4.11 SOILS

This section describes soils at the Puente Power Project (P3 or project) site and in the vicinity of P3, and evaluates potential impacts of the project to these resources. The project area discussed in this section refers to all areas of temporary and permanent disturbance associated with the construction and operation of the new plant and ancillary systems, and construction laydown areas. No new offsite linear facilities are required for P3. The study area for soils evaluated in this section is defined as the area within a 1-mile radius of the P3 site.

The sections below provide an overview of the affected environment; an evaluation of the environmental consequences of the proposed project to soils; a cumulative impact analysis; identification of mitigation measures that will avoid and reduce project impacts to less-than-significant levels; and applicable laws, ordinances, regulations, and standards (LORS).

4.11.1 Affected Environment

P3 will be developed on previously disturbed vacant brownfield land located within the existing boundaries of the Mandalay Generating Station (MGS) in the City of Oxnard, Ventura County, California. Ventura County and the City of Oxnard are situated on the coast of southern California, approximately 50 miles west of Los Angeles. The MGS property is immediately inland from Mandalay State Beach and covers approximately 36 acres. The proposed P3 site encompasses approximately 3 acres on the northern portion of the MGS site. All construction and operation activities will occur within the MGS site.

The project site was originally graded in the 1950s during construction of the MGS and installation of the 30-inch-diameter natural gas line. The existing MGS facility is in an industrial area that includes oil drilling and processing operations, and Southern California Edison (SCE)-owned power generating and transmission facilities. The site is bordered by sand dunes and the Pacific Ocean to the west; McGrath Lake State Park and land owned by SunCal to the north; industrial uses to the north, south and east; and agricultural uses further to the east (see Section 4.6, Land Use and Agriculture, for a more detailed discussion of land uses in the vicinity of the project).

Construction will occur in the 3.26-acre gas turbine erection/material storage and laydown area and 0.5-acre craft trailer shop and fabrication area. An overflow material storage and laydown area is proposed on the southern side of the MGS, and is approximately 1 acre in size. Access between the onsite laydown areas and the new plant site will be on existing internal MGS roads. Existing paved lots will be used for parking. The project will use existing gas and water lines in the MGS.

4.11.1.1 Soil Resources

The Natural Resources Conservation Service (NRCS) maps the locations and properties of soils. Soils surveys for Ventura County are available through an online mapping service, Web Soil Survey 8.0 (NRCS, 2015). Based on information gathered from NRCS, soil types in the vicinity of the project site are shown on Figure 4.11-1 and described in Table 4.11-1.

Coastal Beaches (CnB). Soils at the MGS are mapped as Coastal beaches. This soil forms on beach sand and consists of about 95 percent coastal beaches and similar soils, and about 5 percent minor components. This soil is profiled as typically having 0 to 2 percent slopes; with fine sand from 0 to 6 inches, and coarse sand from 6 to 60 inches in depth. The soil material consists of young eolian (wind-blown) deposits derived from beach sand. This soil type is poorly drained, and very slightly to moderately saline. Coastal beach soil is not considered prime farmland.

Water (W). The Edison Canal enters the MGS from the southeast. This canal was specifically constructed to provide cooling water to the MGS. Cooling water is withdrawn at the surface from Channel Islands Harbor, 2.5 miles to the south. After a once-through pass of the condenser, the cooling water is discharged through a single shoreline outfall to the Pacific Ocean.

4.11.1.1.1 Surrounding Area

The surrounding area consists of a variety of soil types, most of which are characteristic of alluvial deposits. In addition to Coastal beaches (described above), the following soil types are within a 1-mile radius of the project site.

Camarillo sandy loam (Cc). This soil forms on alluvial fans and consists of about 85 percent Camarillo and similar soils and about 15 percent minor components. It forms from alluvium derived from sedimentary parent rock materials, and is considered poorly drained with moderately high to high capacity to transmit water. It has rare to no capacity to flood or pond, and a moderate available water capacity. This soil type is considered farmland of statewide importance.

Camarillo loam (Cd and Ce). This soil forms on alluvial flats and consists of about 85 percent Camarillo and similar soils and about 15 percent minor components. It forms from alluvium derived from sedimentary parent rock materials, and is considered poorly drained with moderately high to high capacity to transmit water. It has rare to no capacity to flood or pond, and a moderate available water capacity. This soil type is considered farmland of statewide importance.

