5.6 AGRICULTURE AND SOILS

This section addresses the potential environmental effects of the proposed Palomar Energy Project on agricultural and soils resources. The impact assessment includes both the power plant site and the associated pipeline routes.

5.6.1 Affected Environment

5.6.1.1 Regional Setting

The project area is within the foothills physiographic province, which consists of narrow winding valleys and rolling to hilly uplands (U.S. Soil Conservation Service and Forest Service, 1973). The foothills physiographic province is about 28 miles wide and extends in a northwest to southeast direction. The foothills are traversed by several rivers and associated small creeks. The creeks flow for only a short period after heavy rainstorms (U.S. Soil Conservation Service and Forest Service, 1973).

Some of the valley land within two miles of the power plant site is considered farmland (California Department of Conservation, 1998). Mean annual precipitation is between 10 and 11 inches, and is heaviest between November and April. Most soils are thoroughly moistened during this period, but little leaching occurs. The non-irrigated growing season is short because rapid plant growth in the spring uses up the available moisture in the soil. Organic matter is oxidized during the long dry summer and therefore the soils are low in organic carbon content. Native vegetation in the area consists of white and black sage, sumac, flattop buckwheat, soft chess, wild oats, and forbs (U.S. Soil Conservation Service and Forest Service, 1973).

The bedrock from which soils in the area are derived is a granitic rock identified as granodiorite or quartz diorite and more specifically on local geologic maps as the Green Valley Tonalite (U.S. Soil Conservation Service and Forest Service, 1973 and Larson Jr., 1948). The bedrock occurs as a fractured blocks 2 to 10 feet across. The fractures and the surface of the bedrock weather leaving a bouldery surface surrounded by weathered and decomposed granitic material. The soil has been formed from the decomposition of the bedrock and is soft and easily eroded. It contains angular to subangular sand fragments that act as an abrasive when carried by runoff. The soils in the area are divided into groups, associations and types. The site is within the Fallbrook-Vista, Rocky soil association, which consists of well-drained sandy loams and coarse sandy loams that have a subsoil of sandy clay loam and sandy loam, over decomposed granitic bedrock. Slopes range from 9 to 30 percent. These soil types occupy about six percent of the San Diego Area (U.S. Soil Conservation Service and Forest Service, 1973).

Agricultural Resources

Based on a review of Important Farmland maps (1:100,000 scale) published by the California Department of Conservation (1998), the power plant site, as well as the proposed and alternative

pipeline routes are not located on areas qualifying as Prime Farmland or Farmland of Statewide Importance.

As illustrated on Figure 5.6-1, areas of Unique Farmland and Farmland of Local Importance are identified within one mile of the site. Unique Farmland is land used for production of the state's major crops, but that does not qualify for Prime or Statewide Importance status (California Department of Conservation, 1998). Farmland of Local Importance is land that meets the characteristics of Prime Farmland or Farmland of Statewide Importance, but is not irrigated, and for that reason, does not qualify for the Prime or Statewide Importance status. Farmlands of Local Importance are identified as economically important to the county.

Although there are no current agricultural uses at the plant site or along the proposed water pipeline and gas pipeline routes, there were avocado and citrus orchards in the past on approximately six acres of the northern portion of the plant site, and a few untended avocado trees remain. These trees will be removed during development of the planned ERTC industrial park. The 1998 Important Farmland Map of San Diego County identifies the area where the orchards were located as Unique Farmland (Figure 5.6-1).

Soil Resources

The soils of the project area are classified as Group VI, excessively drained to moderately well drained, gently sloping to steep, sandy loam to silt loams on uplands in the foothills area (U.S. Soil Conservation Service and Forest Service, 1973). Rock outcrops or stones cover approximately 10 percent of the surface in many areas. The soils are primarily within the Fallbrook-Vista, rocky soil association. Specific soil types, their depths, texture, permeability, drainage, erosion potential and land capacity rating are described below and in Table 5.6-1. Figure 5.6-2 is a soil map of the area.

