be high, diversity low and structural heterogeneity moderate to high, particularly in areas with tree, shrubs, and herbaceous layers.
- ***Streambed/Bank (SB)*.** This community occurs on the creek banks immediately within the wetted perimeter of the active stream channel of Pismo Creek, and on accreted sand and gravel bars in the channel where stream flow decreases and sediments are deposited. The substrate consisted primarily of silts, sands and small gravel with occasional cobbles. Clean gravel only occurred immediately downstream of several existing beaver dams which had concentrated the water flow and subsequently kept small portions of gravel and small cobble clean. When surface flow is present, this community represents a transition between open water and the riparian scrub. Vegetation on the banks and bars varied by elevation, and was moderately dense or non-existent. Hydrophytes within the streambed included some portions of emergent wetland habitat composed of rooted emergent herbaceous plants which were located in mud or on sandbars dominated by giant horsetail (*Equisetum telmateia* ssp. *braunii*) and panicled bulrush (*Scirpus microcarpus*)



Source: ADAIR

padre associates, inc.
ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

PLANT COMMUNITIES MAP
FIGURE 5.3-1

These species were primarily found at elevations below the level of the ordinary high water mark (OHW).

- ***Seasonal Freshwater Wetland (SFW).*** This habitat type occurs in seasonally saturated areas and is present within the gradual swale located adjacent to the existing roadway and man-made storm water conveyance structures southeast of Tank 202. Dominant species observed within this habitat area include western ragweed (*Ambrosia psilostachya*), brown-headed rush (*Juncus phaeocephalus*), cattail (*Typha latifolia*), and Italian ryegrass (*Lolium multiflorum*). Other species present included slender wild oats and common rush (*Juncus effusus).* This habitat area is highly disturbed due to ongoing oil field and grazing activities. This seasonal freshwater habitat area does not qualify as a federal wetland due to the lack of hydric soil and wetland hydrology indicators; however, it is considered a CDFG-defined State wetland due to the dominance of hydrophytic vegetation.

- ***Bulrush-Cattail Series (BCS).*** This freshwater wetland community is dominated by California bulrush (*Scirpus californicus*) and cattail and occurs in permanently flooded habitat as well as seasonally/irregularly flooded habitat areas. This community is present within the proposed tempering pond, roadside drainage, and storm water conveyance structures/ponds located within the proposed project impact area. Other species present within the bulrush-cattail series include umbrella flatsedge (*Cyperus eragrostis*), curly dock (*Rumex crispus)*, common rush (*Juncus effuse* var. *brunneus*), brown-headed rush (*Juncus phaeocephalus* var. *phaeocephalus*), and rabbitsfoot grass (*Polypogon monspeliensis*). Areas containing this community within the project site meet the CDFG-definition of State wetlands due to the dominance of hydrophytic vegetation.

- ***Ruderal (RU).*** It should be noted that the species composition of plant communities within the existing facility is highly variable due to the frequency and magnitude of past disturbance. Specifically, the site proposed for the water reclamation facility and associated pipeline routes are located within the existing oil field which have been heavily influenced by past and current activities. As such, the majority of the native plant communities within these areas have been replaced by facility equipment, piping, and non-native plant species. The term “ruderal” is used to describe those areas that have been disturbed by past land-use practices and/or recent ground disturbance, and are confined to the weedy areas located within existing well pads and bordering access roadways. Typical species are disturbance-adapted plants such as poison hemlock (*Conium maculatum*), cheeseweed (*Malva parviflora*), prickly wild sowthistle (*Sonchus asper*), prickly lettuce (*Lactuca serriola*), white sweetclover (*Melilotus alba*), telegraph weed (*Heterotheca grandiflora*), and summer mustard (*Hirschfeldia incana*).

Wildlife. Wildlife surveys were conducted at the project site in April and May of 2007. Detection methods included direct observation with binocular, examination and identification of tracks, scats, burrows/diggings, and carcasses/skeletal remains; and identification of vocalizations (calls and songs). Surveys were supplemented with previously published wildlife

reports, regional and local species distribution references, and consultation with the USFWS and CDFG to determine which species occur or potentially occur on the project site. Appendix E contains a listing of wildlife species observed during field surveys and/or expected to occur within the various vegetative communities. It should be noted that accurate assessment of wildlife populations would require extended periods of site research, trapping, and census taking. It is particularly difficult to detect nocturnal, rare or reclusive species to obtain accurate estimates of population size and geographical distribution. Other complications in the quantitative assessment of vertebrate (and invertebrate) populations include:

1. Many species may occur in the area only for short periods during migrations;

2. Many species of amphibians and reptiles become inactive during one or more seasons; and,

3. Seasonal or annual fluctuations in climate or weather patterns may confound observations.

The principal cover types that would be impacted by proposed project activities are California annual grassland series, California live oak woodland, riparian woodland, streambed/bank, seasonal freshwater wetland, and bulrush-cattail series. Typical wildlife species found in association with each of these cover types are discussed below:

- ***California Annual Grassland Series.*** The grassland habitat is dominated by low-growing vegetation that provides forage and cover for small mammals, such as voles, deer mice, ground squirrels, and Botta's pocket gopher. These species, in turn, provide the prey base for predators such as red-tailed hawk, red-shouldered hawk, American kestrel, gopher snake, and coyote. Little nesting cover is provided; however, certain species of plants, such as fennel, provide perch sites and forage for birds. Typical bird species include Brewer's blackbird, mourning dove, western kingbird, and western meadowlark. Other species common to this habitat include western fence lizard, house finch, sparrows, wintering raptors, and striped skunk.

- ***California Live Oak Woodland*.** As stated above, coastal oak woodlands provide habitat for a variety of wildlife species. However, population numbers may fluctuate dependent upon annual acorn production within a given area. Specifically, common ground-dwelling birds such as quail and turkey, and various mammals including squirrels and deer may be so dependent on acorns in fall and early winter that a poor acorn year can result in significant declines in their populations (CDFG, 1988).

  Due to the extensive canopy and sub-canopy existing within mature stands of oak woodland, a wide variety of bird species have the potential to frequent oak canopies to utilize them as protective cover and for the purposes of nesting. Typical bird species include acorn woodpecker, Nuttall's woodpecker, downy woodpecker, hairy woodpecker, northern flicker, white-breasted nuthatch, brown creeper, ash-throated flycatcher, Pacific-slope flycatcher, oak titmouse, chestnut-backed chickadee, Bewick's wren, and western scrub-jay. These bird species along with various small mammal species that inhabit the forest floor, in turn, provide the prey base for

predators such as sharp-shinned hawk, Cooper's hawk, western screech owl, and great-horned owl within oak woodland habitat areas. Numerous woodrat houses were also observed in close association with the oak woodland habitat. Further, mature oak woodlands are an important habitat for the survival of several bat species, including the pallid bat, as they provide downed woody debris for roosting.

- ***Riparian Woodland.*** In general, riparian habitats provide food, water, migration and dispersal corridors, and escape, nesting, and thermal cover for an abundance of wildlife. This includes habitat for a variety of songbirds including but not limited to common yellowthroat, oak titmouse, warbling vireo, black-headed grosbeak and yellow warbler, all of which were observed an/or detected within the riparian woodland habitat area of Pismo Creek during Padre's field surveys on-site. This habitat also provides cover for larger animals using the associated water body, including mule deer, gray fox, and raccoon. Riparian habitats also provide roosting and foraging habitat for several raptorial species such as the red-shouldered hawk.
- ***Streambed/Bank.*** During the time of the 2007 field surveys, the creek channel contained low to moderate water flows. Several adult American beavers and associated waterside burrows and multiple dams were observed in the creek corridor during the survey(s). The beaver habitation of the streambed has resulted in substantial modification to the existing stream channel morphology (i.e., creation of several large pools), which may create additional habitat for other wildlife such as the southwestern pond turtle which were observed during the survey. Native steelhead trout were also observed within Pismo Creek during field survey(s), including other native fish species, such as three-spine stickleback, speckled dace, prickly sculpin, and introduced species such as mosquito fish, and channel catfish.
- ***Seasonal Freshwater Wetland.*** Species expected to frequent the seasonal emergent wetland habitats would likely be limited to those wildlife species that typically occupy surrounding grassland habitats as discussed above. However, wetland habitats containing standing water or moist substrates for extended periods would also provide suitable habitat for amphibians including but not limited to Pacific chorus frog and Pacific slender salamander. Reptilian species such as the western aquatic garter snake would also frequent these areas in search of prey, such as Pacific chorus frog adults and larvae. In addition, various shorebirds including killdeer, may frequent seasonal freshwater wetland areas for foraging purposes during various times of the year.
- ***Bulrush-Cattail Series.*** Wildlife expected to occur within the bulrush-cattail series is similar to the amphibian and reptile species listed above within the seasonal freshwater wetland habitat areas in addition to numerous aquatic macroinvertebrates including but not limited to water boatmen and water striders. Birds such as the red-winged blackbird, and song sparrow are also common in within this habitat type. Lastly, during Padre's field surveys largemouth bass were observed in association with the bulrush-cattail series.

- ***Coyote Brush Series*.** As stated above, this community primarily occurred along borders of existing well pads in close association with grassland, oak woodland, and chaparral habitat areas (i.e., intermingled). Though vegetative productivity is lower in the coyote brush scrub than in adjacent chaparral/woodland habitats, it appears to support numbers of vertebrate species roughly equivalent to those in surrounding areas. As such, those species expected to occur in adjacent habitats would also be expected to frequent the coyote brush series existing within the project area. A complete listing of the wildlife species observed during field surveys and/or expected to occur within the various plant communities is provided as in Appendix E.

Special-Status Plant Species. Special-status plant species are either listed as endangered or threatened under the Federal or California Endangered Special Acts, or rare under the California Native Plant Protection Act, or considered to be rare (but not formally listed) by resource agencies, professional organizations (e.g., Audubon Society, CNPS, The Wildlife Society), and the scientific community. For the purposes of this project, special-status plant species are defined in Table 5.3-2.

Based on data provided by USFWS, coordination with CDFG, a query of the CNDDB, and a review of pertinent literature, a list of potential special-status species occurring in the general vicinity of the project was compiled. The results of the literature search conducted for this impact analysis indicates that 30 special-status plant species have the potential to occur in the project region. Table 5.3-3 lists these species, their current status, habitat requirements, presence of habitat, and the nearest known location relative to the Plains Exploration and Production Oil facility.

Table 5.3-2. Definitions of Special-Status Plant Species

Special-Status Plant Species
➢ Plants listed or proposed for listing as threatened or endangered under the Federal Endangered Species Act (50 CFR 17.12 for listed plants and various notices in the Federal Register for proposed species).
➢ Plants that are candidates for possible future listing as threatened or endangered under the Federal Endangered Species Act (Federal Register Vol. 71, No. 176, pp. 53756-53835, September 12, 2006).
➢ Plants that meet the definitions of rare or endangered species under the CEQA (*State CEQA Guidelines,* Section 15380).
➢ Plants considered by the CNPS to be "rare, threatened, or endangered" in California (Lists 1B and 2 in California Native Plant Society, 2001).
➢ Plants listed by CNPS as plants about which we need more information and plants of limited distribution (Lists 3 and 4 in California Native Plant Society, 2001).
➢ Plants listed or proposed for listing by the State of California as threatened or endangered under the California Endangered Species Act (14 CCR 670.5).
➢ Plants listed under the California Native Plant Protection Act (California Fish and Game Code 1900 et seq.).
➢ Plants considered sensitive by other Federal agencies (i.e., U.S. Forest Service, Bureau of Land Management), state and local agencies or jurisdictions.
➢ Plants considered sensitive or unique by the scientific community or occurring at the limits of its natural range (S*tate CEQA Guidelines*, Appendix G).

Table 5.3-3. Special-Status Plant Species Potentially Occurring in the Project Area

Common Name ***Scientific Name***	**Status**	**Habitat**	**Habitat Present/ Absent**	**Nearest Known Location**
Beach spectaclepod *Dithyrea maritima*	-- / ST / List 1B	Coastal dunes, coastal scrub	A	Pismo State Beach, 1.5 miles south of Pismo Beach, 3 miles west of Arroyo Grande (CNDDB, 2007)
Black-flowered figwort * *Scrophularia atrata*	-- / -- / List 1B	Closed-cone coniferous forest, chaparral, coastal dunes, coastal scrub, riparian scrub	P	Species observed on-site during botanical surveys (Padre, 2003)
Blochman's dudleya *Dudleya blochmaniae* ssp. *blochmaniae*	-- / -- / List 1B	Coastal scrub, coastal bluff scrub, valley and foothill grassland	P	Froom Ranch, west of intersection of Los Osos Valley Road and U.S. 101, just outside city limits of San Luis Obispo (CNDDB, 2007)
Blochman's leafy daisy *Erigeron blochmaniae* ssp. *blochmaniae*	-- / -- / List 1B	Coastal dunes	A	Pismo Beach State Park (CNDDB, 2007)
Brewer's spineflower *Chorizanthe breweri*	-- / -- / List 1B	Chaparral, cismontane woodland, coastal scrub, closed-cone coniferous forest	P	Price Canyon Road about 1 mile southwest of Highway 227, south of San Luis Obispo (CNDDB, 2007)
Cambria morning-glory *Calystegia subacaulis* ssp. *episcopalis*	-- / -- List 1B	Chaparral, cismontane woodland	P	Northwest of SLO County Airport, Tank Farm Road vicinity (CNDDB, 2007)
Chorro creek bog thistle *Cirsium fontinale* var. *obispoense*	FE/ SE / List 1B	Chaparral, cismontane woodland, and serpentine seeps	P	Froom Ranch, west of Los Osos Valley Road, South of San Luis Obispo (CNDDB, 2007)
Congdon's tarplant *Centromadia parryi* ssp. *congdonii*	-- / -- / List 1B	Valley and foothill grassland	P	Northwest of SLO County Airport, Tank Farm Road vicinity (CNDDB, 2007)
Fuzzy prickly phlox* *Leptodactylon californicum* ssp. *tomentosum*	-- / -- / List 4	Chaparral, coastal dunes and scrub	P	Species observed during botanical surveys conducted on-site (Levine Fricke, 2002)
Hoover's bent grass * *Agrostis hooveri*	-- / -- / List 1B	Chaparral and grassland	P	Species observed during botanical surveys conducted on-site (Levine Fricke, 2002)
Hoover's button-celery *Eryngium aristulatum* var. *hooveri*	-- / -- / List 1B	Vernal pools	A	Northwest of SLO County Airport, Tank Farm Road vicinity (CNDDB, 2007)
Indian knob mountainbalm *Eriodictyon altissimum*	FE / SE / List 1B	Chaparral, cismontane woodland	P	Indian knob, about 4 miles north of Pismo and 3 miles south of San Luis Obispo (CNDDB, 2007)
Jones's layia *Layia jonesii*	-- / -- / List 1B	Chaparral, valley foothill grassland	P	1.75 mile southwest of San Luis Obispo (CNDDB, 2007)

Table 5.3-3. (Continued)

Common Name ***Scientific Name***	**Status**	**Habitat**	**Habitat Present/ Absent**	**Nearest Known Location**
Leafy tarplant *Deinandra increscens* ssp. *foliosa*	-- / -- / List 1B	Valley and foothill grassland	P	Immediately NE of Lopez Reservoir (CNDDB, 2007)
Marsh sandwort *Arenaria paludicola*	FE / SE / List 1B	Marshes and swamps	A	Pismo Beach, San Luis Obispo County (CNDDB, 2007)
Mesa horkelia *Horkelia cuneata* ssp. *puberula*	-- / -- / List 1B	Chaparral, cismontane woodland, coastal scrub	P	Approx. 1 mile NE of Pismo Beach (CNDDB, 2007)
Morro manzanita *Arctostaphylos morroensis*	FT / -- / List 1B	Chaparral, cismontane woodland, coastal dunes, coastal scrub	P	Edge of Prefumo Canyon Road in Prefumo Canyon, Southwest of San Luis Obispo (CNDDB, 2007)
Obispo Indian paintbrush *Castilleja densiflora* ssp. *obispoensis*	-- / -- / List 1B	Valley and foothill grassland	P	East of Pismo Creek, near eastern boundary of Pismo Beach (CNDDB, 2007)
Pecho manzanita *Arctostaphylos pechoensis*	-- / -- / List 1B	Closed cone coniferous forest, chaparral, and coastal scrub	P	Davis Canyon, Irish Hills (CNDDB, 2007)
Pismo clarkia * *Clarkia speciosa* ssp. *immaculata*	FE / SR / List 1B	Chaparral, cismontane woodland, valley and foothill grassland	P	Species observed on-site during botanical surveys (Padre, 2003 & 2007; Levine Fricke, 2001& 2006)
Saint's Daisy* *Erigeron sanctarum*	-- / -- / List 4	Chaparral, cismontane woodland and coastal scrub	P	Species observed during botanical surveys conducted on-site (Levine Fricke, 2002)
San Luis mariposa lily *Calochortus obispoensis*	-- / -- / List 1B	Chaparral, coastal scrub, valley and foothill grassland	P	Western ridge of Indian Knob, about 4 miles north of Pismo Beach (CNDDB, 2007)
San Luis Obispo County lupine *Lupinus ludovicianus*	-- / -- / List 1B	Chaparral, cismontane woodland	P	Hills north of Price Canyon, north of Pismo Creek, NNE of Pismo Beach (CNDDB, 2007)
San Luis Obispo dudleya *Dudleya abramsii* ssp. *murina*	-- / -- / List 1B	Chaparral, cismontane woodlands, associated with serpentine outcvrops	A	Approx. 4 miles north of Avila Beach, north slope of See Canyon, (CNDDB, 2007)
San Luis Obispo mariposa lily *Calchortus simulans*	-- / -- / List 1B	Valley and foothill grassland, cismontane woodland, chaparral	P	Approx. 4 miles north of Avila Beach, on La Quinta de Avila Ranch (CNDDB, 2007)
Santa Lucia manzanita *Arctostaphylos luciana*	-- / -- / List 1B	Chaparral	P	1.75 miles NNE of Slide Hill, East of San Luis Obispo (CNDDB, 2007)
Santa Margarita manzanita *Arctostaphylos pilosula*	-- / -- / List 1B	Closed-cone coniferous forest, and chaparral.	P	Vicinity of Indian Knob, about 3.5 miles NNW of Pismo Beach, South of San Luis Obispo (CNDDB, 2007)
Straight-awned spineflower *Chorizanthe rectispina*	-- / -- / List 1B	Chaparral, cismontane woodland, coastal scrub	P	Just west of Carpenter Canyon Road, about 0.5 north of Printz Road (CNDDB, 2007)

Table 5.3-3. (Continued)

Common Name ***Scientific Name***	**Status**	**Habitat**	**Habitat Present/ Absent**	**Nearest Known Location**
Surf thistle *Cirsium rhothophilum*	-- / ST / List 1B	Coastal dunes, costal bluff scrub	A	Pismo Beach (CNDDB, 2007)
Well's manzanita * *Arctostaphylos wellsii*	-- / -- / List 1B	Chaparral, closed-cone coniferous forest	P	Species observed during botanical surveys conducted on site (Padre, 2003 & 2007)

Status Codes:

FE	Federal Endangered (U.S. Fish and Wildlife Service [USFWS])
FT	Federal Threatened (USFWS)
List 1B	Plants rare, threatened, or endangered in California and elsewhere (CNPS)
List 4	"Watch list" for plants of limited distribution (CNPS)
SE	State Endangered (CDFG)
ST	State Threatened (CDFG)
SR	State Rare (CDFG)
*	Species observed during recent surveys (Padre 2003, 2007 Levine Fricke 2002)

To determine the presence and/or absence of the special-status plant species listed in Table 5.3-3 above, a focused botanical survey of the project site and proposed pipeline routes was conducted on May 24 and 30, 2007, during the typical flowering period for the majority of the species listed. For a complete listing of vascular flora observed within the project site, please refer to Appendix E.

Special-status plant species that could potentially occur within the project site based on known occurrences within the vicinity of Price Canyon or adjacent portions of San Luis Obispo County included Blochman's dudleya, Brewer's spineflower, Jones' layia, San Luis mariposa lily, Chorro creek bog thistle, Congdon's tarplant, and leafy tarplant. However, none of these species were observed during the 2007 botanical surveys conducted within the project area or during past botanical surveys conducted by Padre in 2003, Levine Fricke in 2000, 2002 and SAIC in 1994.

In addition, Well's manzanita was the only species of *Arctostaphylos* identified in the project area and represents the dominant component of the Central maritime chaparral habitat occurring within the site. Therefore, Morro manzanita, Santa Margarita manzanita, Pecho manzanita, and Santa Lucia manzanita are not expected to occur within the project site. Moreover, special-status plant species associated with specific habitats types such as surf thistle, beach spectaclepod, La Graciosa thistle, and marsh sandwort were not observed during surveys and are not expected to occur within the site due to the lack of suitable habitat (i.e., require coastal foredune and marsh habitat, which is not present within the project site).

Two special-status plant species were observed on the project site during the 2007 botanical surveys including Pismo clarkia and Well's manzanita. Additionally, Hoover's bent grass and Saint's daisy were previously identified and mapped within the project area by Levine Fricke (2002). The locations of these plant species are illustrated on the following Figure 5.3-2.

It should be noted that the location of the Well's manzanita has not been identified on Figure 5.3-2 because of its dominance in the Central maritime chaparral habitat.

In addition, fuzzy prickly phlox was identified within the vicinity of the project site by Levine Fricke (2002); however, outside the proposed impact areas of the project. Further, the manzanita-dominated chaparral occurring along the proposed pipeline route in the southern portion of the site is potentially suitable habitat for Indian Knob mountainbalm, which is known to occur just northwest of the site. San Luis Obispo County lupine would also be expected on thin, sandy soils of the chaparral and is known to occur approximately one mile north of Price Canyon (Levine Fricke, 2002). However, none of these three sensitive plant species were observed during the 2003 or 2007 botanical field surveys.

For the purposes of impact analysis, the following briefly presents the legal status and applicable ecological and range information for those special-status plant species identified within the proposed impact areas and for those that have a high likelihood of occurrence:

- **Pismo Clarkia (*Clarkia speciosa* spp. *immaculata*).** The Pismo clarkia is an annual herb that typically blooms from May to June, and is only known from four extant occurrences (CNPS, 2001). It is Federally listed as endangered, California listed as rare, and is on the CNPS List 1B for plants rare, threatened or endangered in California and elsewhere. Pismo clarkia typically occurs within chaparral, cismontane, and grassland habitats and is generally closely associated with oak woodland habitat. Many occurrences of Pismo clarkia were noted within the project site, most commonly within areas of annual grassland located along the perimeter of oak trees road cuts and within the proposed water reclamation facility building site and tempering pond location (see Figure 5.3-2).
- **Black-flowered figwort (*Scrophularia atrata*).** Black-flowered figwort is a Federal species of concern and is a CNPS list 1B species. This species typically occurs in chaparral, coastal dunes, and riparian scrub habitat and is most commonly associated with rock outcroppings. Black-flowered figwort is a tall, perennial herb that blooms from April through June. Suitable habitat to support this species exists in several locations within the project area. In addition, black-flowered figwort was identified on-site during previous botanical surveys (Padre, 2003). However, this species was not observed within the proposed project impact areas during the 2007 botanical surveys.
- **Well's manzanita (*Arctostaphylos wellsii*).** Well's manzanita is a CNPS list 1B species and is endemic to San Luis Obispo County. This chaparral shrub species blooms from December to April and occurs primarily on the Pismo sandstone formation in southern San Luis Obispo County (SAIC, 1994). As stated above, this species represents the dominant shrub within the maritime chaparral habitat of the project area and occurs around the proposed construction staging area, north of the proposed water reclamation facility and along the proposed pipeline route that traverses the southern portion of the project site.