Hueneme sandy loam (Hn). This soil forms on basin floors and consists of about 85 percent Hueneme and similar soils and about 15 percent minor components. It forms from stratified alluvium derived from sedimentary parent rock materials, and is considered poorly drained with high capacity to transmit water. It has rare to no capacity to flood or pond, and a moderate available water capacity. This soil type is considered prime farmland if irrigated and drained.

Pacheco silty clay loam (Pa). This soil forms on alluvial flats and consists of about 85 percent Pacheco and similar soils and about 15 percent minor components. It forms from stratified alluvium derived from sedimentary parent rock materials and is considered poorly drained with moderately high capacity to transmit water. It has rare to no capacity to flood or pond, and a moderate available water capacity. This soil type is considered farmland of statewide importance.

Pico sandy loam, 0 to 2 percent slopes (PcA). This soil forms on alluvial fans and consists of about 85 percent Pico and similar soils and about 15 percent minor components. It forms from alluvium derived from sedimentary parent rock materials and is considered well drained with high capacity to transmit water. It has no capacity to flood or pond, and a moderate available water capacity. This soil type is considered prime farmland if irrigated and drained.

Sorrento clay loam, 0 to 2 percent slopes (SwA). This soil forms on alluvial fans and consists of about 85 percent Sorrento and similar soils and about 15 percent minor components. It forms from alluvium derived from sedimentary parent rock materials and is considered well-drained with moderately high to high capacity to transmit water. It has no capacity to flood or pond, and a moderate available water capacity. This soil type is considered prime farmland if irrigated and drained.

Sorrento silty clay loam, 0 to 2 percent slopes (SxA). This soil forms on alluvial fans and consists of about 85 percent Sorrento and similar soils and about 15 percent minor components. It forms from alluvium derived from sedimentary parent rock materials and is considered well-drained, with a moderately high capacity to transmit water. It has no capacity to flood or pond with a high availability of water. This soil type is considered prime farmland if irrigated and drained.

4.11.2 Soil Contamination

The project site has been previously used for temporary storage of dredged soils from the Edison Canal. Site preparation included excavation and placement of liner fabric. The dredged spoils were pumped into geotextile containment tubes, allowed to dry, and then transported to the Toland Road Landfill for disposal.

As part of SCE's Retention Basin remediation project in 2011, the project site was used for temporary storage of contaminated soil, placed on a plastic barrier. The soil was tested and disposed of at the Clean Harbors (Buttonwillow, California) and Simi Valley landfills. Gravel was placed to provide an access road that ran through the proposed P3 site and facilitated the remediation.

A Phase I Environmental Site Assessment (ESA) of the MGS property, which includes the P3 site, was prepared in March 2015 (Appendix M-1). The Phase I ESA identified soil and groundwater impacts on the property associated with the historical use of the MGS property as an electrical generating station. Therefore, there is the potential for subsurface impacts in the areas of the project site. Impacts to soil and groundwater are currently being assessed and remediated, as necessary. Closure activities associated with prior operations of retention basins and associated appurtenances on the MGS property are not part of the proposed P3. These activities are the obligation of the former property owners (SCE), and include ongoing groundwater monitoring related to cleanup and closure of the three retention ponds north of MGS Unit 2. These ponds were remediated in 2011, and groundwater monitoring has been ongoing. The Department of Toxic Substances Control is expected to issue a Closure Report in 2015 (see Phase I ESA Section 4.14, Waste Management, and Appendix M-1 for a more detailed discussion of hazardous materials and contaminants at the project site). Mitigation measures related to potential subsurface contamination and hazardous materials handling are presented in Section 4.14.4.

4.11.3 Environmental Consequences

4.11.3.1 Significance Criteria

The following sections evaluate the potential impacts to soils associated with construction and operation of P3. Appendix G of the California Environmental Quality Act (CEQA) describes project-related effects that would normally be considered to have a significant effect on the environment. Based on this guidance, project-related soils impacts are considered significant if the proposed project results in substantial soil erosion or loss of topsoil. Other geologic and soil-related topics are addressed in Section 4.4, Geologic Hazards and Resources. Impacts associated with nitrogen deposition are discussed in Section 4.1, Air Quality, and Section 4.2, Biological Resources.