5.6.1.2 Power Plant Site

The power plant site soils are comprised of Vista coarse sandy loam. The Vista coarse sandy loam is moderately erodible and has a moderate infiltration rate. It is moderately well drained to well drained and exhibits low shrink-swell behavior. The soil is designated within capability unit IVe-1 (19), which means these soils have significant limitations that reduce the variety of plants that grow in this area, require very careful management of plants that grow in this area, or both. The main limitation is erosion. The soil also has low fertility or toxicity. The U.S. Soil Conservation Service and Forest Service (1973) further subdivides the soils as follows: (additional information regarding these soils is included on Table 5.6-1 and Figure 5.6-2)

- VsD: Vista coarse sandy loam on 9 to 15 percent slopes. These soils are present in the northern third of the plant site. This soil is 27 to 47 inches deep over weathered bedrock.
- VsD2: eroded Vista coarse sandy loam on slopes of 9 to 15 percent. These soils are present on the eastern third of the plant site. This soil is 27 to 42 inches deep over weathered bedrock.
- VsE2: eroded Vista coarse sandy loam on slopes of 15 to 30 percent. This soil is 20 to 40 inches deep over weathered bedrock.

Figure 5.6-1 Farmlands Map

Table 5.6-1 Soil Mapping Units Description and Properties [1,2]

Map Symbol	Map Unit Name and Description	Slope %	Depth to Bedrock (inches)	Erodibility	Capability Unit	Permeability/ Shrink-Swell Behavior
CmE2	**Cieneba rocky coarse sandy loam**. Excessively drained, shallow soil formed by weathering in place over granitic rock. This soil has rock outcrops over about 10 percent of the surface.	9-30	5 to 15	Severe	VIIs-8 (19) These soils have very severe limitations that make them unsuited to cultivation.	Moderate /Low
FaC	**Fallbrook sandy loam** Well drained, deep soil formed in place by weathering from granodiorite	5-9	28-60	Severe	IIIe-1(19)) This soil has severe limitations that limit the choice of plants, require very careful management or both	Moderate/Moderate
FaC2	**Fallbrook eroded sandy loam** Well drained, deep soil formed in place by weathering from granodiorite	5-9	27-57	Severe	IIIe-1(19) This soil has severe limitations that limit the choice of plants, require very careful management or both	Moderate/Moderate
FaD2	**Fallbrook eroded sandy loam** Well drained, deep soil formed in place by weathering from granodiorite	9-15	27-57	Severe	IIIe-1(19) This soil has severe limitations that limit the choice of plants, require very careful management or both	Moderate/Moderate
PfC	**Placenta sandy loam** Moderately well drained soil that formed over a granitic alluvium.	2-9	60+	Slight to severe	IIIe-3 (19) This soil has severe limitations that limit the choice of plants, require very careful management or both	Very slow/High
RaC	**Ramona sandy loam** Well drained, very deep soil formed in granitic alluvium	5-9	60+	Severe	IIIe-1(19) This soil has severe limitations that limit the choice of plants, require very careful management or both	Moderately slow/Moderate
VaB	**Visalia sandy loam** Moderately well drained, very deep soil formed on granitic alluvium.	2-5	60+	Slight	IIe-1(19) This soil has moderate limitations that reduce the choice of plants or that require moderate conservation practices.	Moderately rapid/Low

Table 5.6-1 Soil Mapping Units Description and Properties [1,2] (Continued)

Map Symbol	Map Unit Name and Description	Slope %	Depth to Bedrock (inches)	Erodibility	Capability Unit	Permeability/ Shrink-Swell Behavior
VsC	**Vista coarse sandy loam** well drained, moderately deep soil derived from granodiorite or quartz diorite.	5-9	27-47	Slight to Moderate	IIIe-1(19) This soil has severe limitations that limit the choice of plants, require very careful management or both	Moderately rapid/Low
VsD	**Vista coarse sandy loam** well drained, moderately deep soil derived from granodiorite or quartz diorite.	9-15	27-47	Slight to Moderate	IVe-1(19) This soil has very severe limitations that limit the choice of plants, require very careful management or both	Moderately rapid/Low
VsD2	**Vista eroded coarse sandy loam** well drained, moderately deep soil derived from granodiorite or quartz diorite.	9-15	20-42	Moderate	IVe-1(19) This soil has very severe limitations that limit the choice of plants, require very careful management or both	Moderately rapid/Low
VvD	**Vista rocky coarse sandy loam** well drained moderately deep soil derived from granodiorite or quartz diorite.	15-30	20-36	Slight to Moderate	IVe-7(19) This soil has very severe limitations that limit the choice of plants, require very careful management or both	Moderately rapid/Low

[1] Refer to Figure 5.6-1 for location of soil mapping units.