- **Hoover's bent grass (*Agrostis hooveri*).** Hoover's bent grass is a CNPS List 1B species. This species occurs in chaparral, cismontane woodland, valley foothill grassland communities with sandy substrate. Hoover's bent grass is a tufted perennial that typically flowers during the month of June (Skinner and Pavlik, 1994). Hoover's bent grass was identified by Levine Fricke (2002) on road cuts on the western portion of the site, on thin soil at the margins of oak canopies (see Figure 5.3-2). However, this species was not observed within the proposed project impact areas during the 2007 botanical surveys.
- **Saint's daisy (*Erigeron sanctarum*).** Saint's daisy is a CNPS List 4 species. This species is a small herbaceous perennial in the sunflower family (Asteraceae), which occurs in chaparral, cismontane woodland and coastal scrub communities at elevations below 300 meters. The blooming period for this species is typically from March to July. Saint's daisy was identified by Levine Fricke (2002) adjacent to a road cut within the eastern portion of the site (see Figure 5.3-2). However, this species was not observed within proposed project impact areas during the 2007 botanical surveys.
- **Fuzzy prickly phlox (*Leptodactylon californicum* ssp*. tomentosum*).** Fuzzy prickly phlox is a CNPS List 4 species. This species is a small herbaceous perennial in the phlox family (Polemoniaceae), which typically occurs in openings within chaparral habitat on dry hillsides at elevations up to 1500 meters. The blooming period for this species is typically from February to May. Fuzzy prickly phlox was identified outside the proposed impact areas by Levine Fricke (2002).
- **Indian Knob mountainbalm (*Eriodictyon altissimum*).** Indian knob mountain balm is a Federal and State endangered plant species, and a CNPS List 1B species. This species is a woody shrub in the waterleaf family (Hydrophyllaceae), which typically occurs along sandstone ridges and chaparral habitat in southwest San Luis Obispo County at elevations at approximately 250 meters. The blooming period for this species is typically from March to June and it has the potential to occur within chaparral habitat areas along the proposed pipeline route in the southern portion of the site.
- **San Luis Obispo County lupine (*Lupinus ludovicianus*).** San Luis Obispo County lupine is a Federal species of concern and a CNPS List 1B species. This species is a small herbaceous perennial in the pea family (Fabaceae) and is endemic to San Luis Obispo County. It typically occurs in open grasslands and oak woodland habitat up to 500 meters. The blooming period for this species is typically from April to June and it has the potential to occur the within adjacent oak woodland habitat areas of the site.

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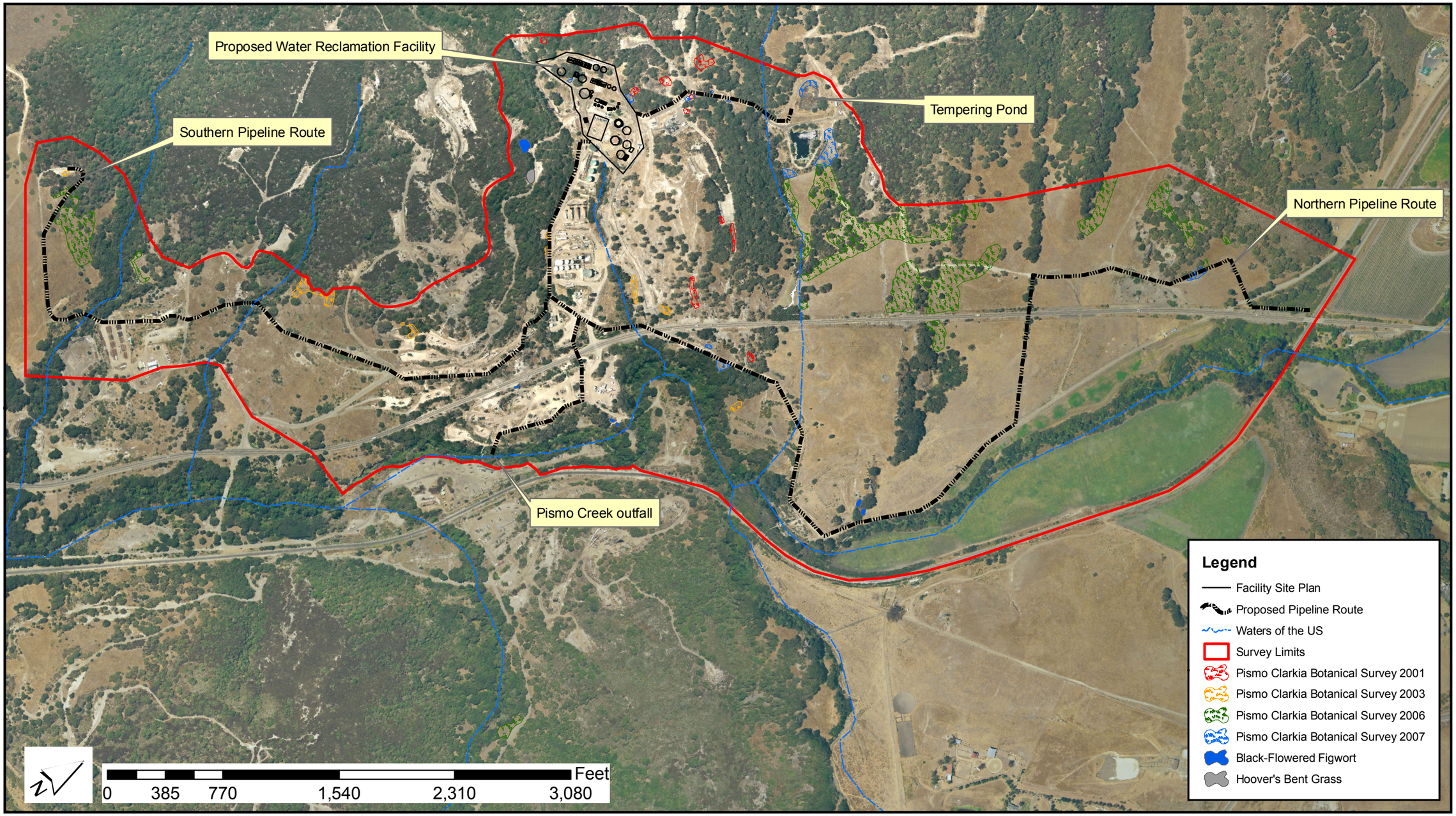


Source: ADAIR and FIRMA

padre associates, inc.
ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

SPECIAL-STATUS SPECIES MAP
FIGURE 5.3-2

- **Special Status Wildlife Species.** For the purposes of this project, special-status wildlife species are defined in Table 5.3-4. Literature research and field surveys conducted for this impact analysis indicates that 22 special-status wildlife species have the potential to occur in the vicinity of project components. Information regarding regulatory status and known location of these species relative to project components is provided in Table 5.3-5. Additional discussion of special-status wildlife species is provided below.

Table 5.3-4. Definitions of Special-Status Wildlife Species

Special-Status Animal Species
➢ Animals listed or proposed for listing as threatened or endangered under the Federal Endangered Species Act (50 CFR 17.11 for listed animals and various notices in the Federal Register for proposed species).
➢ Animals that are candidates for possible future listing as threatened or endangered under the Federal Endangered Species Act (Federal Register Vol. 71, No. 176, pp. 53756-53835, September 12, 2006).
➢ Animals that meet the definitions of rare or endangered species under the CEQA (*State CEQA Guidelines*, Section 15380).
➢ Animals listed or proposed for listing by the State of California as threatened and endangered under the California Endangered Species Act (14 CCR 670.5).
➢ Animal species of special concern to the CDFG (Remsen, 1978 for birds; Williams, 1986 for mammals).
➢ Animal species that are fully protected in California (California Fish and Game Code, Section 3511 [birds], 4700 [mammals], and 5050 [reptiles and amphibians]).

Table 5.3-5. Special-Status Wildlife Species Potentially Occurring within the Project Area

Common Name ***Scientific Name***	**Status**	**Nearest Known Occurrence(s)**
Invertebrates		
Monarch butterfly *Danaus plexippus*	SA	Pismo Dunes State Vehicular Recreation Area District Office, Grover Beach (CNDDB, 2007)
Sandy beach tiger beetle *Cicindela hirticollis gravida*	SA	Pismo Beach (CNDDB, 2007)
Vernal pool fairy shrimp *Branchinecta lynchi*	FT	Northwest of SLO County Airport, Tank Farm Road vicinity (CNDDB, 2007)
Fish		
South-central California coast steelhead* *Oncorhynchus mykiss irideus*	FT, CSC	Pismo Creek and West Corral de Piedra Creek, Price Canyon (CNDDB, 2007)
Tidewater goby *Eucyclogobius newberryi*	FE, CSC	Pismo Creek (from mouth to 1.0 mile upstream), Pismo Beach (CNDDB, 2007)
Reptiles		
California horned lizard *Phrynosoma coronatum frontale*	CSC	El Chorro Regional Park, San Luis Obispo County (CNDDB, 2007); Guadalupe Dunes, San Luis Obispo County (Unocal, 2000)
Southwestern pond turtle* *Clemmys marmorata pallida*	CSC	Species observed in Pismo Creek during field surveys (Padre, 2007)
Two striped garter snake *Thamnophis hammondi*	CSC	Cuyama River, Los Padres National Forest (CNDDB, 2003)

Table 5.3-5. (Continued)

Common Name ***Scientific Name***	**Status**	**Nearest Known Occurrence(s)**
Amphibians		
California red-legged frog *Rana aurora draytonii*	FT, CSC	Unnamed tributary to Pismo Creek, 1.5 miles north of Pismo Beach (CNDDB, 2007)
Birds		
Western snowy plover *Charadrius alexandrinus nivosus*	FT (nesting), CSC (nesting), M	Pismo State Beach (CNDDB, 2007)
California least tern *Sterna antillarum browni*	FE (nesting colony), SE (nesting colony), M	Pismo State Beach (Padre, 2003)
Brown pelican *Pelecanus occidentalis*	FE (nesting colony), SE (nesting colony), M	Pismo State Beach (Padre, 2003)
Golden eagle* *Aquila chrysaetos*	CSC (nesting), FP, M	Observed during 2007 surveys conducted on-site.
Cooper's hawk * *Accipiter cooperii*	CSC (nesting), M	Observed during 2003 surveys conducted on-site.
American peregrine falcon * *Falco peregrinus anatum*	SE (nesting), FP, M	Observed during 2003 surveys conducted on-site.
Loggerhead shrike *Lanius ludovicianus*	CSC (nesting), M	Observed on site during previous survey (ERCO, 1981)
Northern harrier *Circus cyaneus*	CSC (wintering), M	Known from region; nearest occurrence unknown
Sharp-shinned hawk *Accipiter striatus*	CSC (nesting), M	Known from region; nearest occurrence unknown
Southwestern willow flycatcher *Empidonax trailli extimus*	SE (nesting), M	Known from region; nearest occurrence unknown
Yellow warbler* *Dendroica petechia*	CSC (nesting), M	Recorded at Pismo Beach and Oceano (SAIC, 1994)
Mammals		
San Diego desert woodrat *Neotoma lepida intermedia*	CSC	Green Peak, approximately 1.5 miles southeast of Diablo Canyon (CNDDB, 2003)
Southern sea otter *Enhydra lutris nereis*	FT, FP	Pismo State Beach (Padre, 2003)
American badger *Taxidea taxus*	CSC	Price Canyon Road, 3 miles north of Pismo Beach (CNDDB, 2007)

Status Codes:
- FE Federal Endangered (USFWS)
- FT Federal Threatened (USFWS)
- FC Federal Candidate Species (USFWS)
- SE State Endangered (CDFG)
- ST State Threatened (CDFG)
- CSC California Species of Special Concern (CDFG)
- FP Fully Protected under California Fish and Game Code
- SA Special animal (CDFG)
- M Protected under the Migratory Bird Treaty Act of 1918
- * Species observed during recent surveys (Padre 2003 & 2007)

For the purposes of impact analysis, the following briefly presents the legal status and applicable ecological and range information for those special-status wildlife species identified within the proposed impact areas and/or for those that have a high likelihood of occurrence based on the presence of suitable habitat. Special-status wildlife species associated with coastal and/or marine habitats located west of the project area such as the southern sea otter, least tern, western snowy plover, brown pelican, and sandy beach tiger beetle were not observed during surveys and are not expected to occur within the site due to the lack of suitable habitat. In addition, no vernal pools are present within the project site; therefore, vernal pool fairy shrimp are not expected to occur within the site due to lack of suitable habitat.

Invertebrates

- **Monarch butterfly (Danaus plexippus).** The overwintering habitats for the monarch butterfly are considered to be of special concern by CDFG. This species is known to roost in winter (usually in dense concentrations) within groves of eucalyptus or pine trees. Autumnal roosts are abandoned early (November or December) by individuals seeking more favorable conditions, while permanent roosts begin forming in October and persist into February. There are several known eucalyptus woodland monarch butterfly roosting areas located within coastal San Luis Obispo County. The nearest known overwintering location to the project area is in Pismo Beach. Several groves of eucalyptus occur within the site however no monarch congregations were observed during the numerous field surveys conducted by Padre and Levine Fricke.

Fish

- **South-central California coast steelhead (*Oncorhynchus mykiss irideus*).** Steelhead trout are the anadromous form of rainbow trout (McEwan and Jackson 1996). Steelhead historically ranged from Alaska southward to the California-Mexico border, though current data suggests that the Ventura River is presently the southernmost drainage supporting substantial steelhead runs. Periodically, steelhead are reported within the Santa Clara River and Malibu Creek. Southern steelhead are important in that they represent the southernmost portion of the native steelhead range in North America, having ecologically and physiologically adapted to seasonally intermittent coastal California streams. Optimal habitat for steelhead throughout its entire range on the Pacific Coast can generally be characterized by clear, cool water with abundant instream cover (e.g., submerged branches, rocks, logs), well-vegetated stream margins, relatively stable water flow, and a 1:1 pool-to-riffle ratio (Raleigh *et al*. 1984). However, steelhead are occasionally found in reaches of streams containing habitat which would be considered less than optimal. Steelhead within the central coast region begin moving up coastal drainages (including Pismo Creek) following the first substantial rainfall of the fall season typically entering freshwater from December to March. It is for this reason that the south-central California coastal steelhead trout are considered winter run fish. Spawning typically occurs in the spring in pool tail or riffle areas that consist of clean coarse gravels. Deposited eggs incubate for approximately 3 to 4 weeks, with

hatched fry rearing within the gravel interstices for an additional 2 to 3 weeks. Emergent fry rear at the stream margins near overhanging vegetation. Juveniles (smolts) after rearing for 1 to 3 years within freshwater, and post-spawning adults out-migrate to the ocean from March to July, depending on stream flows. Therefore, juvenile steelhead can be found within Pismo Creek at all times of the year, while adults are more likely to be found from February to July.

All populations of steelhead occurring within the south-central California coast Distinct Population Segment (DPS) Region - which is defined as that geographic region north of the Santa Maria River, northward to (and including) the Pajaro River (and it's tributaries), Santa Cruz County, were listed as Federally Threatened by the National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) in August 1997 (62 FR 43937, August 18, 1997; 71 FR 834, January 5, 2006). The NMFS (a.k.a. NOAA Fisheries) lists habitat deterioration due to sedimentation and flooding related to land management practices, and potential genetic interaction with hatchery rainbow trout, as risk factors to steelhead within the south-central California coast DPS. As such, this species is protected under the FESA.

Critical habitat designations have been established to protect steelhead in Pismo Creek. Critical habitat as defined by NOAA Fisheries is any physical or biological feature that is essential to the conservation of the species including space for individual and population growth and for normal behavior; food, water, air, light, minerals, or other nutritional or physiological requirements; cover for shelter; sites for breeding, reproduction, and habitats that are protected from disturbance or are representative of the historical geographical and ecological distribution of a species (50 FR No. 226 / September 2, 2005).

Steelhead typically require cool, clear flowing water with clean gravel in which to spawn. Their primary food source, benthic macroinvertebrates (BMI) also require these general habitat conditions. During 2007 field visit(s), clean gravel within the stream channel only occurred immediately downstream of several existing beaver dams which had concentrated the water flow and subsequently kept small portions of gravel and small cobble clean. It is unknown how many beavers reside in the vicinity of the project site; however, beavers can be both beneficial and detrimental to steelhead. Specifically, they have the tendency to create large ponds which provide good over-summering rearing habitat for steelhead smolts, however these ponds also allow for fine sediments to deposit in the creek bed further decreasing the localized BMI productivity available to steelhead for consumption. BMI samples collected by Entrix in 2006 indicated a lack of Plecoptera (pollution intolerant species) within project area, and a dominance of BMI species within the mid-range for pollution tolerance. Snorkel surveys identified a thick layer of silt and algae within the vicinity of the existing beaver dams. Due to the poor visibility, accurate in-depth steelhead counts were unattainable, however several steelhead fry (~1-inch total length) were observed in the vicinity of the project site indicating spawning of steelhead had obviously been successful in 2007 despite the existing marginal

conditions. Additionally, one juvenile steelhead was observed beneath an undercut bank within the immediate vicinity of the proposed facility outfall location.

The adjoining landowner immediately downstream of the PXP property has a cattle operation and there is no riparian fencing increasing current sediment and nutrient loading of this portion of the creek. No beavers or signs of beavers were observed during field surveys at this location and the habitat was of better quality. The existing pools were not completely silted-in and riffle habitat was present increasing the potential available BMI productivity. Further downstream, Pismo Creek becomes more entrenched and flows through a bedrock section. Land use practices adjacent to the lower 1-mile of Pismo Creek that may impact water quality or quantity are recreation (Price House Historic Property), a sewage treatment facility, residential developments. Ultimately, the creek enters Pismo Estuary which transects the City of Pismo Beach. Current upstream land uses coupled with impacts from the urban setting of the City of Pismo have resulted in substantially decreased water quality conditions in the estuary. The estuary is an important feature for both listed steelhead and tidewater goby (see discussion below) in the watershed. It is the location where smoltification of salmonids begins to allow the next phase of the lifecycle to be completed and also contains most of the spawning and rearing habitat for the tidewater goby. Current low flow conditions through the estuary increases temperature, decreases water quality, and has the potential to prevent migration of anadromous fish to the ocean due to build-up of large sand bars which close the mouth of the estuary.

In summary, south-central California coast steelhead are known to occur throughout the Pismo Creek watershed and were observed during the 2007 field surveys within 500 feet of the proposed outfall (Padre, 2007).

- **Tidewater goby (*Eucyclogobius newberryi*).** The tidewater goby, is a small fish, rarely exceeding 2-inches in length, and is characterized by large pectoral fins, a blunt elongate tail, and a ventral “sucker-like” disk formed by the complete fusion of the pelvic fins. The tidewater goby is a mottled dark olive color and is nearly translucent. The best field mark for identifying tidewater goby is the transparent, whitish or yellowish triangular area on the upper 1/4 to 1/3 of the first, spinous dorsal fin (USFWS, 2005). The tidewater goby, found only in California, is almost unique among fish along the Pacific coast in its restriction to brackish waters of coastal wetlands. It historically occurred in at least 87 California coastal lagoons from San Diego County to Humboldt County; however has disappeared from most of these sites.

  Tidewater goby habitat consists of brackish shallow lagoons and lower stream reaches where the water is fairly still, but not stagnant. The Pismo Creek estuary is a location identified to currently support tidewater goby, which have been documented in water with salinity levels typically less than 12 parts per thousand (ptt), temperature levels from 35 to 73 degrees Fahrenheit (F°), and water depths typically less than four feet. The tidewater goby apparently spends all life stages in lagoons. It may enter the marine environment only when forced out of the lagoon by

strong storms and migrate up tributaries in close proximity to the estuary for spawning purposes. Reproduction occurs year-round although distinct peaks in spawning, often in April and May, do occur. Female tidewater goby lay 6 to 12 clutches of eggs per year (Swenson, 1999). When breeding, males dig vertical burrows for females to deposit eggs. Within nine to ten days larvae emerge and are approximately ¼-inch in length. The larvae inhabit vegetated areas within the lagoon until they are about ¾-inch in length.

The tidewater goby is regulated by the USFWS and was proposed for listing under the ESA as endangered in March 1994 (59 FR 5494, March 7, 1994). Tidewater goby populations within the Central Coast Unit (CC) are those located from the Big Sur Coast south through San Luis Obispo County. The Sub-Unit CC3 completes coverage of San Luis Obispo county from Estero Point north of Morro Bay to the southern county line (Santa Maria River begins Santa Barbara County) which contains Pismo Creek.

Critical habitat designations have been established to protect tidewater goby populations. Critical habitat includes the stream channels and their associated wetlands, flood plains and estuaries. These habitat areas provide the primary biological needs of foraging, shelter, reproduction, and dispersal which are essential for the conservation of the tidewater goby (USFWS, 2005). Initially critical habitat was designated only for San Diego and Orange counties (65 FR 69693, November 20, 2000). Subsequently critical habitat has been proposed for other coastal California counties including San Luis Obispo County (71 FR68913, November 28, 2006). Although no tidewater goby were observed during surveys of the site, they are known to occur within the Pismo Creek estuary.

Reptiles

- **California horned lizard (*Phrynosoma coronatum frontale*).** The California horned lizard is a Federal species of concern and a California species of special concern that occurs in a variety of open habitats that provide sites for basking, sandy or sandy-loam substrates in which night-time burial can occur, and have a suitable prey base (the species feeds almost exclusively on native ants). It was historically distributed throughout the Central and Coast Range, but now occurs at scattered, disjunct locations within this range. The California coast horned lizard produces clutches of 6 to 21 eggs from May to June and hatching typically occurs in August and September. The chaparral habitat areas of the project site may provide suitable habitat for this species, thus vegetation clearing activities during construction of the proposed facility and associated pipeline routes has the potential to result in impacts to this species.
- **Southwestern pond turtle (*Clemmys marmorata pallida*).** The southwestern pond turtle is a Federal species of concern and a California species of special concern. It is an aquatic turtle inhabiting streams, marshes, ponds, and irrigation ditches within woodland, grassland, and open forest communities. However, it requires upland sites for nesting and over-wintering. Stream habitat must contain large, deep pool

areas (six feet) with moderate-to-good plant and debris cover, and rock and cobble substrates for escape retreats. The southwestern pond turtle is known to occur within the Pismo Creek watershed and was observed approximately 500 feet downstream of the proposed facility outfall location during field surveys (Padre, 2007). As such, the proposed project has the potential to result in direct impacts to this species during project implementation, as well as potential long-term impacts due to operation of the facility.

- **Two-striped garter snake (Thamnophis hammondi).** The two-striped garter snake is a California species of special concern which is highly aquatic and is typically found near permanent fresh water streams associated with willow habitat. Small mammal burrows are used as over-wintering sites for the snake (Jennings, 1994). This species occurs historically and currently throughout southern California streams, including the central coast. Existing habitat throughout the Pismo Creek watershed is suitable for this species to occur. Due to the mobility of this species and tendency to inhabit upper banks of riparian corridors, direct impacts to this species may occur during vegetation clearing within the vicinity of Pismo Creek or nearby habitats. Additionally, the proposed project has the potential to result in long-term impacts to this species due to operation of the facility.

Amphibians

- **California red-legged frog (*Rana aurora draytonii*)** is a Federally listed threatened species and a California species of special concern. It formerly ranged from northern California south along the Pacific Coast, west of the Cascade Mountains and the Sierra Nevada, to northern Baja California at elevations from near sea level to 8,000 feet. Populations remain in the San Francisco Bay Area, along the California coast, and the western edge of the Central Valley.

  The California red-legged frog (CRLF) occurs in different habitats depending on their life stage and season. All stages are most likely to be encountered in and around breeding sites, which include coast lagoons, marshes, springs, permanent and semi-permanent natural ponds, ponded and backwater portions of streams, as well as artificial impoundments such as stock ponds, irrigation ponds, and siltation ponds. They require dense and extensive vegetative cover of emergent and bank vegetation including willow (*Salix* sp.), cattail (*Typha* sp.), and bulrush (*Scirpus* sp.), as occurs within the project site. The presence of one or all of these plants is an important indicator that the site may provide foraging or breeding habitat (USFWS, 1997). The largest CRLF densities are associated with deep-water pools with dense stands of overhanging willows and an intermixed fringe of cattails (Jennings and Hayes, 1994).

  CRLFs breed from November through March. The female lays between 2,000 to 5,000 eggs in clusters attached to emergent and submergent vegetation in ponds and backwater pools in creeks. The tadpoles remain in this habitat until they metamorphose in the summer between 11 and 20 weeks after hatching. Young frogs can occur in slow moving, shallow riffle zones in creeks or along the margins of ponds.