There are no existing, permitted, or planned agricultural uses in or contiguous to the project site. The project would not result in impacts on soils considered prime farmland. Refer to Section 4.6 for more information on the assessment of impacts to agricultural resources.

Potential impacts of the Project on soil resources can be divided into those related to construction activities, and those related to power plant operation.

4.11.3.2 Construction Impacts

Construction parking and material storage and laydown areas will all be located on the MGS site, as shown on Figure 2.1-1. Approximately 5.6 acres in the MGS will be used for construction laydown, offices, and parking. Approximately 0.9 acre of the 5.6 acres is currently paved. All construction parking and laydown areas are previously disturbed, and graded, compacted, or paved for existing industrial uses.

Construction will take approximately 21 months. Active major soil grading will occur over a 2-month period. All structures will have cast-in-place concrete foundations. The diameter and depth of each foundation will be determined during detailed design, and will be based on soil conditions and actual tower loads. There will be minimal demolition (fuel oil pipeline and various piping) during construction. The MGS site is generally flat and has limited vegetation; therefore, construction of the P3 facility will require minimal grading and clearing.

Pipelines will be constructed using open-trench methods. The trenches are expected to be no greater than 4 feet deep. Soil will be removed from the trench and used as backfill. Excess soil and disposal from utilities trenching is expected to be minimal. All the areas designated for pipeline construction are previously disturbed industrial areas of the MGS property.

The Site Grading Plan and Drainage Plan are shown on Figure 2.8-1. The P3 site is generally flat, but some grading will be required to provide a level area for the project. Surficial soils will be excavated and recompacted or replaced with materials from the P3 site or larger adjacent MGS site. Preliminary grading plans show a need for 1,000 cubic yards of fill and a cut of 12,400 cubic yards, resulting in a net cut of 11,400 cubic yards. The 11,400 cubic yards of net cut is planned to be removed from site, and will be reused, recycled, or sent for disposal. The final grading plans that will be prepared during the detail design phase may result in a different earthwork balance (cut-and-fill volumes).

Disposal sites for uncontaminated soil will be selected during final design of the project's drainage plan, and may include Toland Road Landfill, Simi Landfill and Recycling Center, and/or Kettleman Hills Landfill, all of which have adequate capacity. Additional landfills are identified in Table 4.14-1, Waste Recycling and Disposal Facilities.

In addition, a Soil Management Plan will be developed and implemented for the construction activities of P3 (refer to Section 4.14, Waste Management and Appendix M-2). The objective of the Soil Management Plan would be to provide guidance for the proper identification, handling, onsite management, and disposal of impacted soil or groundwater that may be encountered during construction activities (ground disturbance).

Soil survey information and erosion ratings are presented in Table 4.11-2. Soils at the project site generally have a low susceptibility to erosion from rainfall and surface runoff, and a high potential for erosion from wind (NRCS, 2015). The Revised Universal Soil Loss Equation (RUSLE) is typically used to quantify water-induced soil loss in agricultural areas, and uses the worst-case factors. The RUSLE was used to estimate the potential amount of soil erosion from the project site for construction conditions (Table 4.11-3). The estimated soil loss during project construction is approximately 3.56 tons (Google Earth Pro, 2015; Layfield, 2015; Purdue University, 2015).

During construction, the new plant site and the construction laydown areas would be disturbed. At that time, the area would be void of vegetation/impervious cover, and would have the highest potential for erosion and loss of topsoil. Soil erosion would be reduced through best management practices (BMPs), which include watering to suppress fugitive dust, providing straw bales and silt fences, and limiting exposed areas (see Section 4.11.5). Construction laydown and parking areas will be graded (as necessary), and surfaced with 4 inches of crushed rock. A draft Stormwater Pollution Prevention Plan (SWPPP) for construction has been prepared, and is included in Appendix A-8 of this Application for Certification. With preparation of a final SWPPP prior to construction and implementation of BMPs, direct and indirect impacts to soils resources from project construction would be less than significant.

Prior to construction, a grading plan will be incorporated into the building permit application to the City of Oxnard for construction of the proposed facilities. The grading plan will show existing and proposed features of the site (slopes, elevation, locations of cut-and-fill), as well as erosion and sediment control measures to be incorporated during construction. During construction of all project components, the potential for erosion would be greater than for existing conditions, but this will be managed to minimize impacts. Therefore, impacts from soil erosion are expected to be less than significant.