[2] Source: Soil Survey of San Diego Area, California, U.S. Soil Conservation Service and Forest Service, 1973.

Figure 5.6-2 Soils Map

5.6.1.3 Pipelines

There are several soil types present along the proposed water pipeline and gas pipeline routes. They include: Vista coarse sandy loam, Fallbrook sandy loam, Cineba rocky coarse sandy loam, Placenta sandy loam, Ramona sandy loam and Visalia sandy loam. These soils are shown on Figure 5.6-2 and described on Table 5.6-1.

5.6.2 Environmental Impacts

The following significance criteria were used in evaluating potential soils and agriculture-related impacts:

- Substantially increased wind or water-induced soil erosion resulting from project construction or operation.
- Substantially increased sedimentation in areas adjacent to construction areas.
- Loss of Prime Farmlands or Farmlands of Statewide Importance.
- Impacts to soil resources could be significant if construction activities were to occur in areas of high erosion susceptibility and the disturbed areas were left exposed and not properly stabilized.

5.6.2.1 Agricultural Resources

Although there are approximately six acres of designated Unique Farmland within the power plant site, this farmland will be removed as part of the ERTC industrial park development prior to construction of the Palomar project. There will be no impacts to Prime Farmlands or Farmlands of Statewide Importance. Thus, Palomar project construction and operation will not impact significant agricultural resources.

There are no agricultural resources present along the pipeline routes. Thus, construction and operation along the pipeline routes will not impact significant agricultural resources.

The soils in the Escondido area tend to be acidic; therefore, the potential of slight increases of pH, should it occur, would not be expected to change the characteristics of the soil. Regional impacts to agricultural or soil resources would be insignificant from long-term power plant operation.

5.6.2.2 Soils Resources

The primary potential for impacts to soils resources would be during project construction. After construction is completed, the site will have been graded, compacted, and covered with structures, asphalt, gravel, and/or concrete; landscaping will be in place around the site perimeter, and a site storm drainage system will be in place. These measures will minimize wind and water erosion, and there will be low potential for impacts to soils resources. The remainder of this discussion focuses on potential impacts during the project construction phase.

Except for the minor effects of finish grading of the power plant site, the Palomar project will have no effect on soil resources. This is because the Palomar site is in Planning Area 1 of the proposed ERTC industrial park project site, and the industrial park project involves balanced cut-and-fill grading of the entire site (Planning Areas 1-8). This includes rough grading of Planning Area 1, which will occur prior to Palomar construction, i.e., the Palomar project will begin with a previously rough graded pad.

The cumulative effects of the Palomar project together with the industrial park are discussed in Section 5.6.5. In order to provide data requested by CEC Staff, the cumulative analysis delineates between effects associated with Planning Area 1 (the Palomar site) versus the remainder of the industrial park.

Plant Site

In its current state, the power plant site is undeveloped and has been disturbed by off road vehicle use; some rough grading of dirt roads is evident. Much of the soil cover is shallow and outcroppings of bedrock, boulders and rocks are present over at least 10 percent of the site. The surface is subject to erosion by wind and surface water runoff, although areas where the bedrock is exposed generally are resistant to erosion.

As stated above the power plant site will be rough graded before power plant construction begins, as part of the development of the industrial park within which the site is located. It is expected that portions of the surface of the plant site will consist of exposed bedrock following the rough grading. Soil will remain in the low areas and along the side slopes at the base of the hills. Final grading of the site will be required as part of power plant construction. In the unlikely event that contaminated soil is encountered during fine grading, it will be handled in accordance with applicable LORS. If soil contamination exceeded cleanup standards, the contaminated soils would be removed from the site and appropriately disposed at a permitted offsite location.

Clearing of the protective vegetative cover and the subsequent soil disturbance likely will result in short-term increases in water and wind erosion rates at the plant site. Project design and construction plans will include measures to stabilize fill areas and cut slopes and to control drainage and erosion. These measures would be expected to minimize erosion and sedimentation to acceptable levels. Calculation of soil loss from the power plant site was not considered appropriate, because of the shallow bedrock and the proposed surface design.