Based upon the presence of suitable habitat within the proposed tempering pond and Pismo Creek, protocol-level CRLF surveys were performed within the project site by Padre in 2007 using the *Revised Guidance on site Assessments and Fields Surveys for California Red-legged Frog* (USFWS, 2005). As required, this included four night surveys and two day surveys in the breeding season (Jan. 1 through June 30) and one night survey and one day survey within the non-breeding season (July 1 through Sept. 30). Although no CRLFs were identified on-site during protocol-level surveys (see Appendix E), the CRLF is known to occur downstream of the project site in an unnamed tributary to Pismo Creek approximately 0.2-mile upstream from the Pismo Creek confluence, 1.5 miles north of Pismo Beach, and suitable habitat exists within those portions of Pismo Creek bordering the project site. Thus, direct impacts to this species may occur during project implementation due to vegetation clearing within the vicinity of Pismo Creek or nearby habitats. Additionally, the proposed project has the potential to result in long-term impacts to CRLF due to operation of the facility. .

Birds

- **Golden Eagle (*Aquila chrysaetos*).** Golden eagle occurs as an uncommon breeding resident throughout the state including San Luis Obispo County with the exception of the valley floor of the Central Valley. The species is a fully protected species within California (under §3511 of the California Fish and Game Code). As such the species cannot be taken at anytime and permits authorizing take cannot be issued. Nest sites are generally located on secluded cliffs or in large trees in rugged, open canyons or on escarpments. Nesting occurs from January through August with peak activity occurring during March through July. Nest territories have been documented ranging in size from 22 to 74 square miles where size is probably a function of prey density and the openness of the habitat surrounding the nest site (which affects prey availability during hunting). An active golden eagle nesting site was observed along the southern boundary project site during the 2007 survey (i.e., rocky outcrop located immediately southeast of Ormonde Road); therefore the proposed project has the potential to result in short-term impacts this species during implementation.
- **Cooper's hawk (*Accipiter cooperii*).** Cooper's hawk is considered a California species of special concern during nesting periods, primarily due to the loss of riparian nesting habitat. Preferred nesting habitat consists of dense stands of coast live oak, riparian or other forest habitat located near water. This species is an uncommon permanent resident and fairly common fall transient along the coast. Cooper's hawk was identified within the oak woodland habitat area during the Padre 2003 field surveys conducted within the project area.
- **American peregrine falcon (*Falco peregrinus anatum*).** American peregrine falcon is considered a State endangered species and a Federal species of concern during nesting periods. Peregrine falcons nest on rugged cliffs and human-made structures in the interior and along the coast of California, and it is an uncommon migrant and breeder in the state. Peregrine falcons may forage for medium-sized

birds in almost any habitat except for dense forest. Although the peregrine falcon may rarely fly over the area, potential nesting habitat exists on nearby cliffs within the project area, and one was observed foraging during field surveys of the site.

- **Loggerhead shrike (*Lanius ludovicianus*).** Loggerhead shrike is considered a Federal species of concern and a California species of special concern, during nesting periods. The species generally occurs in a variety of open grassland, oak savannah, shrub-land, and other similar habitats where it feeds primarily on large insects (e.g., grasshoppers). However, the species may also occasionally take small reptiles, birds, and mammals. Loggerhead shrikes nest during March to June with young becoming independent during July or August. The nest is generally well-concealed on a stable branch in a densely-foliaged shrub or tree. This species was identified on-site during previous surveys (SAIC, 1994).
- **Northern harrier (*Circus cyaneus*).** Northern harrier is a California species of special concern during nesting periods. Nesting sites are typically located within a mound of dead reeds and grass within a marsh or shrubby meadow. Northern harrier typically forages in grassland or wetland habitats where it feeds on mice, rats and frogs. The northern harrier is a fairly common winter visitor and occasional breeder within the coastal region (i.e., breeds within Vandenberg AFB), often foraging in open marshes and fields (SAIC, 1994). This species may occasionally utilize the site for the purposes of foraging and as such may be impacted by project implementation.
- **Sharp-shinned hawk (*Accipiter striatus*).** The sharp-shinned hawk is a California species of concern during nesting periods. This species typically builds nests within woodland habitat where they forage on small birds. Sharp-shinned hawks will also occasionally eat small mammals and insects. This species is a fairly common winter visitor and resident along coastal ridges foraging in woodland and semi-open habitats (SAIC, 1994). This species has the potential to occur within the project area during its winter migration.
- **Southwestern willow flycatcher (*Empidonax trailli extimus*).** The southwestern willow flycatcher is a State and Federally listed endangered species during nesting periods. Dense thickets of riparian vegetation provide nesting and foraging habitat for this species. This vegetation typically includes plant species such as willows (*Salix* sp.) and/or seepwillow (*Baccharis* sp.). Southwestern willow flycatcher is an occasional spring and fall transient along riparian woodland in coastal regions. There are no nesting records of this species within the Pismo Creek drainage, though the creek corridor could provide migratory habitat (resting/feeding).
- **Yellow warbler (*Dendroica petechia brewsteri*).** The yellow warbler is a California species of special concern during nesting periods. This species typically nests within riparian woodland habitat of the coastal foothills from mid-April to early August. Yellow warbler forages within riparian woodland habitats by gleaning the bark of riparian vegetation for insects; however, the species will occasionally eat berries. Within San Luis Obispo County, this species is a fairly common summer transient of

deciduous riparian habitats and was observed within Pismo Creek by Padre during the 2007 surveys.

Mammals

- **San Diego desert woodrat (*Neotoma lepida intermedia).*** San Diego desert woodrat is a California species of special concern. This species typically constructs a nest structure with twigs, sticks, cactus parts, and various other materials. San Diego desert woodrat houses are generally built against rock outcrops or at the base of cactus (Whitaker, 1998). Nests are used for nesting, food caching, and predator escape. Numerous woodrat nests were observed throughout the oak woodland and chaparral habitats of the project site during field surveys. The project site is located near the extreme northern boundary of the desert woodrat's range, it is normally found in more arid habitats commonly associated with cactus scrub and rocky outcrops. Observed woodrat nests were constructed at the base of oak trees and various shrubs including Well's manzanitas and were characteristic of the dusky-footed woodrat, which is a common species throughout San Luis Obispo County. Therefore, San Diego desert woodrat is unlikely to occur at the project site.
- **American badger (*Taxidea taxus*).** The American badger is a California species of special concern. This species typically occurs in drier open stages of most shrub, forest, and herbaceous habitats with friable soils and open, uncultivated ground. The American badger preys on burrowing rodents by digging large, elliptical burrows at the base of rodent dens and waiting for its prey. This species is known to occur along Price Canyon Road, 3 miles north of Pismo Beach, in the vicinity of the project site. Although, no American badgers or evidence of badger activity was observed during the field surveys; this species is expected to occur within the project area.

Regulated Habitats. According to the Significant Natural Areas of California (Hoshevsky, 2002), the project site occurs within the 55,165-acre Significant Natural Area (SNA) SLO No. 54 within the Pismo Beach, Arroyo Grande NE, Guadalupe, Nipomo, Oceano, Pismo Beach, Point Sal, and Tar Spring Ridge quadrangles. The SNA contains lands managed by the CDFG, Calif. Dept. of Parks and Recreation, the Nature Conservancy, Air Force, County and City Regional Parks and Reserves, State Lands Commission, and privately owned lands. The SNA contains thirty special-status plant and animal species, and five sensitive plant communities as discussed below in further detail.

The CNDDB has inventoried natural communities and ranked them according to their rarity and potential for loss. Based on a CNDDB query for the project area, central foredune, central maritime chaparral, and coastal and valley freshwater marsh are considered sensitive natural communities that have the potential to occur within the project area. However, based on past and recent field surveys, central maritime chaparral and coastal and valley freshwater marsh are the only sensitive habitats existing within the project area. Specifically, central maritime chaparral has been ranked by the CNDDB globally as G2, and at the State level as S2.2 and coastal and valley freshwater marsh has been ranked by the CNDDB globally as G3, and at the State level as S2.1. A global sensitivity level of G2 means only 2,000 to 10,000 acres of this habitat exist worldwide and G3 means only 10,000 to 50,000 acres worldwide,

respectively. A State sensitivity of S2 means only 2,000 to 10,000 acres of this habitat exist Statewide and is considered very threatened.

As stated above, Pismo Creek and adjacent riparian habitat areas are known steelhead habitat and are considered an integral component of the south central coast steelhead ESU. On April 30, 2002 the U.S. District Court for the District of Columbia approved a NMFS consent decree withdrawing critical habitat designations for 19 salmon and steelhead populations on the west coast, including those contained in the south central coast steelhead ESU (NOAA, 2003). However, a more thorough analysis of steelhead critical habitat ~~is~~ was conducted by NMFS, which will resulted in the re-issuance of critical habitat designations for the south central coast steelhead ESU in 2005, including Pismo Creek.

Further, the Magnuson-Stevens Fishery Conservation and Management Act (MSA) (16 USC 1801 et seq.) requires Federal agencies to identify Essential Fish Habitat (EFH) for any fish species included under a Federal Fishery Management Plan (FMP). EFH is defined as *"…those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity"* (NOAA, 1997). Further, *"waters"* are defined to include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; *"substrate*" includes sediment, hard bottom, structures underlying the waters, and associated biological communities; *"necessary*" means the habitat elements required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and *"spawning, breeding, feeding, or growth to maturity*" cover a species' full life cycle (NMFS, 1998b). For anadromous species such as steelhead, EFH includes freshwater streams used for spawning and rearing (i.e., Pismo Creek and tributaries).

Prior to any Federal action that would fund, permit, or implement activities that may adversely affect EFH, the Federal action agency is required to consult with the NMFS regarding potential adverse effects of the action on EFH, and respond in writing to NMFS recommendations.

A number of FMPs developed by the Pacific Fishery Management Council exist for the coastal zone of central California including the Coast Pelagics Fishery Management Plan, Pacific Salmon Management Plan, and Pacific Groundfish Fishery Management Plan (NMFS, 1999).

Wildlife Movement Corridors. Wildlife migration corridors are generally defined as connections between habitat patches that allow for physical and genetic exchange between otherwise isolated animal populations. Migration corridors may be local such as between foraging and nesting or denning areas, or they may be regional in nature. Migration corridors are not unidirectional access routes; however, reference is usually made to source and receiver areas in discussions of wildlife movement networks. "Habitat linkages" are migration corridors that contain contiguous strips of native vegetation between source and receiver areas. Habitat linkages provide cover and forage sufficient for temporary habitation by a variety of ground-dwelling animal species. Wildlife migration corridors are essential to the regional ecology of an

area as they provide avenues of genetic exchange and allow animals to access alternative territories as fluctuating dispersal pressures dictate.

Pismo Creek and associated tributaries may play an important role as migration corridors for wildlife species moving within the region and coastal habitat to the west. These migration corridors are especially critical through areas where human activities would otherwise prohibit or impair the movement of species between habitat areas.

5.3.3 Impact Analysis

When development occurs in natural or semi-natural areas, the biological resources of the site and the surrounding area are affected. These effects may take the form of direct impacts, which include habitat loss and fragmentation, introduction of barriers to movement and dispersion, and conversion of native communities to developed conditions. Development may also result in indirect impacts that affect the quality of habitats on and surrounding the project site. These impacts may include the invasion of weedy or landscape plants into natural areas, noise disturbances, and declines in air and water quality. The project sites in and around the Plains Exploration and Production oil facility include areas that have experienced a range of past disturbance from low to high. Consequently, the character of the native communities varies considerably by project element.

5.3.3.1 Thresholds of Significance

Based on the mandatory findings of significance criteria at Section 15065 and Appendix G of the State CEQA Guidelines (Governor's Office of Planning and Research, 1999), an impact would be significant if any of the following conditions, or potential thereof, would result with implementation of the Proposed Project:

1. A substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game, the U.S. Fish and Wildlife Service, or the National Marine Fisheries Service;
2. A substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulation, or by the California Coastal Commission, California Department of Fish and Game, U.S. Fish and Wildlife Service, or National Marine Fisheries Service;
3. 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 pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
4. A substantial interference 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 site;

5. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan;
6. A substantial reduction of habitat of a fish and wildlife species;
7. Cause the population of a fish or wildlife population to drop below self-sustaining levels;
8. Threaten to eliminate a plant or animal community; and/or,
9. Conflict with any local polices or ordinances protecting biological resources. For the purpose of this report, relevant goals and policies regarding sensitive resources from the San Luis Obispo County Land Use Ordinance (Title 23), San Luis Bay Inland Planning Area Land Use Element, and Agriculture and Open Space Element were used to assess conflicts with local policies. See Chapter 4.0 for detailed discussion of applicable policies and ordinances.

5.3.3.2 Project Impacts

Short-Term Impacts. The following are the potential impacts of project implementation occurring during the short-term installation phase of the project (i.e., modification of existing facility and construction of new water treatment facility and associated structures including several pipeline corridors).

Impact BIO-1: Construction activities could result in the disturbance of wildlife occupying adjacent habitats.

Discussion: Construction will entail the use of heavy equipment and increased human presence throughout the project area. This could potentially disturb wildlife at the construction sites and result in mortality of less mobile species, particularly ground-dwelling (fossorial) species such as California ground squirrel, Botta's pocket gopher, broad-footed mole, and dusky-footed woodrat. More mobile species are likely to be temporarily displaced to alternative habitats until the completion of construction. These short-term construction impacts are considered temporary and less than significant.

Impact Category: Class 3

Thresholds of Significance: 6, 7, and 8.

Mitigation Measure: None required.

Impact BIO-2: Construction activities could adversely affect nesting activities of protected migratory birds.

Discussion: A number of migratory bird species could potentially nest in the California annual grassland, chaparral (Well's manzanita and Chamise series), coyote brush scrub, California live oak woodland, seasonal and perennial wetlands (proposed tempering

pond), riparian woodland ~~-~~habitat areas of the site (Pismo Creek and tributaries). These include ground nesters (northern harrier, horned lark, western meadowlark, and lark sparrow), small tree/shrub nesters (bushtit, American robin, northern mockingbird, house finch, and lesser goldfinch) and several raptors which require large trees for nesting (red-tailed hawk, red-shouldered hawk, etc.). Additionally, an active golden eagle nest was identified within the southern boundary of the project site along an existing cliff face during 2007 surveys. Construction activities resulting in the removal of shrubs and trees and/or ground-clearing activities with heavy equipment could disturb and/or destroy nests, nestlings, or hatchlings, and result in a violation of the Migratory Bird Treaty Act (MBTA) (16 USC 703-712). The Act prohibits, by any means or in any manner, the intentional or unintentional capture, possession, or destruction of any migratory bird, its nest, eggs, young, or parts thereof without a permit issued by the USFWS.

Further, the proposed tempering pond may attract waterfowl and other bird species which could be impacted ~~due to contact with untreated water and/or~~ during periodic maintenance activities resulting in further violations of the MBTA.

Impact Category: Class 2

Thresholds of Significance: 1 and 4

Mitigation Measure: BIO-2: Construction operations shall be conducted prior to the initiation of nesting, or after the completion of nesting to avoid any potential impact to migratory birds. Specifically, the following measures shall be implemented:

A. Construction operations shall be conducted prior to the initiation of nesting, or after the completion of nesting to avoid any potential impact to migratory birds. Therefore, all clearing, grading, and general construction operations should be conducted between the months of August and March.

B. If Measure A is infeasible, pre-construction surveys shall be conducted between February 15 and August 15 to identify potential bird and raptor nesting sites:

   - If active nest sites of common bird species protected under the Migratory Bird Treaty Act (e.g., northern mockingbird, house finch, etc.) are observed within the vicinity of the project site, then the project shall be modified and/or delayed as necessary to avoid direct take of the identified nests, eggs, and/or young; and,
   - If active nest sites of raptors and/or species of special concern (e.g., golden eagle, northern harrier, horned lark, etc.) are observed within the vicinity of proposed construction operations, then CDFG shall be contacted to establish the appropriate buffer around the nest site. Construction activities in the buffer zone shall be prohibited until the young have fledged the nest.

C. The proposed tempering pond shall be designed and constructed with a low permeability material ~~protective netting~~ to prevent the growth of vegetation and

discourage the use and potential nesting by waterfowl and other bird species protected under the MBTA. This shall include construction of permanent fencing (i.e., chain-link) around the pond perimeter to prevent debris accumulation and general wildlife use of the structure. In addition, a Tempering Pond Maintenance and Monitoring Plan shall be prepared to ensure that the ~~netted area~~ pond is inspected and maintained for the life of the Produced Water Reclamation Facility~~in perpetuity with the facility~~. This shall include provisions for ~~monthly~~periodic maintenance and monitoring of the ~~netted~~ structure by ~~a qualified biologist~~ facility staff to ensure that the pond is free of vegetation and miscellaneous debris that may attract birds and wildlife ~~no birds are trapped and to capture and release any entangled birds~~ as necessary through the life of the project.

Residual Impacts

Impact Category = Class 3. Implementation of this mitigation measure will reduce potential impacts to less than significant levels.

Impact BIO-3: Construction activities could adversely affect special-status plant and terrestrial animal species potentially occurring in the project area.

Discussion: Development of the proposed Produced Water Reclamation Facility will include construction of a water treatment plant and various associated structures. This will include construction of water transmission pipelines for re-use on/off-site, placement of an outfall structure along Pismo Creek, and creation of a smooth-bottom tempering pond within an existing stormwater collection basin. New facilities would be constructed within the existing disturbed plant area, in addition to a two- to three-acre area of oak woodland habitat located west of the existing plant. In addition, water transmission pipelines will be placed subsurface along existing facility roadways or, where feasible, atop existing pipe racks located along facility roadways.

Special-status species occurring in the project area have the potential to be adversely affected by proposed short-term construction activities throughout the project area. Specifically, special-status plant species, including Pismo clarkia and Well's manzanita, have been documented within and/or adjacent to the proposed impact areas (i.e., adjacent to oak woodland habitat and along proposed pipeline routes) and have the potential to be impacted by project operations. Pismo clarkia is widespread within project area and occurs primarily along slopes, road cuts, and within grassland areas bordering oak woodlands. Specifically, approximately 1,500-square feet of Pismo clarkia has been recorded within and/or directly adjacent to the proposed building envelope for the water reclamation facility and numerous individuals were observed along the proposed tempering pond location and water transmission pipeline routes as illustrated on Figures 5.3-2 and 5.3-3. In addition, potential impacts to Well's manzanita located within the vicinity of proposed pipeline routes and within a small area directly west of the proposed equipment staging area (see Figure 5.3-3) could occur during construction activities. However, construction of the proposed water transmission pipelines would remain within previously disturbed facility roadways and pipeline routes. Therefore,

impacts to special-status plant species within these areas should be avoided through project design.

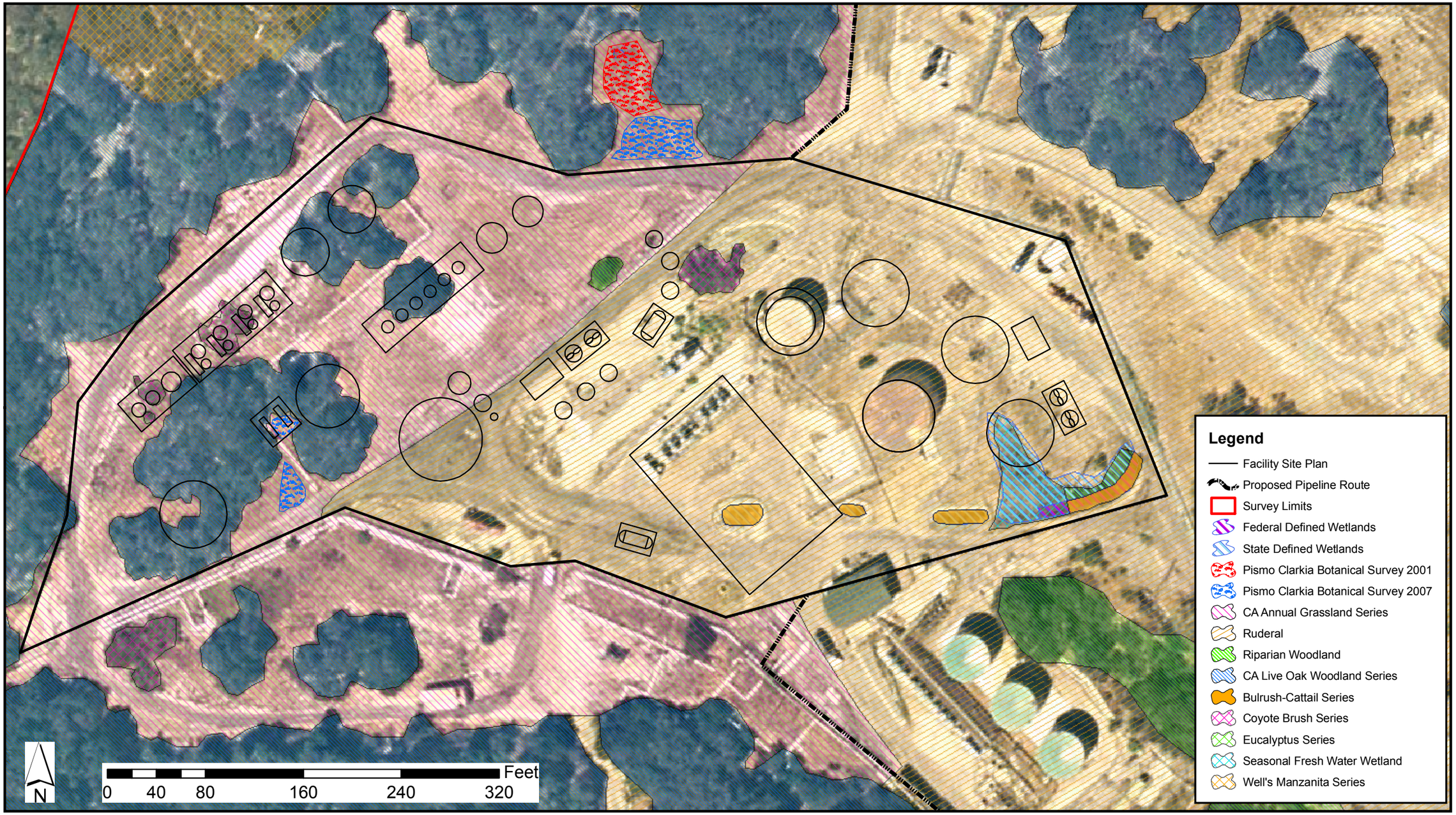
The California horned lizard inhabits the drier and more open areas within the chaparral and scrub vegetation and, as such has the potential to occur within portions of the project site. Specifically, clearing of vegetation including coyote brush scrub and staging of heavy equipment within the vicinity of dense chaparral habitat (i.e., Well's manzanita) during construction of the water reclamation facility and construction of proposed pipeline routes has the potential to result in significant impacts to this sensitive species.

Special-status bird species such as the loggerhead shrike, horned lark, and sharp-shinned hawk could be potentially impacted during construction through the short-term loss of foraging opportunities within areas of construction. The American peregrine falcon and northern harrier could also be affected during breeding season by the short-term disturbance of the open grassland and adjacent woodland habitat areas. The golden eagle and Cooper's hawk are likely to be affected by the short-term disturbance of both foraging habitat and potential and/or known nest sites. Historically, the nesting site for the American peregrine falcon within the vicinity of the project area has been at Shell Beach (SAIC, 1994), however the numerous rocky outcrops and cliff faces occurring within the eastern portion of the site may provide suitable nesting sites for falcons. Further, an active golden eagle nest was observed along a rocky outcrop within the eastern portion of the site during the 2007 survey(s). Due to the small area of disturbance and short-term construction period, impacts to foraging raptors are expected to be minimal. However, potential nesting habitat for all bird species should be carefully surveyed prior to construction as discussed in BIO-2.

Impact Category: Potential impacts to special-status plant species (Pismo clarkia and Well's manzanita) and resident special-status animal species (California horned lizard, golden eagle [nesting], American peregrine falcon [nesting], horned lark [nesting], northern harrier [nesting], and Cooper's hawk [nesting]) are considered significant and mitigable = Class 2; and impacts to migratory special-status species (loggerhead shrike, and sharp-shinned hawk) that have the potential to periodically frequent the project area for the purpose of foraging are considered short-term and less than significant = Class 3.

Threshold of Significance: 1

Mitigation Measure: BIO-3: The following mitigation measures are required to avoid and/or minimize impacts to special-status species known to occur or with the potential to occur within the proposed building envelope for the water reclamation facility, tempering pond, and associated pipeline routes during construction. This includes protective measures to avoid and/or minimize impacts to Pismo clarkia and Well's manzanita during the construction phase of the project:



Source: ADAIR

padre associates, inc.
ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

FOCUSED IMPACT MAP
FIGURE 5.3-3

General Measures:

A. All equipment staging areas and construction-crew parking areas shall be established within the two proposed construction staging areas identified on Figure 3-4. Additionally, all construction access routes shall be established in previously disturbed areas and/or existing roadways;

B. Exclusionary fencing will be erected at the boundaries of construction areas to avoid equipment and human intrusion into adjacent habitats with emphasis on protection of areas containing special-status species. The exact location of exclusionary fencing for each construction area shall be determined by a County-approved biological monitor. The fencing shall remain in place throughout the construction phase for each individual project component;

C. A County-approved biological monitor shall conduct a worker orientation for all construction contractors (site supervisors, equipment operators and laborers) which emphasizes the presence of special-status species within the project site, identification, their habitat requirements, and applicable regulatory policies and provisions regarding their protection, and measures being implemented to avoid and/or minimize impacts;

D. If nighttime construction activities are warranted, all equipment lighting shall be shielded away from adjacent wildlife habitat areas and sky, to the extent feasible while still providing safe working conditions for construction personnel, to minimize lighting/glare impacts of wildlife; and,

E. Mitigation Measure AQ-1 (a dust control program during the construction phase of the project shall be implemented to minimize dust impacts to adjacent vegetation communities and special-status plant species).

Protective Measures for Special-Status Plants:

F. Due to the fluctuation in annual plant populations (i.e., Pismo clarkia), spring botanical surveys shall be conducted annually by a County-approved biologist to update the location of special-status plant species populations on project plans until project construction is complete (as illustrated on Figure 5.3-2 and 5.3-3). Annual botanical survey results and documented fluctuations in populations shall be added cumulatively to the project plans (i.e., all newly discovered populations shall be added to existing populations documented in previous years). All mapped populations shall be clearly fenced off with exclusionary fencing prior to construction in those areas. If areas supporting Pismo clarkia and/or other sensitive plant species are determined by the County to be unavoidable then seed shall be collected from selected plants in impact areas and utilized to restore habitat within the pre-designated PXP Open Space Easement located directly south of the proposed RO facility within the PXP oil field (see Figure 5.3-4). The designated Open Space

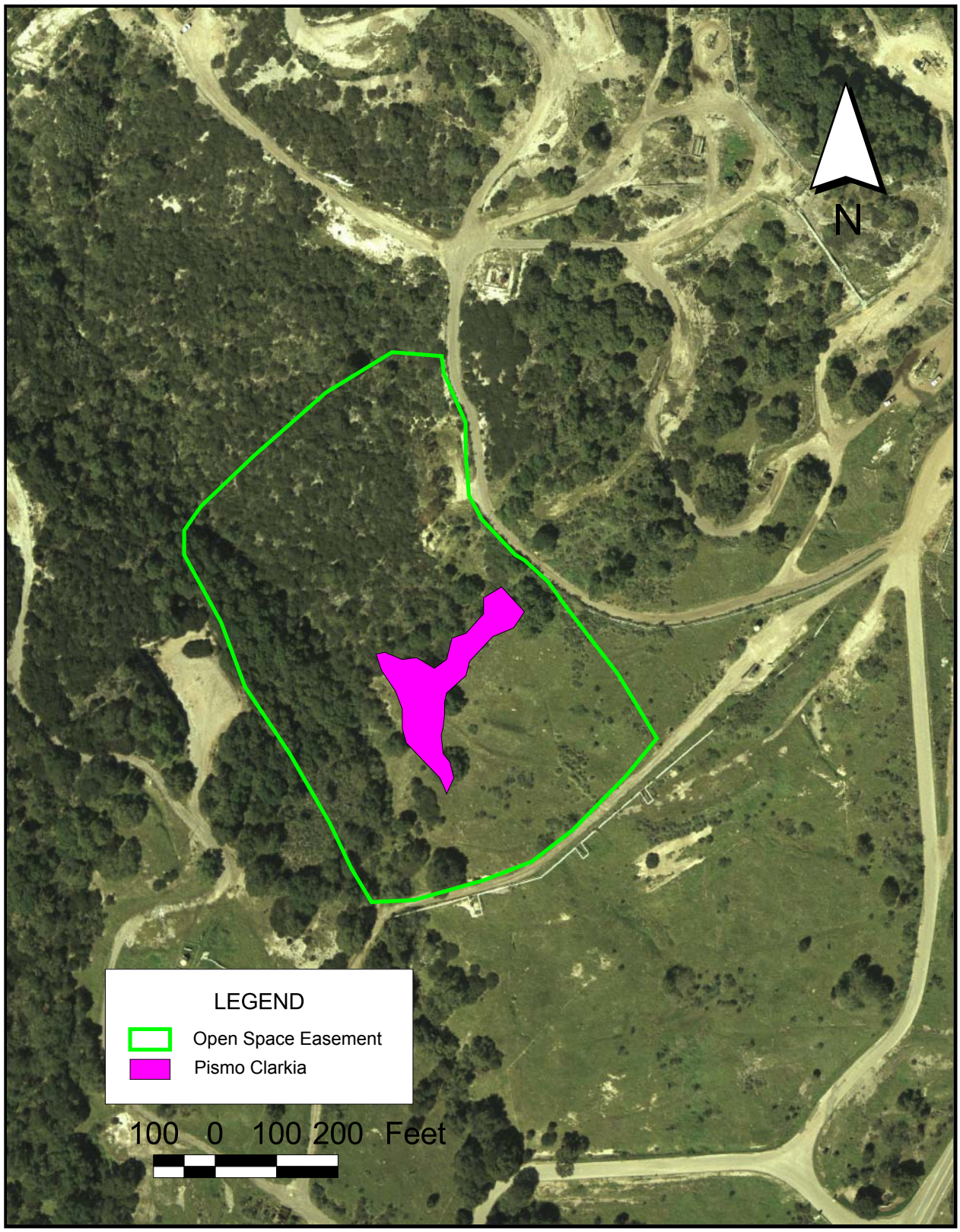
Easement was required as Mitigation Measure BIO-6 in the original Phase IV EIR and is currently being utilized as a receiver site for mitigation plantings from Phase IV expansion operations (i.e., oak tree, Well's manzanita, and Pismo clarkia restoration efforts). The Open Space Easement includes approximately 4.5 acres of oak woodland and grassland habitat areas and should be sufficiently sized to handle the additional Pismo clarkia restoration efforts outlined above. However, in the event the existing easement is determined to be insufficiently sized to handle the additional restoration plantings, then an additional Open Space Easement shall be dedicated by PXP for these purposes; ~~;~~ and,

G. No Well's Manzanita shall be removed and/or impacted as part of the proposed project. The final project plans shall clearly illustrate the location of all Well's manzanita existing within 25 feet of construction activities. Prior to any construction, grubbing or tree removal, each manzanita within the vicinity of the work areas shall be clearly marked for protection. To further avoid impacts to Well's manzanita located adjacent to proposed pipeline routes and the proposed construction staging area(s), boundaries of all work areas shall be clearly defined and marked with visible flagging and/or orange protective fencing. All construction activities shall remain in existing roadways and pipeline routes. If Well's manzanita is deemed unavoidable during project implementation, then the same measures outlined in BIO-6B of the Phase IV EIR (incorporated here by reference), would be implemented within the designated Open Space Easement to offset manzanita impacts.

Protective Measures for Special-Status Wildlife:

H. A County-approved biologist shall conduct pre-construction surveys to determine presence/absence of California horned lizard within and adjacent to project components containing suitable chaparral and/or scrub habitat (i.e., proposed equipment staging area and pipeline routes). Surveys shall only be conducted during the active period of California horned lizards (generally April through September). If California horned lizards are identified adjacent to and/or within work areas, then hand rakes or an equivalent shall be utilized by biological monitors to scarify the ground surface and encourage the horned lizards (and other wildlife) to vacate the immediate area prior to construction. Alternatively, sampling composed of drift fences shall be used to capture horned lizards. As necessary, the County-approved biological monitor shall physically relocate California horned lizards to suitable habitat located outside the construction zone. Exact procedures and protocols for relocation shall be based upon pre-project consultation with CDFG;

I. A County-approved biological monitor shall be on-site during all vegetation clearing and shall periodically monitor the project site during construction activities to inspect protective fencing, equipment staging areas, and physically relocate/remove any special-status wildlife species entering the construction zone (i.e., California horned lizard, etc.). All special-status species shall be relocated to suitable habitat located outside the construction zone by a qualified biologist. Exact procedures and



Source: EDA

padre associates, inc.
ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

PHASE IV OPEN SPACE EASEMENT

FIGURE 5.3-4

protocols for relocation shall be based upon pre-project consultation with CDFG; and,

J. Mitigation Measure BIO-2 (nesting bird surveys shall be conducted between February 15 and August 15 to identify nest sites of special-status bird species including golden eagle, American peregrine falcon, horned lark, northern harrier, and Cooper's hawk).

Residual Impacts

Impact Category = Class 3. Implementation of this mitigation measure will reduce potential impacts to special-status species to less than significant levels.

Impact BIO-4: Construction activities could result in direct and indirect impacts to special-status species potentially occurring within the proposed tempering pond and Pismo Creek and associated tributaries.

Discussion: Special-status aquatic and semi-aquatic species including the two-striped garter snake, southwestern pond turtle, south-central California coast steelhead and California red-legged frog are either known to occur and/or have the potential to occur within the Pismo Creek watershed. Southwestern pond turtle also have the potential to occupy the proposed location of the tempering pond during wet years. Further, tidewater goby is known to inhabit the lower reaches of Pismo Creek. Although some of these species are strictly aquatic, such as steelhead and tidewater goby, several of these species use upland habitat for forage and cover, as well as the aquatic habitat present within Pismo Creek. Examples of these species include the southwestern pond turtle, two-striped garter snake, and the California red-legged frog, as well as several bird species (e.g. yellow warbler, southern willow flycatcher, etc.).

Construction activities within close vicinity of the creek could result in direct impacts to semi-aquatic species that utilize the upland areas of the watershed, disrupt the natural behavior patterns of special-status species (i.e., breeding activity) and/or result in indirect impacts to aquatic species, such as steelhead, due to inadvertent spills of deleterious materials during construction of the proposed outfall structure. However, with implementation of Mitigation Measures BIO-3A-E and BIO-4, a qualified biologist shall conduct a worker orientation wich emphasizes the special-status species of the proposed tempering pond, Pismo Creek and adjacent areas. In addition, the qualified biologist shall complete pre-construction surveys for special-status wildlife species and conduct monitoring on a full-time basis for all activities within a 100-foot buffer of Pismo Creek. Per Mitigation Measure BIO-2, nesting bird surveys shall also be conducted prior to construction activities within or adjacent to the tempering pond and riparian corridor of Pismo Creek. Therefore, impacts to nesting birds (e.g. yellow warbler, southern willow flycatcher, etc.) shall be avoided and/or minimized to the extent feasible. However, impacts to southwestern pond turtle, two-striped garter snake, and potentially the California red-legged frog occurring in upland habitat areas is still considered likely.

The expected increased sediment load during short-term construction activities has the potential to impact existing habitat and water quality of Pismo Creek. However, as discussed in Section 5.5 - Hydrology and Water Quality, implementation of a site-specific erosion control plan during and subsequent to construction activities would minimize the potential for short-term sedimentation impacts to Pismo Creek. Further, an inadvertent spill into Pismo Creek during construction of the outfall concrete supports and placement of gunite surfacing on the existing rip-rap slope is considered likely. However, with implementation of the mitigation measures outlined below, impacts to Pismo Creek due to sedimentation and inadvertent spills would be considered less than significant.

Impact Category: South-central California coast steelhead, Southwestern pond turtle, two-striped garter snake, and California red-legged frog = Class 2.

Thresholds of Significance: 1, 2, and 6

Mitigation Measure: BIO-4: The following mitigation measures are recommended to avoid and/or minimize impacts to special-status species known to occur or with the potential to occur within the proposed tempering pond and the Pismo Creek watershed:

A. Construction of the proposed tempering pond and outfall at Pismo Creek including clearing and grubbing of vegetation shall be limited to the dry season (i.e., April 15 to Oct. 15);

B. The proposed outfall structure shall be designed to minimize impacts to the existing willow scrub habitat of Pismo Creek to the greatest extent feasible. Specifically, this shall include placement of the structure within a pre-disturbed area (i.e., existing rip-rap bank) located downstream of the “Hyla Crossing” near an existing pipe bridge. Additionally, the final design of the outfall shall include a series of 20- to 30-foot long discharge pipes positioned at appropriate intervals along the creek bank to further minimize the footprint of impact to habitat along the creek bank;

C. All existing downed woody debris and willow cuttings removed during construction of the outfall shall be placed and/or stockpiled in natural clumps on nearby creek banks to ensure no net loss of habitat for wildlife including special-status species;

D. PXP shall prepare and implement a Spill Contingency Plan that includes provisions for avoiding and/or minimizing impacts to Pismo Creek due to spills during construction of the proposed outfall. Specifically, the plan shall include an overview of the secondary containment structures to be installed along the toe of the creek bank to prevent discharge of concrete and gunite into the stream channel during construction operations. Further, the plan shall outline the response equipment that will be on-site during construction and procedures for responding to any inadvertent spills within the creek or surrounding areas including miscellaneous fuel and/or lubricant spills from construction equipment and vehicles during operations. Final specifications of the Spill Contingency Plan shall be reviewed and approved by the County and CDFG prior to project implementation;

E. All construction activities within a 100-foot buffer of Pismo Creek shall be monitored by a qualified biologist on a full-time basis or at a frequency deemed necessary by a qualified biologist in consultation with the appropriate regulatory agencies. The biological monitor shall conduct~~ed~~ pre-construction surveys for special-status wildlife species (e.g., southwestern pond turtle, two-striped garter snake, Calif. red-legged frog, etc.), maintain protective fencing, inspect equipment staging areas, and, as necessary, physically relocate/remove any special-status wildlife species entering the construction zone; and,

F. Mitigation Measures BIO-3A-E (General Protective Measures for Biological Resources); and,

G. Mitigation Measure BIO-2 (nesting bird surveys shall be conducted between February 15 and August 15 to identify nest sites of special-status bird species including yellow warbler, southern willow flycatcher, and Cooper's hawk).

Residual Impacts

Impact Category = Class 3. Implementation of this mitigation measure will reduce potential impacts to special-status wildlife species occurring within Pismo Creek to less than significant levels.

Impact BIO-5: Development of the produced water reclamation facility will result in the removal of up to 26 coast live oak trees and an additional six oak trees could be impacted by proposed activities.

Discussion: An estimated 26 coast live oak trees, located within the proposed impact area, would be removed to accommodate construction of the proposed Produced Water Reclamation Facility. An estimated 6 oak trees, located around the perimeter of the impact area, have the potential to be impacted by proposed activities, which may include rough grading within the drip line of the trees, and/or pruning of major limbs to facilitate equipment access. All tree specimens considered in this analysis have diameters at breast height (DBH, 4.5-feet above grade) exceeding 5 inches. Potential impacts were quantified as part of the oak tree survey conducted on-site. All oak trees to be removed or impacted by project activities were numbered in the field (see Appendix E - Oak Tree Survey Data) and displayed on Figure 5.3-3 as oak woodland habitat areas.

Oak woodland is considered to be a sensitive habitat and is already fragmented in much of the proposed project area. Further, oak trees provide food, cover, nest, and roost habitat for a number of species, particularly birds. It is a violation of Section 3503 of the California Fish and Game Code to take, possess, or destroy the nests and/or eggs of birds-of-prey, such as red-tailed hawk, red-shouldered hawk. The MBTA provides similar protection for nesting migratory bird species. Consequently, removal of any tree while migratory or other protected bird species are nesting would be a Class 2 impact.

Impact Category: Class 2

Thresholds of Significance: 2, 9

Mitigation Measure: BIO-5: The following mitigation measures are recommended to mitigate impacts to oak trees due to project implementation. This includes protective measures to avoid and/or minimize impacts to oak trees designated for long-term preservation:

A. Mitigation Measures BIO-3A-E (General Protective Measures for Biological Resources);

B. Prior to construction, a Supplemental Habitat Enhancement Plan containing site-specific oak tree protection and replacement procedures shall be prepared for the project. The Supplemental Habitat Enhancement Plan shall tier off of the previously developed Habitat Enhancement Plan established per mitigation measure BIO-5 of the original Phase IV EIR and clearly outline the procedures for protecting oak trees to remain in place during construction and provide details for replacing oak trees that are removed at a 4:1 ratio and those impacted at a 2:1 ratio. Final specifications of the Supplemental Habitat Enhancement Plan shall be approved by the County and CDFG prior to construction. At a minimum, the plan shall contain the following provisions:

- Utilizing the oak tree survey data collected in 2007, final project plans shall clearly illustrate the size and location of all oak trees to be removed as part of the project and all oak trees to remain within 25 feet of construction activities. Prior to any construction, grubbing or tree removal, each mature coast live oak tree within the vicinity of the proposed impact area shall be clearly marked for removal or protection;
- Protective fencing shall be installed around each oak tree to remain in place with emphasis on the six mature oak trees located along the perimeter of the proposed Produced Water Reclamation Facility. The fencing shall be installed prior to grubbing/construction and provide protection of the root zone of oak trees (the outer edge of the tree root zone is 1-1/2 times the distance from the trunk to the drip line of the tree);
- To further protect oak trees to remain in place, a certified arborist shall be retained by the applicant to perform any necessary trimming of oak tree limbs overhanging equipment access routes. This shall be conducted prior to allowing construction equipment to enter the proposed impact area to avoid and/or minimize the potential for inadvertent damage to oak trees limbs (i.e., equipment, vehicles, etc.);
- Replacement oak trees shall be from vertical tubes or deep, one-gallon container stock;
- Replanting shall be completed in the fall season upon completion of grading within a given area and by a qualified individual familiar with native vegetation;

- Location of newly planted oak trees shall adhere to the following whenever possible: on the north side of and at the canopy/dripline edge of existing mature native trees; north-facing slopes; within drainages swales; where topsoil is present; and if clustered, at least 10' "on-center" separation between each tree. Tree spacing will average approximately 15 feet on-center. Some clustering is acceptable to maintain a more natural appearance; and,
- Newly planted trees shall be maintained until successfully established. This shall include protection (e.g., caging, tree shelters) from burrowing and browsing animals (e.g., deer, rodents), regular weeding (minimum of once early fall and once early spring) of at least a 3-foot radius around the plant base and adequate watering (i.e., drip irrigation system). Heavy mulching consisting of local oak leaf litter/mulch so seedlings are exposed to local mycorrhizal fungi to enhance survivability and growth is also recommended. Irrigation shall be slowly terminated over a 3-year period. If possible, planting during the warmest, driest months (June through September) shall be avoided. Replacement oak trees identified as dead and/or diseased during the monitoring period shall be replaced accordingly.

C. Mitigation Measure BIO-2 (the tree removals shall be conducted as to avoid a take of raptors or migratory birds).

Residual Impacts

Impact Category = Class 3. Implementation of the above listed mitigation measure will reduce project impacts to oak trees to less than significant levels.

Long-Term Impacts. The following are the potential impacts associated with the conversion of natural habitats within project sites and the long-term operation and maintenance of the site on biological resources.

Impact BIO-6. The proposed Produced Water Reclamation Facility will result in the permanent loss and/or long-term degradation and fragmentation of natural habitats, which provide forage, cover, and breeding elements for a wide variety of wildlife species, including several special-status species.

Discussion: Plant communities existing within and along the perimeters of the existing facility and roadways have been previously disturbed by past oil field operations (e.g., clearing and grading, long-term dust impacts, etc.). Although portions may be intact, the habitat value of these plant communities has been substantially reduced due to fragmentation, introduction of non-native vegetation, and ongoing disturbance. However, the proposed project includes the installation of a water treatment facility, various water tanks and silos, tempering ponds, three air strippers, and two heat exchangers. Ultimate construction of these structures as well as construction/installation of water transmission pipelines and reclaimed water outfall structure would result in the permanent and temporary loss of the plant communities existing within the project area

and result in further degradation of habitat supporting special-status species, including Pismo clarkia. The estimated total loss for each cover type within proposed project area is provided below in following Table 5.3-8:

Table 5.3-6. Plant Community Impact Summary Table

Plant Community	Loss (acres)
Calif. live oak woodland series	0.66
Bulrush-cattail series	0.68
Riparian woodland	0.1
Seasonal freshwater wetland	0.09
Coyote brush series	0.07
Calif. annual grassland series	1.75
Total Acreage:	**3.35**

Note: The remaining estimated 3.25 acres of disturbance is expected to occur in pre-disturbed habitat areas (i.e., ruderal).

Loss of non-native annual grassland areas is not considered a significant impact to wildlife because it supports a relatively low density and diversity of species and is considered abundant both locally and statewide. Although coyote brush scrub provides moderate foraging and nesting habitat for wildlife species it is not considered a sensitive plant community. Therefore, loss of 0.07-acre of coyote brush scrub is not considered a significant impact. However, the riparian woodland community, seasonal freshwater wetland, and the bulrush-cattail community meet the CDFG definition of state wetlands; consequently, loss of these habitats is considered significant. In addition, loss of California live oak woodland habitat is considered significant because of their high habitat value and declining abundance of these habitat areas within San Luis Obispo County.

The loss of the 0.66-acre of California live oak woodland habitat would occur as a result of construction of the proposed water treatment facility and associated structures. Implementation of provision A of Mitigation Measures BIO-3 and BIO-5 (listed above) would minimize impacts to oaks through avoidance measures. However, project implementation would ultimately result in the permanent loss of approximately 26 mature oak trees and associated habitat. Moreover, construction of the proposed structures and transmission pipelines would result in further degradation of adjacent habitat areas known to support special-status species (e.g., Pismo clarkia).

A wetland assessment was conducted within the proposed project impact areas on June 18, 2007 (see Appendix E - Wetland Assessment Report). The permanent loss of 0.634-acre of State wetlands would occur as a result of construction of the proposed tempering pond (0.62-acre) and installation of the reclaimed water outfall structure along Pismo Creek (0.01-acre). In addition, 0.19-acre of wetland habitat exists within the proposed location of the water reclamation facility (i.e., three man-made storm water conveyance structures/ponds (0.07-acre), seasonal freshwater wetland (0.09-acre), and roadside drainage (0.03-acre)) (see Figure 5.3-3); however, impacts to these wetland features could be avoided through project design. Temporary impacts to the riparian

corridor of Pismo Creek would include trimming/clearing of vegetation on either side of the proposed outfall structure, primarily willows, during construction activities.