Pipeline Routes

Project pipelines will be installed underground. The construction right-of-way disturbances are expected to be approximately 30 feet wide. Approximately half of the proposed 1.1-mile water supply/brine return pipeline route is along existing paved roadways. Appropriate measures would be taken during construction to control wind or water erosion of excavated soils, and the construction area will be repaved. No significant soils impacts are expected.

The remaining half of the proposed water pipeline route is within the overall industrial park site. Industrial park development activities will remove existing surface vegetation before Palomar project pipeline construction begins. The trenching for pipeline installation and vehicular travel on ungraded and graded access roads, will temporarily disturb soils, and potentially increase wind and water erosion. Appropriate erosion and dust control techniques will be implemented during construction, which would be expected to reduce the loss of soil to water erosion or wind erosion to below a level of significant impacts.

Palomar project development also will require upgrading of a 2,600-foot segment of natural gas pipeline at a location approximately one mile east of the plant site near the center of Escondido. The pipeline would be installed in existing street rights-of-way. No unpaved areas would be disturbed. Appropriate measures would be taken during construction to control wind or water erosion of excavated soils, and no significant soils impacts would occur.

5.6.3 Mitigation Measures

The following mitigation measures will be implemented to reduce potentially significant impacts to insignificant levels.

SOIL-1. Prepare a detailed erosion control plan prior to construction and implement the plan during and following construction. Erosion and sediment control measures may include, but are not limited to, use of sand bags, mulches, protective coverings (e.g., jute netting and rip-rap), construction of water diversions along roads, and water bars along pipeline rights-of-way. The plan will conform to City of Escondido requirements.

SOIL-2. Conduct power plant construction grading in compliance with good industry practice and City of Escondido grading permit requirements.

SOIL-3. Conduct power plant construction activities and operations in accordance with an approved Stormwater Pollution Prevention Plan (SWPPP) and associated Monitoring Program. SWPPPs will be required for both construction and operations phases, and will include Best Management Practices to reduce erosion and sedimentation.

SOIL-4. Stabilize disturbed areas that will not be covered with surface structures (e.g., buildings or power plant equipment) or pavement following grading and/or cut-and-fill operations. Configure berms around the site perimeter and landscaping on/near these berms to minimize potential for soil erosion. In vegetated areas to be disturbed or excavated along the pipeline route, salvage and replace topsoil where practicable too allow reestablishment of vegetation.

SOIL-5. Limit soil erosion/dust generation by wetting active construction areas with water (including roads) or by applying commercial dust palliatives (soil binders).

SOIL-6. Conduct visual post-construction monitoring of areas that were disturbed during the construction phase, particularly erosion prone areas; implement corrective measures in areas that do not respond adequately to initial stabilization techniques or in areas where accelerated erosion is occurring.

5.6.4 Significant Unavoidable Adverse Impacts

No significant unavoidable adverse impacts on agricultural or soil resources are anticipated as a result of Palomar Energy Project construction and operation.

5.6.5 Cumulative Impacts

The projects included in the assessment are two small power plants currently under development nearby. These are the 49.5 MW CalPeak power plant, adjacent to the northern boundary of the Palomar site, and the 44 MW RAMCO power plant, approximately 0.5 mile northwest of the Palomar site. The assessment also includes the proposed ERTC industrial park within which the power plant site is located.

The CalPeak power plant project adds slightly (perhaps one acre) to the amount of Unique Farmland that will be lost; the Palomar project involves the use of about six acres of designated Unique Farmland. However, there will be no losses of Prime Farmland or Farmland of Statewide importance because none are present in the area. Thus, the cumulative impacts are not considered significant.

It is assumed that appropriate design, construction, and operational procedures (grading, surfacing, drainage systems, etc.) for the cumulative power plant projects, would address soil erosion and sedimentation, stormwater control, and other issues relevant to the protection of soils resources. Construction work may result in minor, temporary increased soil erosion and sedimentation at these sites, although construction of the two small power plants is expected to be completed by the beginning of the rainy season of 2001-2002.