Impact Category: Loss of the California live oak woodland series, riparian woodland, seasonal wetlands and bulrush-cattail series = Class 2; Loss of California annual grassland and coyote brush series = Class 3

Thresholds of Significance: 1, 2, and 9

Mitigation Measure: BIO-6: The following measures shall be implemented to compensate for the actual permanent loss of vegetation resulting from project implementation and potential long-term degradation of adjacent habitat areas from projected long-term utilization of the site:

A. Prior to construction, an area within the previously dedicated PXP Open Space Easement shall be set aside to accommodate the required oak replacement (estimated at 104 total) and Pismo clarkia plantings (BIO-3 and BIO-5). If the available area within the existing open space easement is not sufficient to accommodate all of the required oak tree and Pismo clarkia plantings additional mitigation areas containing suitable habitat shall be identified by the applicant and dedicated as supplemental open space easement areas. These areas should contain a representative mixture of oak woodland and annual grassland with known populations of Pismo clarkia. Final specifications of any additional dedicated easement areas (size and location) shall be reviewed and approved by the County and CDFG prior to construction. In addition, future equipment staging areas, access routes, and additional well pads shall be prohibited in the dedicated easement areas;

B. Provision B of Mitigation Measure BIO-5 (Supplemental Habitat Enhancement Plan) shall also contain measures to offset additional impacts to Pismo clarkia and oak woodland within the dedicated easement area. Specifically, the Supplemental Habitat Enhancement Plan shall include species lists, installation and maintenance methods, performance criteria, and monitoring protocols for enhancing existing habitats within the dedicated easement area. At a minimum, the plan shall contain the following additional provisions:

- Procedures to further mitigate permanent loss of California live oak woodland by augmenting existing oak woodland habitat within the dedicated easement with a portion of the required 4:1 ratio oak tree plantings;
- Planting of Pismo clarkia as required by Mitigation Measure BIO-3 shall occur within selected areas (if loss is deemed unavoidable by the County) of the dedicated easement to augment existing populations, concentrating the majority of seed dispersal along the northeastern perimeter of the existing oak woodland habitat;
- Installation of all replacement planting and/or seed dispersal shall be conducted within the appropriate season to promote survivability (i.e., fall/winter). If

possible, planting during the warmest, driest months (June through September) shall be avoided;

- Shall provide procedures to ensure eradication of exotic plant species (i.e., pampus grass, tree tobacco, etc.) within the dedicated easement. This shall include provisions for controlling the spread of exotic species throughout the project area; and,
- Shall provide an implementation schedule which emphasizes initiation of the Habitat Enhancement Plan within the 1st year of improvements authorized under this approval. The schedule shall outline the sequencing of all mitigation planting and timing for long-term monitoring and maintenance of the dedicated open space easement through the life of the project.

C. To offset approximately 0.62-acre of state wetland impacts due to construction of the proposed tempering pond, PXP shall either develop a compensatory wetland mitigation plan which outlines procedures for restoring wetland habitat on-site in-kind (i.e., bulrush-cattail series) or pay an in-lieu fee as directed by the County into a designated wetland restoration fund.

D. To avoid further impacts to state-designated wetland habitat areas, the proposed water reclamation facility and tempering pond shall be modified to avoid impacts to the wetland features mapped on Figure 5.3.-3 and in Appendix E - Wetland Assessment. This shall include the following provisions:

- A 10-foot buffer measured outward from the edge of the seasonal wetland swale and riparian woodland (i.e., willows) shall be preserved in a natural vegetation state. This includes the seasonal freshwater wetland, riparian woodland, and roadside drainage located along the southeastern corner of the currently proposed water reclamation facility site plan as well as the riparian woodland habitat located along the southeastern corner of the proposed tempering pond. This measure shall not apply to the three man-made storm water conveyance structures/ponds (0.07-acre) located along the southeastern corner of the proposed reclamation facility, and;
- Wetlands and setback areas shall be temporarily fenced with silt fencing and orange protective fencing during construction to minimize and/or avoid inadvertent impacts due to temporary construction related erosion and sedimentation.

E. To offset approximately 0.01-acre of riparian woodland impacts due to installation of the proposed outfall structure, PXP shall prepare a Compensatory Mitigation Plan which outlines the procedures for restoring willow habitat removed due to project implementation at a 3:1 ratio with emphasis on habitat enhancement. The plan shall clearly identify planting areas within and adjacent to the proposed impact area in addition to the performance criteria for re-establishing willow habitat within Pismo

Creek. The plan shall be approved by the County, CDFG~~,~~, RWQCB, and Corps prior to project implementation.

F. Mitigation Measure AQ-1 (a dust control program during the construction phase of the project shall be implemented to minimize dust impacts to adjacent wetland communities);

G. Mitigation Measure HYD-1 (in compliance with the Land Use Ordinance, the applicant will prepare and implement a Sediment and Erosion Control Plan (SECP) which will outline procedures for stabilizing the site and minimizing sedimentation and erosion impacts to adjacent wetland habitat areas);

Residual Impacts

Impact Category = Class 3. Implementation of the above listed measures will reduce long-term project impacts to natural habitats supporting special-status species to less than significant levels.

Impact BIO-7: Development of the proposed the Produced Water Reclamation Facility could result in the permanent loss of wetlands regulated by the Corps under Section 404 of the Clean Water Act.

Discussion: Federal wetlands and designated waters of the U.S. are present within the proposed project area including a roadside drainage, the Pismo Creek channel, and two unnamed tributaries to Pismo Creek. The extent of wetlands and waters of the U.S. within the project site and impacts to wetlands due to proposed project activities were quantified during the wetland assessment conducted on June 18, 2007 (see Appendix E - Wetland Assessment Report).

As a result of the proposed project activities, impacts would occur to a portion of the riparian corridor of Pismo Creek. Specifically, impacts to approximately 0.014-acre of waters of the U.S will result from placement of the permanent reclaimed water outfall structure below the ordinary high water mark (OHWM). Per Mitigation Measure BIO-4, installation of the reclaimed water outfall structure would include placement of a series of three to four, 25 to 30-foot long perforated pipes on the existing rip-rap bank area along Pismo Creek. Construction of the outfall structure would also include clearing of the debris and coating the existing rip-rap slope with gunite to allow sheet flow of discharge water to Pismo Creek. As discussed in BIO-6, the riparian corridor of Pismo Creek is also considered a CDFG-defined state wetland and therefore is considered sensitive. However, with implementation of Mitigation Measure BIO-6E impacts to the riparian corridor of Pismo Creek would be considered less than significant (i.e., Compensatory Mitigation Plan). The four unnamed tributaries to Pismo Creek also qualify as waters of the U.S., however, impacts to the these features during project implementation would be avoided through project design which includes construction of pipelines along existing access roads and overall avoidance of drainages. In the event that major excavation would be required to install pipelines beneath existing culverts, then a jack-and-bore

technique would be utilized to avoid impacts to the tributaries. Therefore, impacts to tributaries of Pismo Creek would be considered less than significant.

Federal wetlands within the project site are limited to a small roadside drainage (approximately 1,300 square feet [0.03-acre]), located in the southeast corner of the proposed water reclamation facility (see Appendix E - Wetland Assessment Report). However, impacts to the federal wetland feature can be avoided through implementation of Mitigation Measure BIO-6, including avoidance and minimization measures (BIO-6D) and therefore would be considered less than significant.

Impact Category: Permanent loss of waters of the U.S. due to placement of the outfall structure along Pismo Creek = Class 2; Secondary impacts to federal wetland (roadside drainage) due to development of the Water Reclamation Facility = Class 2

Thresholds of Significance: 3

Mitigation Measure: BIO-7: The following measures shall be implemented to avoid impacts to Pismo Creek tributaries, compensate for the permanent loss of waters of the U.S. resulting from installation of the proposed outfall structure and potential long-term degradation of adjacent federal wetland habitat areas from projected long-term utilization of the site as required by the Corps (M. Vandersande, Corps, pers. comm., 2007):

A. In the event that no pipe racks exist along the existing roadways at tributary crossings and excavation of the roadway base material would require removal and/or replacement of existing road culvert(s), then a jack-and-bore technique would implemented for pipeline installation to ensure that no impacts occur to the subject drainages.

B. Mitigation Measure BIO-6 (avoidance and minimization measures for protection of wetland habitat features and development of Compensatory Mitigation Plan for Pismo Creek [BIO-6E]); and,

C~~B~~. The applicant shall obtain a permit from the U.S. Army Corps of Engineers pursuant to 404 of the Clean Water Act, Water Quality Certification from the Regional Water Quality Control Board pursuant to 401 of Clean Water Act and a Streambed Alteration Agreement or waiver from the California Department of Fish and Game pursuant to Section 1600 et seq. of the California Fish and Game Code for placement of permanent structures along Pismo Creek (i.e., fill activities) including trimming/removal of riparian vegetation. As part of the permitting process, PXP shall be required to provide the Compensatory Mitigation Plan (Mitigation Measure BIO-6E) to the Corps and RWQCB for review and approval prior to permit issuance. As part of this process, the ~~Corps~~ agencies may require a higher mitigation ratio and/or include additional performance criteria in the form of special permit conditions. All agency permits and the Final Compensatory Mitigation Plan shall be submitted to the County prior to ~~project implementation.~~ issuance of grading permit.

Residual Impacts

Impact Category = Class 3. Implementation of the above listed measures will reduce long-term project impacts to federal wetlands and Waters of the U.S. to less than significant levels.

Impact BIO-8: Operation of the proposed Produced Water Reclamation Facility could result in long-term direct and indirect impacts to special-status species potentially occurring within Pismo Creek and the Pismo Creek Estuary.

Discussion: Special-status aquatic and semi-aquatic species including the south-central California coast steelhead, two-striped garter snake, California red-legged frog, and southwestern pond turtle are either known to occur and/or have the potential to occur within Pismo Creek. Further, tidewater goby is known to inhabit the lower reaches of Pismo Creek and the Pismo Creek Estuary approximately 4 miles downstream of the proposed facility. For the purposes of this impact analysis, aquatic special-status species such as steelhead which spend the most critical portion of their life cycle within freshwater systems are considered sensitive to perturbations in water quality and as such will be the focus of the following impact discussion on the potential long-term effects of the proposed water reclamation facility on aquatic and semi-aquatic organisms.

Because juvenile steelhead remain in the creeks year-round, adequate flows, suitable water temperatures, and an abundant food supply are necessary throughout the year in order to sustain steelhead populations. Cool, clean water is essential for the survival of steelhead during all portions of their life cycle. Elevated water temperatures (>70°F) can greatly impair growth rates of juvenile steelhead if adequate food is not available. Warmer water also holds less dissolved oxygen (DO) and increases a fish's susceptibility to disease (CDFG, 2002). Specifically, rearing steelhead juveniles prefer water temperatures of 7.2-14.4°C (45-58°F) and have a upper lethal limit of 23.9°C (75°F), however can survive up to 27°C (80.6°F) with saturated dissolved oxygen conditions and a plentiful food supply (NMFS, 2001). The most critical period is in the summer and early fall when these conditions become limiting. As such, the primary potential impact of the proposed project to steelhead is the effect of discharge water on the existing temperature and DO levels of Pismo Creek. Secondarily, steelhead residing downstream of the facility and tidewater goby located within the estuary could be affected by long-term discharge of treated water containing potentially toxic chemical constituents (e.g., heavy metals, etc.).

Based upon existing data, the discharge from the facility estimated at 1.3 cubic feet per second (cfs) could be the only flow present downstream of the facility during prolonged drought periods (Entrix, 2006). The continuous discharge would approximately double the average summer flow conditions. However, during storm flows, the discharge would not be discernable in the large volume of stream flow. Based upon water quality measurements obtained in Pismo Creek in 2006 (Entrix), water temperatures ranged from 8.59°C (48.1°F) to 26.89°C (80.4°F) and DO levels ranged from 3.13 to 6.34

micrograms per liter (mg/l), respectively (Entrix, 2006). Average water temperatures during this period were between 13.98 to 14.21°C (57.16 to 57.59°F). Further, 75 compounds were detected in creek water samples including metals, semi-volatile organic compounds, volatile organic compounds, pesticides, and inorganic compounds. One inorganic compound and several metals were detected at limits above established regulatory standards including selenium, iron, and zinc (see Section 5.5 – Hydrology and Water Quality, Table 5.5-1). In summary, the following parameters and/or constituents were determined to be above or below required levels to support a healthy steelhead population: total suspended solids, dissolved oxygen, pH, hardness, manganese, iron, phosphorous, and zinc (Entrix, 2006).

However, despite existing degraded water quality conditions within Pismo Creek including periodic elevated water temperatures and low DO levels, steelhead are still persisting within the creek system as evidenced by the observation of steelhead fry at the proposed discharge location during spring 2007 field surveys (i.e., successful 2007 spawning event) and past reported observations of steelhead within the creek system (Entrix, 2006). Further, as discussed in Section 5.5 – Hydrology and Water Quality, the RWQCB has established thresholds and standards for protection of receiving waters and associated aquatic organisms and habitats. Specifically, the RWQCB Basin Plan Water Quality Objectives contain requirements for receiving waters identified as "Cold Freshwater Habitat" and as "Fish Spawning" areas which corresponds to those conditions existing within Pismo Creek. This includes the following requirements for dissolved oxygen and temperature:

> *"Dissolved Oxygen. The dissolved oxygen concentration shall not be reduced below 7.0 mg/l at any time.*
>
> *Temperature. At no time or place shall the temperature be increased by more than 5°F above natural receiving water temperature."*

In addition, per the RWQCB Basin Plan Water Quality Objectives and California Toxic Rule, toxic constituents which may be harmful to aquatic species should be removed from the water prior to discharge. The following Table 5.3-9 provides an overview of the toxic metals known to be deleterious to fish and wildlife when concentrations are present in excess of the limits identified within the Basin Plan Water Quality Objectives. These limits have been compared to those concentrations detected in produced water samples collected by PXP in 2007:

Table 5.3-7. Toxic Metal Concentrations Not to be Exceeded in Aquatic Life Habitats Compared to PXP Produced Water Metal Concentrations

Metal	RWQCB Established Concentrations not to be Exceeded (mg/l)[1]	Concentrations in PXP Produced Water (mg/l)[2]
Cadmium	.03	<0.005
Chromium	.05	0.005
Copper	.03	<0.005
Lead	.03	<0.002
Mercury	.0002	<0.002
Nickel	.4	<0.020
Zinc	.2	<0.020

[1] Based upon RWQCB Basin Plan, Table 3-5 - *Toxic Metal Concentrations not to be Exceeded in Aquatic Life Habitats, mg/l* (Freshwater [Cold, Warm] Hard [>100 mg/l $CaCO_3$]).

[2] Based upon PXP Produced Water Samples, Sample C taken on 01/25/07; < = indicates less than laboratory detection limit.

Table 5.3-9 illustrates that the toxic metal concentrations within the produced water would not be a concern for discharge to Pismo Creek since existing concentrations are below the established thresholds and would be lowered further after processing through the treatment facility. However, as discussed in Section 5.5 Hydrology and Water Quality, other primary water quality constituents of concern associated with the proposed water treatment facility include the following: pH, turbidity, chlorides, sodium, sulfate, boron, non-ionic ammonia, 2-butanone, acetone, and phenol. In addition, produced water from the facility could potentially be released at temperatures in excess of the receiving water of Pismo Creek which could result in significant impacts including mortality of steelhead residing at or immediately downstream of the discharge location. Long-term effects of increased water temperatures could also include reduced DO levels and an overall decrease in the survival rates of steelhead fry and juveniles in the creek system. Further, Matthew McGoogan of the NMFS conducted a preliminary review of the proposed project and indicated water temperature of discharge flows, spill protection, and steelhead stranding as primary concerns for potential impacts to steelhead associated with the Produced Water Reclamation Facility (Entrix, 2007).

To remove potentially toxic compounds and other constituents to the standards of the RWQCB Basin Plan Water Quality Objectives and California Toxic Rule, the facility will include several water filtration processes that involve both mechanical and chemical filtration of the produced water along with processing through a series of cooling towers. Further, the facility will include a gunite surface at the discharge location which will serve as a “splash pad” to oxygenate the water and increase DO prior to discharge flows reaching the creek channel. A review of PXP’s pilot test data (Table 5.5-1) indicates that the proposed treatment technology would meet the applicable state and federal water quality criteria for most of the key constituents analyzed during the pilot study except

~~expect~~ phenol, which could result in a significant health threat to steelhead residing in the creek system as well as tidewater goby within the Pismo Estuary. Further, the proposed produced water project has the potential to result in increased water temperature impacts due to fluctuating water temperatures of Pismo Creek throughout the year. This would be most applicable in winter months, when immediate temperature increases could result in significant impacts to steelhead residing in pools within the vicinity of the discharge location including reductions of available DO.

With implementation of mitigation measure BIO-8 including designing the facility to ensure water temperatures are regulated throughout the year to coincide with current stream temperatures of Pismo Creek (i.e., maximum of 5°F above natural receiving water temperature) with a maximum discharge temperature not to exceed 20°C (68°F) and development and implementation of a Stream Monitoring Plan, impacts associated with increased temperature and reduced DO would be reduced to less than significant. This would include mitigation measures HYD-4 and HYD-5 which will ensure that PXP receives a RWQCB/NPDES permit and implements an appropriate monitoring program to ensure all applicable water quality standards are being met, that a granular activate carbon is utilized in association with the facility as a polishing unit to ensure that treated water does not contain phenol or other organic compounds in excess of RWQCB water quality standards, and that the facility includes sufficient holding capacity to contain water that fails to meet water quality standards or other agency permit conditions to ensure that potentially harmful water is not released to Pismo Creek. With implementation of these measures, potential long-term water quality impacts to steelhead, tidewater goby, and other special-status, semi-aquatic species located downstream of the facility (e.g., southwestern pod turtle, two-striped garter, California red-legged frog) would be considered less than significant.

However, based on the above analysis and implementation of appropriate protective measures to ensure water quality in perpetuity with the project, it is presumed that the long-term operation of the facility may provide additional over-summering habitat downstream of the facility in low-flow years. This would be especially critical in drought years where the projected 1.3 cfs from the facility could be the only source of water flow in the channel and in-stream habitat for steelhead. As such, periodic maintenance of the facility when water flows would be discontinued for up to one week could result in significant impacts to steelhead due to receding water flows, potential stranding and high mortalities (i.e., steelhead fry and juveniles). Further, there may be emergency shut-downs where the water flows would be intermittently shut-in to address water quality deficiencies within the treatment system. Lastly, the proposed project includes a re-use option that has the potential to provide undetermined amounts of water to adjacent landowners for the purposes of supplemental irrigation supply in the dry season. Similarly, the transfer of water flows to adjacent landowners within the summer season could result in significant but mitigable impacts to steelhead supported by discharge flows. The potential long-term stranding effects to steelhead residing in Pismo Creek during operations was discussed with the NMFS which indicated the need for additional analysis and development of appropriate strategies including a Steelhead Stranding

Plan to mitigate potential long-term effects to steelhead (M. McGoogan, NMFS, pers. comm., 2007).

Impact Category: Impacts to special status aquatic and semi-aquatic species due to perturbations in water quality = Class 2; Direct impacts to steelhead due to annual fluctuations in facility water discharge rates/flows = Class 2

Thresholds of Significance: 1 and 4

Mitigation Measure: BIO-8: The following measures shall be implemented to offset potential impacts to special-status species potentially occurring within Pismo Creek and the Pismo Creek Estuary due to long-term operation of the proposed Produced Water Reclamation Facility:

A. PXP shall obtain appropriate approvals and/or authorizations from the NMFS and USFWS to discharge treated water into Pismo Creek per Section 7 of the ESA. If deemed necessary by NMFS, t~~T~~his shall include preparation of an Essential Fish Habitat Analysis per the Magnuson-Stevens Fishery Conservation and Management Act. All conditions and/or specified recommendations from these agencies to afford maximum protection of special-status species known to occur in Pismo Creek including temperature requirements (e.g., steelhead, tidewater goby, California red-legged frog) shall be adhered to and implemented as part of the project. Approvals and/or authorizations from these agencies shall be provided to the County for review prior to ~~project implementation~~ issuance of grading permit;

B. Mitigation Measure HYD 4A and 4B (PXP shall obtain an NPDES permit from the RWQCB the requirements of which shall be fully implemented including waste discharge limitations, and monitoring and reporting requirements. During plant operations, the applicant shall report phenol concentrations in effluent samples indicated above the method detection limits but less than quantitation limits. At such a time that laboratory analytical methods allow for lower quantitation limits, the applicant shall report phenol concentrations to the RWQCB to ensure compliance with the RWQCB's water quality standards~~During operation, the applicant shall utilize granular activate carbon as a polishing unit to ensure that treated water does not contain phenol or other organic compounds that are present in concentrations in excess of RWQCB water quality standards but less than the contract laboratory's analytical method detection limit~~);

C. Mitigation Measure HYD 5 (water treatment system shall be constructed with sufficient holding capacity to contain water that fails to meet water quality per the NPDES permit or other agency permit conditions so that water not meeting specifications is not released to Pismo Creek);

D. To mitigate potentially significant impacts to steelhead and other special-status species due to increased water temperatures within Pismo Creek, PXP shall prepare a Stream Monitoring Plan for the proposed water reclamation facility. The Plan shall

be prepared for County and NMFS review and approval prior to project implementation and shall contain at a minimum the following provisions:

- Identification of permanent temperature monitoring stations within Pismo Creek both upstream and immediately downstream of the proposed discharge location. The upstream location shall be utilized to determine baseline stream temperature conditions of Pismo Creek and downstream shall be utilized as a temperature control station;
- The monitoring stations shall consist of HOBO continuous temperature recorders or an equivalent to allow automatic stream temperature measurements at approximate 2-hour intervals;
- DO levels shall also be monitored at the designated stations on a periodic basis (to be defined in the Plan) utilizing appropriate water quality sampling equipment. If deemed necessary, additional features shall be installed to the treatment system and/or along the splash pad to increase oxygenation of the discharge water;
- The Plan shall identify the procedures and schedule for stream temperature data collection and reporting requirements which will be utilized to determine the maximum discharge water temperature from the water reclamation facility to ensure compliance with the RWQCB Basin Plan and NMFS requirements throughout the life of the project (i.e., at no time shall the temperature of receiving waters be increased by more than 5°F). This shall include modifying water temperatures accordingly throughout the year to coincide with seasonal fluctuations of Pismo Creek ~~with a maximum discharge temperature not to exceed 20°C (68°F)~~;
- The Plan shall include maintenance and inspection procedures to ensure that the temperature monitoring stations are periodically serviced and/or replaced, as necessary throughout the life of the project. This shall include inspections after significant storm events to ensure that the stations are not dislodged and/or damaged by storm flows and debris; and,
- The Plan shall include a reporting schedule that provides quarterly monitoring reports to the County and the RWQCB. The Plan shall also contain provisions for the immediate reporting of upset conditions to the County and RWQCB.

E. To mitigate potentially significant impacts to steelhead due to stranding during periodic maintenance events, emergency shut-downs, and transfer of water to adjacent landowners, PXP shall prepare a Steelhead Stranding Plan for the proposed water reclamation facility. Per NMFS requirements, the Plan shall clearly outline a series of steelhead stranding avoidance measures that shall be adhered to for the life of the facility. The Plan shall be prepared for County and NMFS ~~for~~ review and approval prior to project implementation and shall contain at a minimum the following provisions:

- An analysis of the expected flow fluctuations of Pismo Creek in conjunction with the Water Reclamation Facility at the time of shutdown and/or water transfers;
- Development and implementation of a steelhead monitoring program with emphasis on habitat areas downstream of the facility to provide ~~"real time"~~baseline estimates of steelhead populations within the vicinity of the facility and periodically thereafter as deemed necessary by the NMFS;
- Identification of all factors affecting steelhead stranding potential including but not limited to changes in wetted width with modifications in stream flows and stranding potential in side channels;
- Recommendations for appropriate ramping rates to ensure that the water discharge rate is decreased slowly over a long-duration to prevent to the extent feasible steelhead stranding with emphasis on fry and juveniles;
- Monitoring program during extended temporary shut-ins and emergencies which outlines procedures for qualified biologists to monitor pools and stream channels downstream of the facility and relocate stranded steelhead to suitable habitat areas. The extent of areas within and/or downstream of the PXP property to be monitored for potential steelhead stranding shall be determined as part of the analysis and include a map identifying approximate locations of likely habitat areas (i.e., pools) and distances downstream. Information on relocation sites and estimated steelhead mortalities shall be provided to NMFS and the County in comprehensive monitoring reports; and,
- To mitigate potential impacts to steelhead due to stranding and/or relocation through the life of the project (i.e., worst case scenario), the Plan shall include several mitigation options such as implementation of creek habitat restoration projects within the PXP facility and/or p~~P~~rovisions for monetary compensation to fund high priority projects identified within the Pismo Creek Watershed Plan and adjacent watersheds. Mitigation options, if required, would be commensurate to the level of impact (i.e., installation of a series of root wads to enhance steelhead production). Maximum monetary compensation amounts shall be provided in the Plan and agreed upon by all parties prior to Plan approval. ~~to mitigate potential impacts to steelhead mortalities due to stranding and/or relocation through the life of the project.~~

Residual Impacts

Impact Categories = Class 2 and Class 4. Implementation of the above listed measures will reduce potential long-term project impacts to special-status species of Pismo Creek to less than significant levels (Class 2). Further, with appropriate implementation of mitigation measures and long-term monitoring to ensure water quality standards are being met through the life of the project, the proposed discharged water would be seen as beneficial to the lower 4 miles of the Pismo Creek system during operation (Class 4). The following provides an overview of several of the expected beneficial effects to Pismo Creek:

- Increased water flow into Pismo Creek would have the potential to dilute nutrients that accumulate during low flow periods from adjoining land uses (cattle operations), and agricultural operations next to the creek. Fine sediments could also be kept in suspension instead of settling and smothering BMI habitat and nutrient loading could be diluted to promote the increase in diversity and abundance of sensitive BMI species (Entrix, 2006);
- Increased water flow into the creek would potentially allow the creek to flow (i.e., surface flow) in all reaches from the project site to the ocean. Stream flow as measured during the CDFG stream survey in 2005 at mile 0.87 upstream from the ocean, after a significant winter which produced above average rainfall for the area, was less than 1.0 cfs flow in early June and 0.12 cfs by September (CDFG, 2005);
- Increased water flow into the creek would provide for increased flow over the riffles and would result in an overall expansion in the available habitat for all aquatic species residing in Pismo Creek downstream of PXP property, especially BMI which are the primary food for steelhead;
- Increased water flow into the creek would potentially reduce the existing fine sediments and thick algae mats, especially in the vicinity of the project area, from embedding of the gravel and cobbles essential for steelhead spawning and survival. As was noted during snorkel surveys, a thick layer of fine sediment and algae covered most of the bottom of the pool habitats surveyed;
- Increased water flow into the creek would increase the useable habitat for rearing and survival as the potential for poaching from homeless camps and populations along the creek is a factor for survival of the steelhead. Maximum residual pool depth was another parameter examined during the CDFG 2005 stream survey. This parameter is important especially in small coastal drainages that have the potential to become intermittent or dry during parts of the year as most of the drainages in San Luis Obispo County. The maximum residual pool depth is the deepest portion of the pool, and of the 193 pools measured during the survey, almost 50% had depths between 1 and 2-feet (CDFG, 2005); and,
- Increased water flow into the creek will ensure increased inflow into the estuary to improve water quality and quantity, which can aid in survival of both steelhead trout and tidewater goby. Site conditions in the Pismo Creek estuary as recorded in June 2005 were 1.0 ppt (parts per thousand) salinity and ~145% oxygen saturation (HES, 2005). The saturation of oxygen is an important water quality parameter as it demonstrates significant production during the day. This parameter will convert to respiration at night and could create anoxic conditions, which could be lethal to fish species located in the estuary. This specific issue is documented in the Recovery Plan for Tidewater Goby (USFWS, 2005). The first recovery task for tidewater goby is to stabilize and protect habitat conditions at occupied sites by developing strategies to maintain or enhance, as needed, current habitat conditions, including managing freshwater inflow and water quality.

Impact BIO-9: Termination of the PXP Arroyo Grande oil field and eventual decommissioning of the proposed Produced Water Reclamation Facility could result in significant impacts to steelhead populations potentially occurring within Pismo Creek.

Discussion: As discussed above, the proposed Produced Water Reclamation Facility could result in long-term enhancement of available fish and wildlife habitat in Pismo Creek and its estuary, which in turn could result in a substantial increase in overall populations of special-status aquatic and semi-aquatic species. Specifically, it is feasible that steelhead may become entirely dependent upon the flows from the facility over time. Due to the fact that the proposed Water Reclamation Facility is only required to support continued production of the PXP Arroyo Grande oil field, the water discharge from the facility would be discontinued at some unknown future date and is not considered a permanent source of water to Pismo Creek. Therefore, decommissioning of the proposed Water Reclamation Facility and termination of water discharge to Pismo Creek could have a significant impact on steelhead which become dependent on the water source overtime. The following local case study provides a specific example of related fisheries impacts, which were directly attributable to removal of an artificial water source from a local waterway supporting steelhead:

> *The City of San Luis Obispo (City) maintains the sewage treatment plant located at the south end of City limits adjacent to Prado Lane. The facility discharges treated wastewater (effluent) into San Luis Obispo Creek. In the mid-1990's, the City upgraded their treatment process to a tertiary level at a rate of approximately 6.5 cfs. As a result, a dramatic improvement of the steelhead trout population was immediately noticed within the downstream portions of San Luis Obispo Creek. When the City began examining the option of diverting a portion of the treated discharge water into the City for beneficial recycling and reducing the overall amount of discharge, the regulatory agencies, including NMFS became concerned. The initial reduced discharge rate was to be as low as 1.7-cfs which has subsequently been increased to 2.5-cfs minimum allowable daily discharge rate. However, before any diversion could be approved and/or initiated, a complete assessment of all baseline parameters for the existing steelhead population and their associated habitat was required. This included development of a Habitat Suitability Index (HIS) for the lower 7-miles of San Luis Obispo creek which would be potentially impacted by the diversion.*
>
> *The HIS provided a comprehensive analysis of all parameters associated with steelhead during any/all portions of their lifecycle while in the freshwater system. Canopy cover, water depth, water temperature, creek substrate surveys, etc. were completed in San Luis Obispo Creek and assigned a score which required mitigation at a ratio of 1:1. A watershed wide steelhead population census and distribution analysis was also completed to document where and how many fish were in the system.*

> *This included an emigration survey which was completed for a 1-year period to determine timing of steelhead smolt emigration. An infra-red water gage was also installed immediately downstream of the discharge location to provide assurance to the agencies that the City was discharging water as required. As mitigation, twenty habitat restoration projects (i.e., development of pools) were required in San Luis Obispo Creek to increase the available habitat for steelhead in the system. However, once the population census was analyzed, it was noticed that there were more fish than anticipated in the lower section of the creek (i.e. below the discharge location) so additional mitigation was required at that time. Specifically, the City was required to remove a barrier on Coon Creek located between PG&E's Diablo Canyon Nuclear Power Plant and Montana de Oro State Park. This effectively opened an additional 6-miles of protected habitat to offset future potential impacts to steelhead trout in San Luis Obispo Creek from removing the artificial water source from the system.*

Based upon the case study above proposed long-term discharge of water to Pismo Creek as part of the project (i.e., > 10 years), potential impacts to steelhead associated with future facility decommissioning activities are considered reasonably foreseeable and potentially significant.

Impact Category: Impacts to steelhead due to ultimate facility decommissioning and removal of water source from Pismo Creek = Class 2

Thresholds of Significance: 1 and 4

Mitigation Measure: BIO-9: The following measures shall be implemented to offset potential impacts to steelhead populations established within Pismo Creek due to decommissioning of the Produced Water Reclamation Facility:

A. ~~Prior~~ At the time PXP determines to decommission~~ing~~ ~~of~~ the Produced Water Reclamation Facility, PXP shall be required to obtain formal approval and/or authorization from the County and NMFS. As part of the decommissioning request, PXP shall conduct a complete assessment of all baseline parameters for the existing steelhead population and their associated habitat within Pismo Creek. This shall include a detailed summary of the ~~annual~~ steelhead monitoring data required as part of BIO-8E and development of a Habitat Suitability Index (HIS) for the lower 4 miles of Pismo Creek which would be potentially impacted by removal of the artificial water supply from the creek system;

B. In the event it is determined by NMFS and the County after review of the data that removal of the facility would result in a significant impact to the existing Pismo Creek steelhead population, then PXP shall submit a ~~Pismo Creek~~ Steelhead Habitat Mitigation Plan (Plan) to the County and NMFS for review and approval prior to approval of facility decommissioning. The Plan shall be prepared in accordance with

the most current California salmonid habitat restoration techniques and identify a series of creek habitat restoration projects that will be completed by PXP over a specified time period to enhance the existing breeding and over-summering habitat within Pismo Creek (i.e., creation of pools, etc.) and/or an adjacent watershed, such as Arroyo Grande Creek. The Plan shall focus on restoration of the portion of Pismo Creek located within the PXP Arroyo Grande oil field or within a comparable section of Arroyo Grande Creek ~~including~~ and include, as necessary, replacement of any dilapidated road crossings and associated culverts that may be acting as fish barriers. Again, mitigation options, if required, would be commensurate to the level of impact. ~~As necessary~~Alternatively, the Plan ~~shall also~~ can include provisions for monetary compensation to fund high priority projects identified within other portions of the Pismo Creek and/or Arroyo Grande Watershed~~ Plan~~s. Maximum monetary compensation amounts shall be provided in the Plan and agreed upon by all parties prior to Plan approval. Monetary compensation can be provided as mitigation anytime prior to decommissioning of the facility at the discretion of PXP.~~.~~

Residual Impacts

Impact Category = Class 3. Implementation of the above listed measures will reduce potential long-term project impacts to steelhead due to facility decommissioning to less than significant levels.

5.3.3.3 Cumulative Impacts

As discussed in Section 6.2 of this EIR, cumulative projects include King South Ranch and Tentative Tract Map No. 2388 which would result in the development of low density residential land uses, a hotel, golf course and vineyards. Further, there a number of other proposed developments much smaller in scale, however with the potential to cumulatively effect the Pismo Creek watershed due to secondary impacts (i.e., increased runoff, sedimentation, etc.). Price Canyon is a biologically significant area that supports numerous sensitive plant and animal species and natural communities including the Pismo Creek riparian corridor and stream channel, such that construction of either the King South Ranch Project or the Tentative Map Tract no. 2388 may result in impacts to biological resources. Specifically, these projects have the potential to result in further removal and degradation of vegetative communities due to construction of permanent structures, introduction of impervious surfaces, and conversion of natural areas to vineyards and golf courses. This may also result in indirect impacts to Pismo Creek and associated biological resources. It is possible that construction of either of these projects may result in incremental impacts to biological resources within the area. However, these cumulative impacts are not expected to alter the significance of biological resources impacts associated with the proposed project.

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5.4 GEOLOGY AND SOILS

The purpose of this section is to describe geological and soil conditions in the project area and to evaluate potential impacts of the proposed project on these features.

5.4.1 Setting

5.4.1.1 Geology

The project is located in southern San Luis Obispo County, which is situated in the southern Coast Ranges geomorphic province of California. The southern Coast Ranges geomorphic province extends from Point Arguello in the south to the Oregon border in the north and ranges from 20 to 80 miles in width. The Coast Ranges province is bounded on the south by the Transverse Ranges geomorphic province, on the east by the Central Valley, on the north by the Klamath Ranges geomorphic province, and on the west by the Pacific Ocean.

The Coast Ranges geomorphic province is characterized by a series of northwest trending mountain ranges and valleys, many of which are bounded by faults. Rocks exposed in the southern Coast Ranges province include igneous, sedimentary and metamorphic rocks ranging in age from Jurassic to recent (see Figure 5.4-1).

San Luis Obispo County is traversed by five mountain ranges: the Santa Lucia Range, the Temblor Range, the Caliente Range, the La Panza Range and the San Luis Range. The Arroyo Grande Oil Field is located in Price Canyon in the southern portion of the San Luis Range.

The oldest rocks in the San Luis Range belong to the Jurassic-aged Franciscan formation, which forms the basement complex. The Franciscan formation is predominantly comprised of graywacke sandstone, with lesser amounts of shale, limestone, chert, and altered submarine volcanic rocks. Thickness of the Franciscan formation is estimated to be in excess of 25,000 feet. The Franciscan formation is unconformably overlain in the Arroyo Grande Oil Field by the Miocene-aged Monterey and Miocene/Pliocene-aged Pismo formations (ERCO 1981).

The Monterey formation is composed primarily of siliceous and porcelanous shales interbedded with dolomite/limestone, chert, and volcanic ash. The Monterey formation in the Arroyo Grande Oil Field is subdivided into four members: the Tuffaceous Member (Tmmt), the Siliceous Member (Tmmp), the Diatomaceous Member (Tmmd), and the Silty Member (Tmms) (ERCO 1981). Although no hydrocarbons are directly produced from the Monterey Formation, it is believed to be the source rock for the Arroyo Grande field reservoirs. No exploratory borings or wells have been drilled through the entire thickness of the formation, which is believed to be approximately 1,000 to 1,400 feet thick (Dames & Moore 1986).

The late Mio-Pliocene Pismo formation unconformably overlies the Monterey formation and consists of lenticular fine to coarse grained friable sandstone, calcareous siltstone, pebble conglomerate, and siliceous, cherty shale. The Pismo formation in the Arroyo Grande Oil Field area is subdivided into the Edna Member (late Miocene), an intermediate undifferentiated Member, and the Squire Member (Pliocene). The Edna Member is a massive buff to white coarse-grained bituminous sandstone, with layers of course pebble- or boulder-size components appearing randomly throughout the member. Bedding throughout the massive sands is indistinct or absent, with the exception of coarse-grained gravels or horizons of erosional contacts (Dames & Moore 1986).

In addition to the consolidated rock formations, recent alluvial deposits are present in the channel and flood plain of Pismo Creek. The alluvial sediments are comprised of silt, sand, and gravel and reach a maximum thickness of 100 feet near the center of the valley, becoming thinner at the margins of the valley.

5.4.1.2 Geologic Structure

The Arroyo Grande Oil Field lies within a structurally complex area. Significant faults in the area include the Hosgri, Nacimiento, West Huasna, and Rinconada faults. Smaller faults include the Los Osos fault zone, the Edna fault, the Indian Knob fault; the Wilmar Avenue, the Oceano, and the Pecho faults (see Figure 5.4-2). Fault movement includes reverse, strike-slip, and normal types of displacement (ERCE 1991; Dames & Moore 1986). Price Canyon trends north-northeast, cross-cutting the regional east-west or northwest-southwest structural grain. The area also contains a less well-defined north-south fault set (Dames & Moore 1986). There are no known active faults in the project area. The proposed project site is not located within an area susceptible to liquefaction or landsliding, according to the County of San Luis Obispo Safety Element.

5.4.1.3 Topography

Elevations within the site range from a high of 607 feet above sea level in the northern segment of the site to approximately 100 feet above sea level on the east side of the site within the Pismo Creek drainage. The topography at the site is characterized by three main hills (rising to elevations of 442, 506, and 607 feet above sea level) separated by valleys at elevations of approximately 200 feet above sea level.

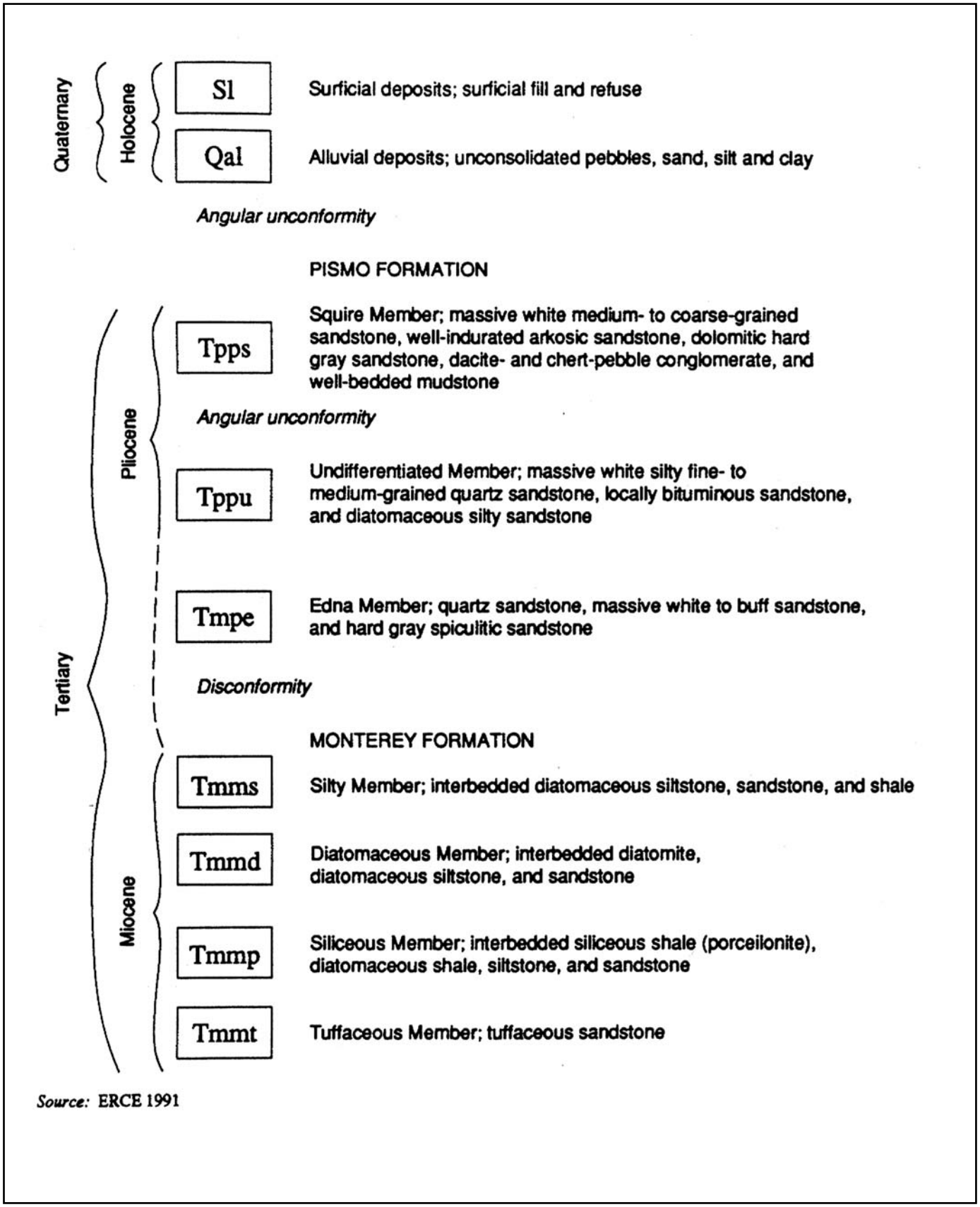
5.4.1.4 Petroleum Occurrence

The Arroyo Grande field is located on the north flank of the Pismo syncline, strata dip southwest; oil-producing zones are deeper in that direction. A structural saddle in the center of the field coincides with a nearly barren zone at depth and divides the field into two major producing areas, north and south. In the northern area, where most of the currently-producing wells lie, the producing zones are shallower and structurally complex, being broken by several inactive faults into roughly half a dozen blocks. The faults isolate the individual blocks, requiring closer and more irregular well spacing to produce the available oil.

A minor amount of natural gas is produced with the oil and is used to fuel the steam generators. Crude oil produced from the Arroyo Grande field has API Gravities ranging from 14 to 22 degrees and 1.6 percent sulfur content, average for California crude oils which range from 0.8 to 2.0 percent sulfur (Lawrence, 1958).

5.4.1.5 Soils

Soils found in the project site are predominantly comprised of weathering products of Pismo formation sandstones. The dominant soil type at the proposed RO plant site is Arnold Loamy Sand is typically developed on 5 to 15 percent slopes. Loamy sands are typically 70 to 90 percent sand with varying percentages of silt and clay constituents making up the remaining 10 to 30 percent.



Source: SAIC

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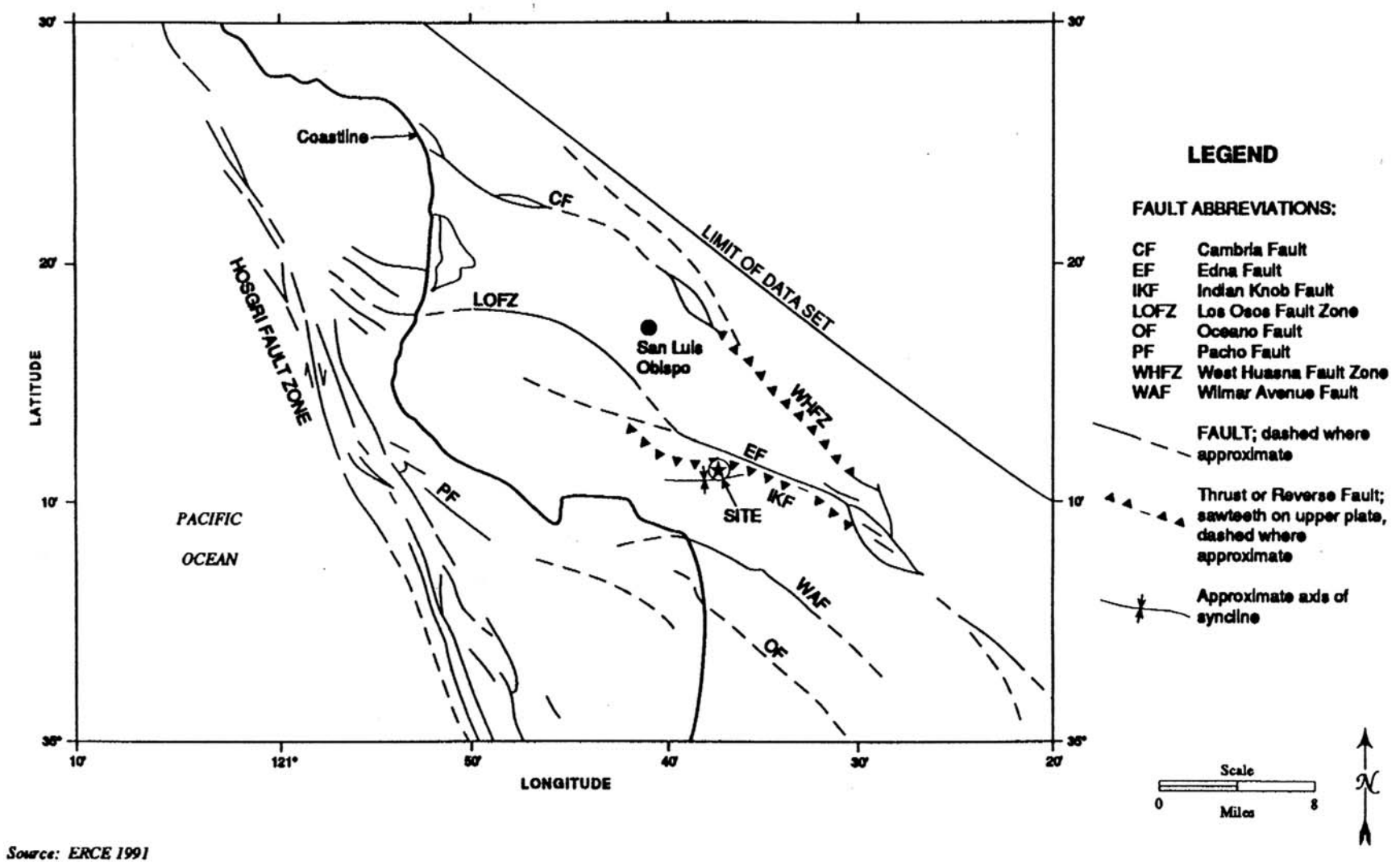
STRATIGRAPHIC COLUMN FOR PRICE CANYON AREA

FIGURE 5.4-1



Source: ERCE 1991

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MAJOR FAULT STRUCTURES NEAR PRICE CANYON

FIGURE 5.4-2

The parent material for the Arnold loamy sand is derived from unconsolidated material weathered from the nearby siliceous marine sandstones of the Pismo formation. Due to the high quartz content of these weathered materials, the soils derived from them have not been able to develop a significant amount of clay content. This results in a loamy sand texture with a high permeability (i.e., low available water capacity), in turn which leads to limited plant growth and minimal organic matter accumulation (U.S. SCS, 1984).

5.4.2 Impact Analysis

5.4.2.1 Thresholds of Significance

Based on the County of San Luis Obispo's CEQA Guidelines, an impact would be significant if any of the following conditions, or potential thereof, would result with implementation of the proposed project:

1. Exposure of people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of known earthquake fault, strong seismic ground shaking, seismic-related ground failure, including liquefaction, or landslides;
2. Result in soil erosion, topographic changes, loss of topsoil or unstable soil conditions, from project-related improvements, such as vegetation removal, grading, excavation or fill;
3. Result in the loss of a unique geologic failure;
4. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse;
5. Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the General Plan, Area Plan, or Zoning Ordinance) adopted for the purpose of avoiding or mitigating an environmental effect; or,
6. Preclude the future extraction of valuable mineral resources.