Overall ERTC Industrial Park Construction

Rough grading for the entire ERTC industrial park site, including Planning Area 1 (the Palomar site), will be performed in an integrated manner, with earth materials from Planning Area 1 used as fill material elsewhere in the industrial park. A mass grading operation of approximately 2.5 million cubic yards will be involved over approximately 186 acres. Cut volumes of approximately 2.0 million cubic yards are anticipated which, when bulked (to account for the volume of compacted fill versus the existing granite formation) will provide approximately 2.5 million cubic yards of fill. An onsite balance of earthwork is planned.

The ERTC industrial park will be subject to City of Escondido grading, drainage, and erosion control requirements, as well NPDES construction stormwater requirements. These issues will be addressed in the ongoing City of Escondido CEQA review process. Industrial park earthmoving activities will utilize design and construction procedures (grading, drainage and

erosion control, SWPPP, etc.) that would be expected to adequately address soil erosion and sedimentation, stormwater control, and other issues relevant to the protection of soils resources.

The overall ERTC industrial park (Planning Areas 1-8) will result in the conversion of approximately 30 acres of Unique Farmland. Approximately six acres of this total is in Planning Area 1. No Prime Farmland or Farmland of Statewide Importance would be affected because none are present in the area. These cumulative agricultural impacts are not considered significant.

Planning Area 1 Construction Phase Eartwork

Approximately 700,000 cubic yards of cut material will be excavated from Planning Area 1. Because the materials from Planning Area 1 will be used as fill in Planning Areas 2-8 of the industrial park, the overall mass grading operation will begin in Planning Area 1. It is anticipated that the first 12-15 feet of cut materials (about 350,000 cubic yards) will be excavated using conventional earthwork equipment (dozers, scrapers, loaders, etc.). The underlying granite formation will require blasting prior to excavation. Blasting will be designed to pulverize the granite material in situ to render it suitable for fill material. Blasting is expected to occur once daily, producing volumes of 5-10,000 cubic yards per day. All City of Escondido (including Escondido Fire Department) blasting regulations will be followed, including notice requirements. The entire earthwork effort within Planning Area is expected to be completed over the course of about 70 working days.

Overall, the Palomar project will not cause or contribute to a significant cumulative impact to agriculture and soils resources during either construction or operation.

5.6.6 LORS Compliance

Design, construction and operation of the power plant and its linear features will be conducted in accordance with all LORS pertinent to agriculture and soils. The applicable LORS are discussed in Section 6.4.6.

5.6.7 Involved Agencies and Agency Contacts

Agencies and agency contacts relevant to agricultural and soil resources are provided in Table 5.6-2.

Table 5.6-2 Involved Agencies and Agency Contacts

Agency/Address	Contact/ Telephone	Permits/Reason for Involvement
City of Escondido Permits and Inspection 201 N. Broadway Escondido, CA 92025	Field Engineers Office (760) 839-4664	Grading Permit
San Diego Regional Water Quality Control Board 9771 Claremont Mesa Blvd., Suite A San Diego CA 92124-1331	Hashim Navrozali (858) 467-2981	NPDES Permit SWPPP

5.6.8 Permits Required and Permit Schedule

The City of Escondido will require a grading and erosion control permit prior to the start of construction. The State Water Resources Control Board will require a NPDES General Permit for Storm Water Discharges prior to the start of construction. The schedule for acquiring these permits is summarized in Table 5.6-3.

Table 5.6-3 Permits Required and Permit Schedule

Permit/Approval Required	Schedule
Grading/Erosion Control Permit	30 days prior to start of construction activities.
NPDES General Permit for Storm Water Discharges Associated with Construction Activities	Submit application 120 days prior to start of construction.

5.6.9 References

California Department of Conservation. 1998. San Diego County - Important Farmland Map. 1:100,000 scale map.

City of Escondido. 1990. General Plan. May 1990.

Larson Jr., Esper S. 1948. Batholith and associated rocks of Corona, Elsinore, and San Luis Rey Quadrangles Southern California. U.S. Geologic Survey Memoir 29. June 21, 1948.

San Diego County Planning Department. 1990. General Plan, Land Use, Open Space, and Conservation Element. Revised March 1991.

U. S. Soil Conservation Service and Forest Service. 1973. Soil Survey, San Diego Area, California.