5.4.2.2 Short-Term Impacts

Impact GEO-1: Construction of the proposed project may result in a substantial, or potentially substantial, adverse change in the physical condition of the land.

Discussion: Topography will be impacted by construction. The proposed project will require the construction of new soil pads, construction of approximately 14,600 linear feet of pipelines, and the modification of an existing basin. Site disturbance would consist of approximately 13,610 cubic yards of cut and approximately 12,280 cubic yards of fill (with a balance of approximately 1,330 cubic yards), resulting in a total disturbed area of approximately 5.6 acres. The proposed construction would be limited to a canyon within the developed area of the oil field and would not substantially alter the existing topography. Potential soil erosion and vegetation removal impacts would be addressed by Mitigation Measures HYD-1 and BIO-6. Therefore, the physical change to the land is considered adverse, but less than significant.

Impact Category: Class 3

Threshold of Significance: 2

Mitigation Measures: Since no significant impacts were identified, no mitigation is required.

Residual Impacts

None

5.4.2.3 Long-Term Impacts

Impact GEO-2: Construction of new graded pads and proposed detention pond modifications could result in unstable slopes prone to failure during a seismic event.

Discussion: The applicant proposes to utilize an existing unused detention basin for the temporary storage of treated water prior to discharge or re-use at adjacent properties. The pond would be lined to reduce percolation of the stored water. A geotechnical engineering study will be required as a part of the submittal for grading permits. Construction of new graded pads would require approval of a grading plan reviewed by the County Planning and Building Department's grading plan checker. County inspections and independent geotechnical soils testing would be required during the course of grading activities to ensure that the grading activities meet County grading requirements. Mitigation Measure GEO-2 would ensure that impacts associated with slope failure would be less than significant.

Impact Category: Class 2

Thresholds of Significance: 1-5

Mitigation Measure GEO-2: The applicant shall provide the County with a geotechnical engineering report prepared and certified by a State of California licensed geotechnical engineer which addresses slope stability, landslides, liquefaction, settlement, seismic hazards, and expansive soils at the area of proposed facilities. The applicant shall implement the recommendations contained in the geotechnical engineer's report in preparation of grading plans and during construction.

Residual Impacts

No significant residual impacts are anticipated with implementation of the mitigation measure presented above.

Impact GEO-3: The treatment and discharge of produced water could result in decreased oil production due to the loss of reservoir pressures.

Discussion: The proposed project would result in the treatment and discharge of approximately 840,000 gallons per day of produced water generated during oil production activities. Currently, produced water is re-injected into the oil producing formation. Steam is also injected into the oil-producing formation to enhance oil recovery. The applicant has stated that the re-injection of produced water interferes with the ongoing steam injection activities. The removal of water from the oil-producing formation will lower reservoir pressures which could have a negative impact on oil production rates within the oilfield. It is anticipated that the applicant will continue to

monitor reservoir pressures as part of its ongoing reservoir management practices and adjustments would be made to ensure that oil production rates are maintained.

Impact Category: Class 3

Thresholds of Significance: 6

Mitigation Measure: None required.

Residual Impacts

None

5.4.2.4 Cumulative Impacts

Project Sites for the King South Ranch and Tentative Tract Map No.2388 both drain to Pismo Creek. No significant cumulative geologic or soils impacts are anticipated to result from approval of the proposed project. Refer to Section 5.5 for a discussion of potential drainage, erosion, and sedimentation impacts to Pismo Creek resulting from the proposed project and other projects in the Pismo Creek watershed.

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5.5 HYDROLOGY AND WATER QUALITY

This section addresses potential impacts of the proposed produced water treatment facility on surface water hydrology and water quality. Specifically, this section discusses the existing hydrologic and water quality conditions found in Pismo Creek and the surrounding basin. Potential impacts associated with the proposed water reclamation facility are analyzed and mitigation measures proposed to reduce significant impacts have been included.

The proposed project would develop a water reclamation facility at the PXP Arroyo Grande Oil Field to facilitate continued operations associated with the approved Phase IV Development Plan. See Section 3.0 Project Description for a detailed discussion of the water treatment process proposed by the applicant.

Published reference documents and applicant-supplied information was used in assessing the potential impacts from the proposed project in this SEIR. Water resources reports used in preparation of this SEIR analysis include:

- *Revised Hydrologic, Water Quality, and Biological Characterization of Pismo Creek* (Entrix Inc., 2006);

  This report augments information presented in the Application and Supplemental Information submitted to San Luis Obispo County Department of Building and Planning on May 22, 2006. This report includes a baseline characterization of conditions in Pismo Creek, and an assessment of impacts to hydrology, water quality, and biological resources as a result of the project;

- *Reasonable Potential Analysis and Options Analysis, Plains Exploration and Production Company, Produced Water Reclamation Facility, 1821 Price Canyon Road, Pismo Beach, California,* prepared by Entrix, Inc. and dated March 16, 2007.

  This report includes information requested by the Regional Water Quality Control Board in their October 6, 2006 letter, including detailed information on the proposed water treatment process, a summary of water quality data for produced water samples collected from the oil field, and alternative water disposal methods considered for the project.

- Laboratory analytical reports prepared by Calscience Environmental Laboratories, Inc. and summary tables of water sample analytical data provided by the applicant for pilot test runs conducted in 2006 for the proposed treatment system.

- *San Luis Obispo County Public Works Department Hydrologic Report* (for the Years 2001 through 2003) (hereinafter referred to as the Hydrologic Report);

  This report includes a summary of the hydrological conditions for San Luis Obispo County for the 2001-02 and 2002-03 Water Years. Data is presented for precipitation, evaporation, stream flow, groundwater and reservoir operations; and

- *California Groundwater Bulletin 118 – San Luis Obispo Valley Groundwater Basin.*

This report provides information on hydrologic basin in the project area as well as groundwater quality.

5.5.1 Setting

The following sub-sections present setting information regarding hydrology, surface water quality, and groundwater resources in the vicinity of the project site.

5.5.1.1 Hydrology

The Pismo Creek watershed area is approximately 47 square miles, and attains a maximum elevation of almost 2,865 feet above mean sea level (msl). The watershed consists of approximately 54 percent mountainous and foothill area and 46 percent valley area. Pismo Creek measures approximately 13 miles in length from its headwaters to its confluence with the Pacific Ocean.

There is no stream gauge in Pismo Creek, and as such there are no long-term hydrologic records. Entrix conducted stream flow measurements within Pismo Creek at the project site. Measured base flow conditions during the Entrix study period ranged from 0.9 to 1.76 cubic feet per second (cfs). The peak flow measured during a 2006 storm event was 98 cfs. Entrix utilized the available data for input to a widely used hydraulic model (US Army Corps of Engineers HEC-RAS) which yielded a bankfull flow of 530 cfs. This flow is equivalent to the 2-year recurrence interval flow, and typically measures the flow before the stream enters the floodplain. Entrix calculated the 10-, 50-, and 100-year recurrence interval flows for Pismo Creek and derived estimated flow rates of 6,703 cfs, 32,239 cfs, and 55,937 cfs, respectively.

5.5.1.2 Surface Water Quality

The Pismo Creek watershed is known to contain naturally-occurring inorganic constituents at levels exceeding drinking water standards, and to contain naturally-occurring oil and gas seeps that can result in detectable concentrations of total petroleum hydrocarbons (TPH), volatile organic compounds (VOCs), and regulated metals in surface water and groundwater. The Entrix Report presents a characterization of baseline water quality in Pismo Creek, with an emphasis on the area proposed to receive water from the Produced Water Reclamation Facility.

As part of this study, the applicant initiated a sampling program at three locations (upstream, downstream and near the proposed discharge area) under existing operational and hydrological conditions. Sample location P-1 is the uppermost site, located at the eastern property line near Edna Valley and constitutes inflow to the oil field. Sample location P-2 is directly upstream of the proposed discharge site, and just below the Hyla Crossing of Pismo Creek. Sample location P-4 is downstream of the proposed discharge site at the western property line to determine water quality conditions leaving the project area.

Of the total suite of priority pollutants and water quality constituents investigated, 75 were detected in Pismo Creek during at least one of the surveys. All detections were recorded in both wet and dry sampling rounds, with the exception of six analytes found in all three sampling events, and three in the storm event only. Sample locations within the oil field (P-2

and P-4) indicate similar water quality to the sample approximately 2,000 feet upstream from the oil field (P-1).

The 75 detected compounds in existing creek water samples include metals, semi-volatile organic compounds (SVOCs), VOCs, pesticides, and inorganic compounds. The detections were compared to appropriate regulatory standards. Three compounds were identified at concentrations above Basin Plan water quality objectives, as summarized in the following table:

Table 5.5-1. Pismo Creek Baseline Basin Plan Water Quality Objectives

Type	Constituent	Max (mg/L)	Site	Basin Plan (mg/L)	Exceed Basin Plan Thresholds?
Metal	Selenium	0.0963	P-1	0.01	Yes
Metal	Iron	2.95	P-1	1	Yes
Metal	Zinc	0.172	P-1	0.12	Yes

Source: Entrix, 2006
mg/L – milligrams per Liter

5.5.1.3 Groundwater Resources

Groundwater Supply. The project area lies within the Pismo Creek Valley Basin (refer to Figure 5.5-1). The Pismo Basin (or Pismo Creek Hydrologic Subarea) is relatively small with a total storage capacity of 30,000 acre-feet. The estimated annual safe/yield is 2,000 acre-feet per year, but annual consumptive use has been over 2,100 acre-feet, indicating the basin is slightly over-drafted (San Luis Bay Inland Planning Area). As a result, the City of Pismo Beach is currently at a Level of Severity II for water resources (County of SLO, RMS Annual Report, 2005).

Groundwater flow in the region is generally controlled by the local topography and geology. Groundwater in the site area follows the topographic gradient to the southwest, and is probably bounded by the local hills to the northwest and southeast. The majority of stored potable groundwater at the site is likely to be found in the shallow alluvial deposits associated with Pismo Creek.

The nearest municipal groundwater well to the proposed project is located in the Edna Valley. According to the referenced DWR document titled *California's Ground Water*, well yields within the Pismo Creek Valley Groundwater Basin average approximately 350 gallons per minute, with maximum yields of approximately 500 gallons per minute, and the groundwater production zones within the Pismo Creek Valley Groundwater Basin extend from depths of approximately 10 to 110 feet below ground surface.

Groundwater Quality. Groundwater is produced from three water wells within the property. Groundwater at the Arroyo Grande oilfield overlies a naturally occurring oil-bearing formation. The oil regularly migrates naturally upward from lower elevations toward the surface, frequently coming into contact with the groundwater.

The applicant conducted groundwater sample collection and chemical analyses at the project site in June 2004. Groundwater samples were collected from two water supply wells located within the project site and operated by PXP. The groundwater samples were submitted to a local analytical laboratory for chemical analyses for the following parameters: pH values, electrical conductivity, total dissolved solids (TDS), heavy metals, and TPH. The analytical results for water samples collected in 2004 were compared to analytical results for samples collected from the same wells in 1986 and 1993. A review of the analytical results shows that there has been no significant increase in metals or TDS concentrations. TPH was not indicated above reporting limits in samples collected from the two wells. Electrical conductivity and pH values have increased slightly in each well but do not exceed state or federal drinking water standards known as Maximum Contaminant Levels (MCLs). Comparison of this data with historical data does not indicate a significant impact to groundwater from ongoing steam or wastewater injection activities at the oil field.

Analyses of data from seven public supply wells show an average TDS content of 583 milligrams per Liter (mg/L) in the basin with a range from 450 to 800 mg/L. The water quality objective of the Water Quality Control Plan for the Central Coast Region for TDS is 1,000 mg/L; however, the water quality for the Pismo Creek Valley Groundwater Basin is characterized by Department of Water Resources (DWR) as having elevated TDS, chloride, nitrate, and sulfate concentrations.

As part of Phase IV EIR implementation, a Sentry Groundwater Monitoring Well Program was incorporated into a groundwater monitoring program as an added protection measure. This monitoring and reporting program has been implemented and evaluates constituents in the groundwater aquifer associated with the Pismo Creek alluvial valley.

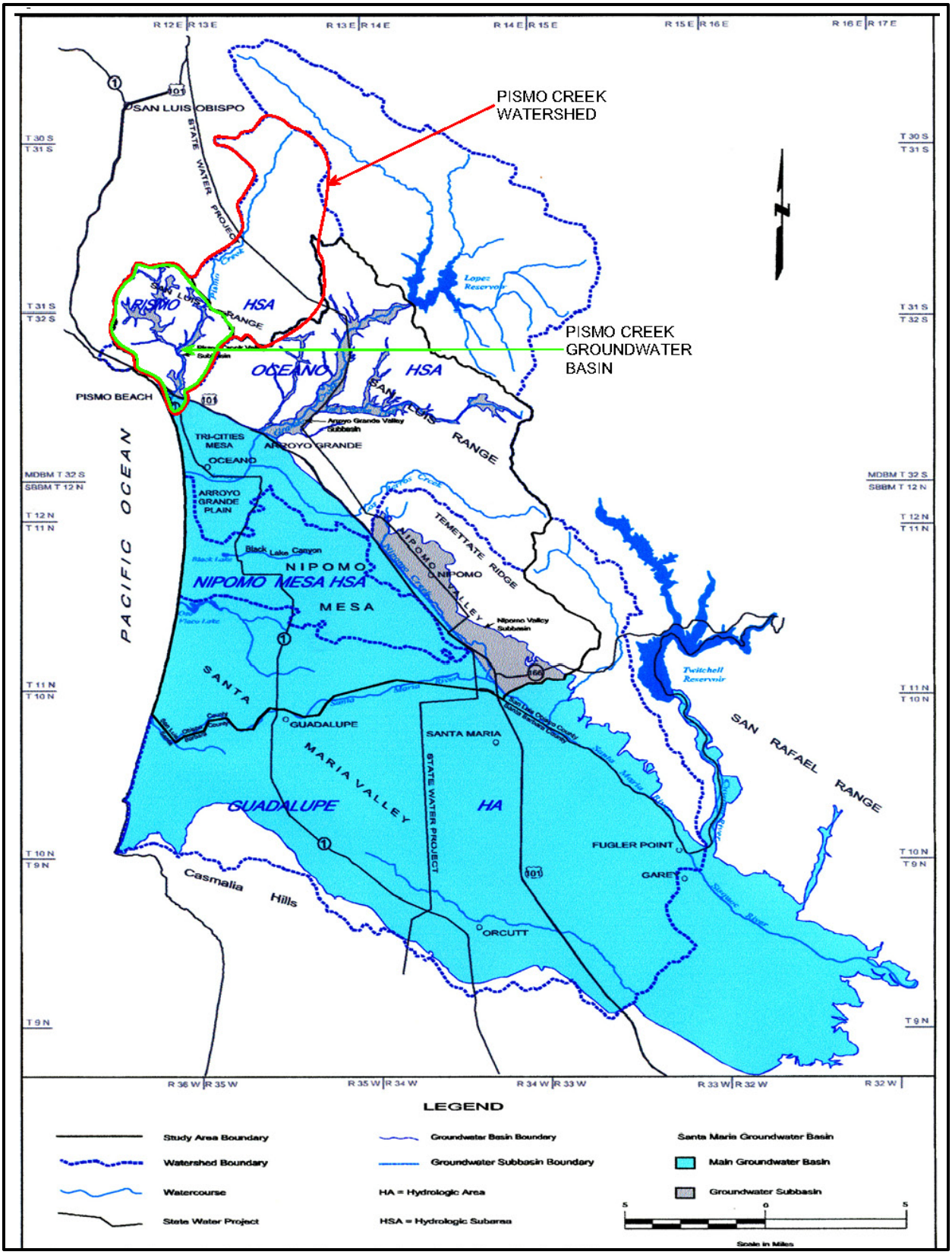
5.5.1.4 Flooding

No stream gauges are currently located on Pismo Creek. Entrix utilized direct flow measurements, combined with estimations of flows using a hydraulic model and approximating hydrologic characteristics using data from nearby Toro Creek which is a gauged, analogous coastal watershed within San Luis Obispo County, to determine anticipated flows within Pismo Creek. The instantaneous peak streamflow data for Toro Creek between 1971 and 1978 (the available period of record) was used to calculate recurrence interval flows using the USGS PEAKFQ Version 4.1 software. The recurrence interval is the average interval, in years, between the occurrences of a flood of equal or greater magnitude to the specified value. The results of the analysis indicate a 2-year recurrence interval flow of approximately 143 cfs for Toro Creek which correlates to a flow of 480 cfs for Pismo Creek which is close to the bankfull flow estimate of 530 cfs predicted by the hydraulic model performed for the study (Entrix, 2006).

5.5.2 Regulatory Setting

5.5.2.1 Federal Policies and Regulations

The Safe Drinking Water Act implemented by the U.S. Environmental Protection Agency (EPA) is the primary federal regulation controlling drinking water quality. It was originally implemented in 1974 with significant revisions in 1986. The Act originally set standards for 83



Source: Department of Water Resources, Southern District

padre associates, inc.
ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

PISMO CREEK HYDROLOGIC BASIN

FIGURE 5.5-1

individual constituents, including pesticides, trihalomethanes, arsenic, selenium, radionuclides, nitrates, toxic metals, bacteria, viruses, and pathogens. The 1996 amendment to the Act made some significant changes, most of which resulted in more stringent application of controls. The amended Act also adopted a more rigorous schedule for amending the Disinfectants/Disinfection By-Products Rule and the Enhanced Surface Water Treatment Rule, both of which took effect in 1998. Federal permits relating to water utilities or infrastructure would be required only if the proposed project resulted in Corps involvement or USFWS involvement if issues concerning the project resulted in construction of new infrastructure such as pipelines, utility lines, etc. in sensitive habitat areas. The proposed project will require authorization from the U.S. Army Corps of Engineers under Section 404 of the SDWA.

5.5.2.2 State Policies and Regulations

The State Water Resources Control Board (SWRCB) and Central Coast Regional Water Quality Control Board (RWQCB) have responsibility for maintaining water quality in the State of California under the authority of the federal Clean Water Act, and the State Porter-Cologne Water Quality Control Act (PCWQCA). The Boards exercise this authority through regulations contained in Title 23 and 27 of the California Code of Regulations (CCR). SWRCB provides statewide policy direction and administrative functions, while the nine RWQCBs have principal authority for permitting and enforcing requirements to control any discharge to surface waters, groundwater, or wetlands.

The RWQCBs also direct, oversee, inspect, and enforce tasks associated with the assessment, remedial monitoring, and closure of sites with discharges that have impacted or could impact the waters of the State. Under the PCWQCA, each RWQCB may impose more stringent requirements on discharges of waste than any statewide requirements as needed to protect water quality based on identified beneficial uses.

Water quality goals and cleanup levels at a site are determined by a variety of site-specific factors. As a broad goal, the SWRCB and RWQCBs attempt to restore all contaminated sites to background levels according to State Board's Resolution No. 68-16 "State of Policy With Respect to Maintaining High Quality Waters in California (often referred to as the State's Anti-degradation Policy"). Resolution 68-16 states that "whenever the existing quality of water is better than the quality established in policies…such existing high quality will be maintained." The Resolution further states that degradation will only be allowed if it is in the best interest of the State, and will not impair present and future beneficial uses. SWRCB Resolution 92-49, "Policies and Procedures for Investigation and Cleanup and Abatement of Discharges under Water Code § 13304" empowers the RWQCBs to pursue the "complete cleanup of waste discharged and restoration of affected water to background conditions (i.e., the water quality that existed before the discharge)".

Federal and State water quality criteria and standards designed to protect human health and welfare, agricultural use, and aesthetics have been established in a wide range of references. Of all water quality criteria, only the United States Environmental Protection Agency's (U.S. EPA) and California Environmental Protection Agency's (Cal/EPA) primary Maximum Contaminant Levels (MCLs) set mandatory water quality criteria for drinking water. RWQCBs have established MCLs as minimum cleanup standards. However, MCLs have not

been developed for all chemical constituents. In such cases, the following water quality goals generally are used:

- California Safe Drinking Water and Toxic Enforcement Act (Proposition 65);
- Cal/EPA Office of Environmental Health Hazard Assessment Public Health Goals ;
- U.S. EPA Suggested No Adverse Response Level;
- National Toxic Rule; and
- California Toxic Rule.

Construction Storm Water General Permit

The applicant would need to obtain coverage under the General Construction Storm Water General Permit, issued by the SWRCB (Permit Order 99-08-DWQ) for the proposed construction activities. To comply with the general permit, the applicant would be required to prepare and implement a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP is required to include the following elements: 1) identify the potential sources of storm water pollution at the Project Site; 2) identify, select, and implement BMPs to reduce the potential for storm water pollution; 3) train employees in storm water pollution prevention BMPs; and 4) regularly monitor and maintain the effectiveness of the selected BMPs through plan evaluation and annual storm water quality compliance certification.

5.5.3 Impact Analysis

5.5.3.1 Thresholds of Significance

CEQA Appendix G (Environmental Checklist) states that a significant water resource impact would occur if the project:

1. Substantially depletes groundwater supplies or interferes substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted);
2. Requires or results in the construction of new water treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental issues; or,
3. Did not have sufficient water supplies available to serve the project from existing entitlements and resources;
4. Per State CEQA Guidelines, if a project were to substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted);
5. Any project-related exceedance of the water quality objectives of the Central Coast

Water Quality Control Plan;

6. Any project-related effect that would substantially reduce groundwater production of wells in the project area;
7. Substantially alter drainage patterns which would result in substantial erosion or siltation;
8. Substantially increase the rate or amount of surface run-off;
9. Expose people or structures to significant risk of loss, injury or death involving flooding; and,
10. Place structures in a 100-year flood hazard zone that would impede or redirect flood flows.

Short-Term Impacts

Impact HYD-1: Construction of the proposed project could result in short-term increases in erosion and sedimentation resulting from earth-moving operations and exposed soils.

Discussion: Construction of the project will require land clearing operations to construct several new soil pads for new facilities. Approximately 5.6 acres of land would be disturbed during the course of construction activities. During clearing operations, vegetation will be removed and soil will be exposed. Exposed sandstone-derived soil is vulnerable to erosion by rainfall runoff. Soil eroded from the project site could ultimately be deposited into Pismo Creek, which would increase turbidity and sedimentation.

Impact Category: Class 2

Thresholds of Significance: 7, 8

Mitigation Measure HYD-1:

A. In compliance with the Land Use Ordinance, the applicant will prepare and implement a Sediment and Erosion Control Plan (SECP) for the proposed project. The SECP will include:

- Slope surface stabilization measures, such as temporary mulching, seeding, and other suitable stabilization measures to protect exposed erodible areas during construction, and installation of earthen or paved interceptors and diversion at the top of cut of fill slopes where there is a potential for erosive surface runoff;
- Erosion and sedimentation control devices, such as energy absorbing structures or devices, will be used, as necessary, to reduce the velocity of runoff water to prevent polluting sedimentation discharges;
- Installation of mechanical and/or vegetative final erosion control measures within 30 days after completion of grading;

- Confining land clearing and grading operations to the period between April 15 and October 15 to avoid the rainy season consistent with the County Land Use Ordinance and SWPPP requirements;

- Minimizing the land area disturbed and the period of exposure to the shortest feasible time;

- The SECP will be prepared in accordance with the Land Use Ordinance; and,

- Install long-term drainage devices at new/modified pads, including headwalls, basins, culverts with down-drains and energy dissipating devices (riprap or diffusers).

B. In compliance with Section 23.05.020 – Grading, the applicant will prepare a grading plan for the project.

C. PXP will comply with the requirements under a general stormwater construction permit. Such requirements will include preparation of a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP shall include provisions for the installation and maintenance of Best Management Practices to reduce the potential for erosion of disturbed soils at the Project site.

Residual Impacts
Impact Category = Class 3. Implementation of this mitigation measure will reduce erosion and sedimentation impacts from construction activities to less than significant levels.

Long Term Impacts

Impact HYD-2: Discharge of treated water to Pismo Creek would affect stream geomorphology due to higher dry-season flows.

Discussion: During low flows in Pismo Creek, the proposed water reclamation facility would discharge 1.3 cfs and would approximately equal base flows measured in the Entrix report. The continuous discharge would approximately double the summer flow conditions. During prolonged drought, the discharge could constitute the only flow in the creek. During storm flows, the discharge would not be discernable in the large volume of streamflow. The results of hydrologic modeling conducted by Entrix indicates that the additional flow of 1.3 cfs would result in a minimal impact to the hydrologic conditions in Pismo Creek. With implementation of the mitigation measures HYD-4a, HYD-4b, and HYD-5, the increased summer flows are anticipated to result in a beneficial impact to fisheries and aquatic species within Pismo Creek (refer to Section 5.3 – biological resources). Additionally, erosion at the discharge point would be reduced by gunite applied to the rip-rap slope (see Figure 3-7). This is anticipated to be a less than significant impact.

Impact Category: Class 3

Thresholds of Significance: 2, 7

Mitigation Measure: Implement Mitigation Measures HYD-4a, HYD-4b, and HYD-5.

Residual Impacts

Impact Category = Class 3. Implementation of the above-referenced measures would reduce geomorphology impacts to a less than significant level.

Impact HYD-3: Groundwater supply may be impacted by the project.

Discussion: Water from the three onsite wells is used only for landscaping and domestic uses. This purpose would not change with implementation of the proposed project. All water used in steam injection comes from treating produced water. The proposed project would treat water produced from the oil-bearing formation and either discharge the water to Pismo Creek or utilize it beneficially on adjacent agricultural lands thereby reducing the amount of water pumped from the shallow aquifer. Up to 840,000 gallons per day would be discharged to Pismo Creek under the discharge only option. With either disposal method, the treatment and re-use or discharge of produced water would have a beneficial impact on the shallow alluvial aquifer along Pismo Creek downstream of the oil field. This is considered a beneficial impact.

Impact Category: Class 4

Thresholds of Significance: 2, 3, 4

Mitigation Measure: None required.

Impact HYD-4. The proposed project could result in water discharges that exceed water quality objectives of the Central Coast Water Quality Control Plan or the California Toxics Rule.

Discussion: Based on a review of the water quality data for produced water samples supplied by PXP and correspondence between PXP and RWQCB, the primary water quality constituents of concern associated with the proposed water treatment facility include the following: pH, temperature, turbidity, dissolved oxygen, chlorides, sodium, sulfate, boron, non-ionic ammonia, 2-butanone, acetone, and phenol. Potential water quality impacts to sensitive aquatic species present in Pismo Creek and the Pismo Creek estuary include steelhead and tidewater goby. PXP's pilot test water quality data was reviewed to determine the anticipated water quality to be discharged from the proposed water treatment facility. Table 5.5-1 below presents the pertinent water quality analytical data from the untreated water samples (influent) and pilot study treated water samples (effluent).

Table 5.5-2 – Reported Pre- and Post-Treatment Concentrations of Constituent of Concern for PXP RO Water Treatment Facility
(all results reported in micrograms per Liter, µg/L, or parts per billion)

Constituent	Produced Water – Average (influent)[a]	Pilot Test Permeate (effluent)[a]	Applicable Regulatory Standard
2-butanone	860	56	--
Acetone	3,900	500	--
Benzene	12.1f	<0.50	1.0[b]
Ammonia	1500	280	25[c]
Phenol	86.67[f]	<5.0	1[d]
Arsenic	<10	<0.010	0.018[e]
Boron	7,440	730	--
Mercury	<0.2	NA	0.012[e]
Sodium	112,500	1,800	--
Chloride	500,000	6,900	--
Sulfate	13,000	1,700	--

Notes:

NA Not analyzed

-- Not applicable

a/ Pilot test data provided by PXP, 2006, except as noted.

b/ California Primary Maximum Contaminant Level (MCL) for drinking water.

c/ Basin Plan, expressed as NH_3 as N in receiving waters

d/ Central Coast Regional Water Quality Control Board, Basin Plan.

e/ National Toxics Rule

f/ Produced water sample analytical results, Entrix, Inc., January 2007.

-- No published state or federal regulatory standards.

A review of the pilot test data indicates that the proposed treatment technology would meet the applicable state and federal water quality criteria, including California Code of Regulations Title 22 criteria for organic and inorganic compounds in drinking water, for most of the key constituents analyzed during the pilot study.

Phenol. Phenol, also known as carbolic acid, is both a natural substance and a manufactured chemical. Phenol is a semi-volatile organic compound and is found in liquid form in many consumer products including mouth washes, cleaning products, and lozenges. Phenol has a distinct sickeningly sweet odor. Taste and smell of

phenol are possible at levels lower than those associated with effects that are harmful. Exposure to phenol in high amounts can result in skin burns, liver damage, dark urine, irregular heartbeat and, in some cases, death.

According to the applicant, phenol was not detected in effluent water samples collected during the pilot test study using the contract laboratory's analytical method detection limit of 5 µg/L. The analytical method detection limit by PXP's contract laboratory is higher than what is required by the RWQCB under the Basin Plan. Therefore, additional testing will be required to ensure that the discharged water meets the Basin Plan and other state and federal water quality standards.

A review of readily available literature and information supplied by PXP indicates that phenol can be removed from water through reverse osmosis. Phenol would not be substantially removed by air strippers due to its low Henry's Law constant (H_{cc}). This is considered a potential significant impact to aquatic species in Pismo Creek from the proposed discharge to Pismo Creek.

Table 3-7 in the Basin Plan provides specific water quality objectives for chlorides, sulfates, boron, and sodium for some of the sub-basins within the vicinity of the project. However, no specific water quality objectives have been adopted by the RWQCB for Pismo Creek.

The proposed project would be required to comply with applicable federal and state water quality standards regulated under the National Pollutant Discharge Elimination System (NPDES), which would ensure any discharges do not violate water quality objectives. However, to ensure compliance with NPDES regulations, mitigation is provided to reduce water quality impacts to a level of less than significant.

Impact Category: Class 2

Thresholds of Significance: 2, 4, 5

Mitigation Measure HYD-4:

A. Prior to operation, the applicant shall obtain an NPDES permit from the RWQCB. The requirements of the Permit shall be fully implemented including waste discharge limitations, and monitoring and reporting requirements.

B. ~~During operation, the applicant shall utilize granular activate carbon as a polishing unit to ensure that treated water does not contain phenol or other organic compounds that are present in concentrations in excess of RWQCB water quality standards but less than the contract laboratory's analytical method detection limit. The need for GAC treatment may be eliminated by the County in consultation with the RWQCB, CDFG, and NMFS, at such a time that analytical laboratory method limits can detect organic compounds at or below the RWQCB water quality standards.~~ During plant operations, the applicant shall report phenol concentrations ~~indicted~~ in effluent samples indicated above the method detection limits but less than quantitation limits. At such a time that laboratory analytical methods allow for lower quantitation limits, the applicant shall report phenol concentrations to the RWQCB to ensure compliance with the RWQCB's water quality standards.

Also refer to Mitigation Measure BIO-8 regarding proposed mitigation measures to ensure temperature and dissolved oxygen concentrations due not exceed ranges required for sensitive aquatic species.

Residual Impacts

Impact Category = Class 3. Implementation of this mitigation measure would reduce impacts to less than significant levels.

Impact HYD-5. An upset condition at the water treatment facility could result in the release of water not meeting water quality standards into Pismo Creek.

Discussion: The proposed project would include water quality monitoring devices that record water quality parameters and alarms for significant changes in water quality. Both automatic and operator controls would shut down the system in the event of an upset in water quality parameters.

Impact Category: Class 2

Thresholds of Significance: 5

Mitigation Measure HYD-5: The proposed water treatment system shall be constructed with sufficient holding capacity to contain water that fails to meet water quality per the NPDES permit or other agency permit conditions so that water not meeting specifications is not released to Pismo Creek.

Residual Impacts

Impact Category = Class 3. Implementation of this mitigation measure would reduce impacts to less than significant levels.

5.5.2.4 Cumulative Impacts

Project sites for the Spanish Springs project and Tract Map 2554 both appear to drain to Pismo Creek. As such, construction of these two projects may cause construction-related turbidity and sedimentation of Pismo Creek. Multiple projects near the creek could also increase erosion and increase creek sediment load, thus, resulting in a long-term impact for the area. However, the incremental contribution of the proposed project to this cumulative impact would be not substantial.

The proposed project will include the treatment of produced water to meet RWQCB discharge requirements per state and federal water quality standards for discharge to a surface water body containing sensitive aquatic species. The applicant does not propose to provide disinfection treatment as part of the water treatment system. Disinfection by-products, such as trihalo methanes, would not be allowable in the proposed water discharge to Pismo Creek. The water will not be disinfected, therefore, will not meet the criteria as a drinking water source. Therefore, the water is not anticipated to create growth-inducing impacts.

5.6 HAZARDS AND HAZARDOUS MATERIALS

5.6.1 Introduction

This section addresses the potential for impacts related to the presence and use of hazards/hazardous materials at the proposed project site.

5.6.2 Environmental Setting

The project is located in southern San Luis Obispo County, which is situated in the southern Coast Ranges geomorphic province of California. The Arroyo Grande Oil Field is located in Price Canyon in the southern portion of the San Luis Range.

The oldest rocks in the San Luis Range belong to the Jurassic-aged Franciscan formation, which forms the basement complex. The Franciscan formation is predominantly comprised of graywacke sandstone, with lesser amounts of shale, limestone, chert, and altered submarine volcanic rocks. Thickness of the Franciscan formation is estimated to be in excess of 25,000 feet. The Franciscan formation is unconformably overlain in the Arroyo Grande Oil Field by the Miocene-aged Monterey and Miocene/Pliocene-aged Pismo formations (ERCO 1981).

The Monterey formation is composed primarily of siliceous and porcelanous shales interbedded with dolomite/limestone, chert, and volcanic ash. The Monterey formation in the Arroyo Grande Oil Field is subdivided into four members: the Tuffaceous Member (Tmmt), the Siliceous Member (Tmmp), the Diatomaceous Member (Tmmd), and the Silty Member (Tmms) (ERCO 1981). Although no hydrocarbons are directly produced from the Monterey Formation, it is believed to be the source rock for the Arroyo Grande field reservoirs. The late Mio-Pliocene Pismo formation unconformably overlies the Monterey formation and consists of lenticular fine to coarse grained friable sandstone, calcareous siltstone, pebble conglomerate, and siliceous, cherty shale. The Pismo formation in the Arroyo Grande Oil Field area is subdivided into the Edna Member (late Miocene), an intermediate undifferentiated Member, and the Squire Member (Pliocene). The Edna Member is a massive buff to white coarse-grained bituminous sandstone, with layers of course pebble- or boulder-size components appearing randomly throughout the member.

Groundwater flow in the region is generally controlled by the local topography and geology. Groundwater in the site area follows the topographic gradient to the southwest, and is probably bounded by the local hills to the northwest and southeast. The majority of stored potable groundwater at the site is likely to be found in the shallow alluvial deposits associated with Pismo Creek.

The project site lies within an area of high fire hazard according to the County of San Luis Obispo Safety Element maps.

5.6.2.1 Current Site Conditions

The proposed project would be located within a developed area of the Arroyo Grande Oil Field. The proposed project site is located north of an existing separation facility and west of an existing natural gas treatment facility. The vicinity of the proposed project site has been utilized for petroleum production for many years and may contain areas of petroleum hydrocarbon-containing soil.

5.6.3 Regulatory Setting

The following section provides a brief description of some of the applicable state and federal regulations relating to the use, storage, and disposal of hazardous substances and petroleum.

5.6.3.1 Federal Laws/Regulations

Federal Water Pollution Control Act of 1972 (Clean Water Act). The Clean Water Act governs the control of water pollution in the United States. This Act includes the National Pollutant Discharge Elimination System (NPDES) program, which requires that permits be obtained for point discharges of wastewater. This Act also requires that storm water discharges be permitted, monitored, and controlled for public and private entities.

Resource Control and Recovery Act of 1974 (RCRA). RCRA was enacted as the first step in the regulation of the potential health and environmental problems associated with solid hazardous and non-hazardous waste disposal. RCRA, and the formation of the U.S. EPA to implement the RCRA, provide the framework for national hazardous waste management, including tracking hazardous wastes from point of origin to ultimate disposal.

Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA). Under CERCLA, owners and operators of real estate where there is hazardous substances contamination may be held strictly liable for the costs of cleaning up contamination found on their property. No evidence linking the owner/operator with the placement of the hazardous substances on the property is required. CERCLA, also known as Superfund, established a fund for the assessment and remediation of the worst hazardous waste sites in the nation. Exceptions are provided for crude oil wastes that are not subject to CERCLA.

Hazardous and Solid Waste Amendments of 1984 (HSWA). The HSWA law was enacted to close RCRA loopholes and regulated leaking underground storage tanks (USTs) specifically. The SWRCB, the RWQCB, and the local County Division of Environmental Health, as a Certified Unified Program Agency (CUPA) program, oversee UST regulations and cleanup of leaking USTs.

Asbestos Hazard Emergency Response Act of 1986 (AHERA). The AHERA is the federal legislation that governs the management and abatement of asbestos-containing materials in buildings.

National Emission Standards for Hazardous Air Pollutants; Asbestos, 40 CFR Part 61. This regulation requires the assessment and proper removal of asbestos-containing materials that could release asbestos when disturbed prior to the demolition of buildings.

Clean Air Act. The regulatory programs that govern stationary sources of air pollution apply to any facility that emits or has the potential to emit conventional pollutants: oxides of nitrogen and sulfur, carbon monoxide, VOCs or particulate matter. It may also apply to emission sources of certain toxic chemicals. In addition to the existing air district permitting programs required by state law and district rules, a new federal operating permit program must be implemented to meet EPA regulations adopted pursuant to Title V of the 1990 amendments of the Clean Air Act. Locally the Clean Air Act regulations are implemented and enforced by the San Luis Obispo APCD.

5.6.3.2 California Laws/Regulations

Porter-Cologne Water Quality Control Act (Division 7 of the California Water Code). The Porter-Cologne Act established a regulatory program to protect water quality and protect beneficial uses of the state's waters. The Porter-Cologne Act also established the State Water Resources Control Board and nine regional boards as the main state agencies responsible for water quality in the state. Discharges of wastes (including spills, leaks, or historical disposal sites) where they may impact the waters of the state are prohibited under the Porter-Cologne Act, including the discharge of hazardous wastes and petroleum products. The assessment and remediation of these waters are regulated by the regional boards, the RWQCB administers such waters in the vicinity of the proposed project.

Title 22, California Code or Regulations. Title 22 of the CCR regulates the use and disposal of hazardous substances in California. It contains regulatory thresholds for hazardous wastes which are more restrictive than the federal hazardous waste regulations.

California Health and Safety Code Sections 25500 et seq. The California community right-to-know hazardous material law applies to any facility that handles any hazardous material (chemical, chemical-containing products, hazardous wastes, etc.) in a quantity that exceeds reporting thresholds. The most common thresholds that trigger regulation based on that state statute are 500 pounds of solid, 55 gallons of liquid, and 200 cubic feet of compressed gas, based on the presence of individual chemicals. The basic requirements of hazardous materials and community right-to-know regulations for covered facilities include:

- Determining whether the facility handles hazardous materials;
- Immediate reporting of releases of hazardous materials;
- Submission and update of a Hazardous Materials Business Plan (including a accurate chemical inventory, site map showing hazardous materials storage locations, emergency response plan, and notification procedures) as required by the local administering agency;

- Notification of the local administering agency of the handling of specified quantities of acute hazardous materials and submission of a Risk Management Plan (RMP) as required;
- Annual submission for manufacturing facilities of a Toxic Chemical Release Report (Form R) if threshold amounts of certain toxic chemicals are made, or processed for use; and,
- Requirements for hazardous materials storage imposed by local administering agencies, fire departments, and California Occupational Safety and Health Administration (Cal/OSHA) standards.

California Air Resources Board - Air Toxics Control Measure. Under the California Air Resources Board Air Toxics Control Measure (ATCM) for Construction, Grading, Quarrying, and Surface Mining Operations, prior to construction permit issuance, a geologic evaluation is required to determine the presence or absence of naturally-occurring asbestos. If naturally occurring asbestos is found at the site, the applicant must comply with all requirements outlined in the Asbestos ATCM before grading may begin. These requirements may include, but are not limited to, 1) preparation of an "Asbestos Dust Mitigation Plan," which must be approved by APCD before grading begins; and 2) an "Asbestos Health and Safety Program", as determined necessary by APCD.

California Fire Code. The 2001 California Fire Code has been adopted by CDF/County Fire, which is the fire agency with jurisdiction over the project site. The California Fire Code contains minimum standards for many aspects of fire prevention and suppression activities. These standards include provisions for access, water supply, fire protection systems and fire resistant building materials. The California Fire Code also includes provisions for required setbacks for oil wells from buildings, storage tanks, and streets and railways.

5.6.3.3 County of San Luis Obispo Regulations

Energy Element. In 1995, the County of San Luis Obispo adopted the Energy Element as part of the County's General Plan. The Energy Element contains a goal of protecting public health, safety and environment, and several policies that promote the stated goal. Applicable policies are summarized below:

> Policy 56. Encourage existing and proposed facilities to focus on measures and procedures that prevent oil, gas, and other toxic releases into the environment. This policy is to ensure that facilities: (1) take measures to prevent releases and spills, (2) prepare for responding to a spill or release, and 3) provide for the protection of sensitive resources. A review of a facilities spill response plan, or reports from other agencies, should be completed to monitor compliance.
>
> Policy 64. Guideline 64.1. To reduce the possibility of injury to the public, facility employees, or the environment, the applicant shall submit an emergency response plan which details response procedures for incidents that may affect human health and safety or the environment. The plan shall be based on the results of the comprehensive risk

analysis. In the case of a facility modification, the existing response plan shall be evaluated by the safety review committee and revisions made as recommended.

5.6.4 Impact Analysis

5.6.4.1 Thresholds of Significance

For the purposes of the EIR, a potential impact related to the presence of hazardous materials and/or risk of upset impact of hazardous materials is identified as significant based on the following thresholds:

1. Create a significant hazard to the public or the environment through the routine transport, use or disposal of hazardous materials;

2. Create a significant hazard to the public or the environment through the reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;

3. Emit hazardous emissions or handle hazardous or acutely hazardous materials within one-quarter mile of an existing or proposed school;

4. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 (Cortese List) and, as a result, would create a significant hazard to the public or the environment;

5. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area;

6. For a project within the vicinity of a private airstrip, would the project result in the safety hazard for people residing or working in the project area;

7. Impair the implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; and,

8. Expose people or structures to a significant risk or loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

5.6.4.2 Project Impacts

Impact HAZ-1. Operation of the proposed water treatment facilities would include the use of containing hazardous chemicals which could potentially impact the project site, Price Canyon Road, and potentially Pismo Creek if ruptured during an upset condition.

Discussion: Operation of the proposed water treatment facilities would include the use of hazardous chemicals, including soda ash, caustic soda, sulfuric acid, and anti-scaling

additives. These chemicals would be stored on-site and used in the treatment system on a regular basis. The anticipated volumes of hazardous chemicals used or stored on-site would be limited to adequate amounts needed for the water treatment system. The use of these materials is not anticipated to result in a significant impact due to hazards to employees, the public, or the environment. No hazardous wastes are anticipated to be generated from the proposed project activities. The applicant would be required to submit an amended Hazardous Materials Business Plan with the County of San Luis Obispo Division of Environmental Health (SLODEH). See Impact AQ-2 (Section 5.2) for a discussion of hazardous emissions from the proposed air strippers.

Impact Category: Class 2

Thresholds of Significance Criteria: 3

Mitigation Measures: HAZ-1: Prior to system start-up, the applicant shall submit an amended Hazardous Materials Business Plan to the San Luis Obispo Division of Environmental Health for review and approval.

Residual Impacts

Impact Category = Class 3. Residual impacts would be less than significant.

Impact HAZ-2. Petroleum hydrocarbon-containing soil may be encountered during project construction activities.

Discussion: The project site is located within a developed area of the existing oil field that may contain contaminated soils. Contaminated soils could be disturbed during construction activities which may pose a risk to on-site workers. Off-site disposal of contaminated soils could pose a safety risk to the public if not disposed in a licensed disposal facility. In addition to the implementation of Mitigation Measure HAZ-2A, HAZ-2B addresses APCD requirements with regards to hydrocarbon-containing soils.

Impact Category: Class 2

Thresholds of Significance Criteria: 1, 2

Mitigation Measure:

HAZ-2A: The applicant shall complete an environmental site assessment of areas to be utilized for the proposed project to determine whether the project site has been impacted with petroleum or hazardous substances. The site assessment work plan shall be prepared by a registered professional and submitted to the SLODEH for review and approval prior to implementation. The site assessment activities shall include the advancement of drill holes and collection of soil and, if contamination is present, groundwater samples for chemical analyses. A site assessment report shall be submitted to SLODEH for review and approval. If necessary, a corrective action plan

shall be submitted to SLODEH for the proper management of contaminated soil and groundwater that may be disturbed as part of the proposed project grading activities. Corrective actions shall be completed at the project site to the satisfaction of SLODEH prior to implementation of the proposed grading activities. Corrective actions, other than compliance with the RWQCB's beneficial reuse provisions for crude oil-containing soil excavated during the course of project construction activities, shall not be required for naturally-occurring petroleum hydrocarbon containing soils present at the project site.

HAZ-2B: Should hydrocarbon contaminated soil be encountered during construction activities, the APCD must be notified as soon as possible and no later than 48 hours after affected material is discovered to determine if an APCD Permit would be required. In addition, the following measures shall be implemented immediately after contaminated soil is discovered:

- Covers on storage piles shall be maintained in place at all times in areas not actively involved in soil addition or removal;
- Contaminated soil shall be covered with at least six inches of packed uncontaminated soil or other TPH -non-permeable barrier such as plastic tarp. No headspace shall be allowed where vapors could accumulate;
- Covered piles shall be designed in such a way to eliminate erosion due to wind or water. No openings in the covers are permitted;
- During soil excavation, odors shall not be evident to such a degree as to cause a public nuisance; and,
- Clean soil must be segregated from contaminated soil.

Crude oil-containing soil excavated during the course of project construction activities shall be handled and reused on-site in accordance with the RWQCB's Beneficial Reuse Order #R3-2005-005. The notification and permitting determination requirements shall be directed to Karen Brooks of the APCD Enforcement Division at (805) 781-5912.

Residual Impacts:

Impact Category = Class 3. Residual impacts would be less than significant.

Impact HAZ-3. Location of the project within a high fire hazard could result in additional fire risk for the project area.

Discussion: The project site is located within an area of high fire hazard, as shown on the County of San Luis Obispo's Natural Hazard Disclosure Maps - Fire Hazard Map (http://landarch.larc.calpoly.edu/slocounty/nhd.htm). The applicant maintains an emergency response plan which includes fires occurring at the oil field property. The applicant would incorporate the operation of the water treatment facility into existing fire safety plans and emergency response procedures.

Impact Category: Class 2

Thresholds of Significance Criteria: 8

Mitigation Measure HAZ-3:

HAZ-3A - The applicant shall submit a Fire Hydrant System plan to County/CALFIRE for approval prior to construction. This plan shall be implemented before construction commences.

HAZ-3B - The applicant shall submit a vegetation management plan to County/CALFIRE for approval prior to issuance of construction permits. This would identify measures to minimize the risk of wildfires due to operation of existing and proposed facilities. It would also make recommendations for protection of such facilities from a wildfire.

Residual Impacts:

Impact Category = Class 3. Residual impacts would be less than significant.

5.6.4.3 Remaining Hazards Issue Areas

The proposed project is not within one-quarter mile of an existing or proposed school. The project site is not included on the Cortese list of hazardous materials sites. The project site is not located within the regulated area of an adopted airport land use plan, or within two miles of a public airport or private airstrip. The project site is located adjacent to Price Canyon Road, and would not impair the implementation of or interfere with an adopted emergency response or evacuation plan.

5.6.4.4 Cumulative Impacts

The project site lies within the Arroyo Grande Oil Field which is an active oil production facility. Hazards impacts are anticipated to be localized in nature. Therefore, projects would not contribute to project-specific hazardous materials impacts, and cumulative impacts would be significant but mitigable.