As discussed in Section 4.15, Water Resources, the project will comply with the National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges Associated with Construction Activity (NPDES Construction General Permit), and a final SWPPP will be prepared prior to construction. An Erosion and Sediment Control Plan will also be prepared that will identify erosion control measures that could be implemented during construction of the project. Post-construction drainage and erosion will be designed in compliance with the NPDES Construction General Permit.

4.11.3.3 Operational Impacts

Plant operations would not result in impacts to the soil from erosion, topsoil loss, or compaction. When construction is complete, the project site will either be covered with facilities, gravel or paved; therefore, there would be no potential for soil erosion or topsoil loss. Final site drainage and erosion control features will be installed in compliance with the NPDES Construction General Permit and the standards in State Water Board Order 2000-0011 regarding Standard Urban Stormwater Mitigation Plans. The water and gas lines will be underground, and would not pose soil erosion risks. Routine vehicle traffic during plant operation will be limited to existing paved or graveled roads, and standard operational activities would not involve the disruption of soil.

In addition, surface drainage design provisions and site maintenance would manage soil erosion during long-term operation of the new facility. Therefore, the potential erosion impacts during operations are considered to be less than significant.

4.11.3.4 Effect of Emissions on Surrounding Soil-Vegetation Systems

There is a concern in some areas that emissions from a generating facility, principally nitrogen oxide (NO_X) from the combustors, would have an adverse effect on soil-vegetation systems in the project vicinity. This is principally a concern where environments that are highly sensitive to nutrients or salts, such as serpentine habitats, are downwind of the project.

State-of-the-art air emissions control and monitoring equipment will be installed to reduce, control, and measure air emissions (e.g., NO_X). The project will include a selective catalytic reduction (SCR) system to control NO_X air emissions, and a carbon monoxide (CO) catalyst to control CO air emissions. Additionally, a Continuous Emissions Monitoring System will be installed to monitor the emissions as required by LORS. Cooling towers will be equipped with high-efficiency mist eliminators to reduce particulate matter emissions. Given the use of air emission control technology equipment, and the absence of ultramafic bedrock and associated soils in the project area, the potential effects of emissions on soil vegetation systems is considered to be less than significant. Potential impacts associated with nitrogen deposition are discussed further in Section 4.1, Air Quality, and Section 4.2, Biological Resources.

4.11.4 Cumulative Impacts Analyses

P3 will have less-than-significant impacts on soil resources as a result of erosion, topsoil loss, and compaction. Of the cumulative projects identified in Section 4.0, only two projects (North Shore Subdivision and Avalon Homes Subdivision) are within the 1-mile study area for soil resources. These identified future projects would also not be expected to result in a cumulatively significant impact to soils, because they would be expected to implement similar BMPs and erosion control practices as P3. The project therefore would not contribute to a cumulatively significant impact, and cumulative impacts of the project would be less than significant.

4.11.5 Mitigation Measures

This section presents erosion control measures that will be implemented to avoid and/or minimize project-related impacts to soil resources. In addition to the following measures, a Soil Management Plan will be developed and implemented for the construction activities of P3, as described above (refer also to Section 4.14, Waste Management; and Appendix M-2). Measures related to stormwater pollution prevention are presented in Section 4.15, Water Resources and Appendix A-8).

SOILS-1 Temporary Soil Erosion Control Measures

During construction of the project, dust erosion control measures will be used to minimize the windblown erosion of soil from the project site. Clean water will be sprayed on the soil in construction areas to suppress dust.

Sediment barriers, such as straw bales or silt fences, will be placed to slow runoff and trap sediment. Sediment barriers will be placed around sensitive areas (such as the Edison Canal) to prevent contamination by sediment-laden water. Barriers will be placed around the site boundary to prevent sediment from leaving the site. Because the project site is relatively level, standard surface erosion control techniques should be effective. Soil stockpiles generated during construction will be covered and protected from rainfall if left on site for long periods.

SOILS-2 Permanent Soil Erosion Control Measures

The P3 site will consist of paved roads, paved parking areas, and graveled areas. Stormwater that does not infiltrate the site will be routed to onsite detention basins, before being discharged into the Pacific Ocean (refer to Figure 2.8-1, Site Grading and Drainage Plan). BMPs will be implemented to reduce erosion and prevent silt from being discharged off site.

4.11.6 Laws, Ordinances, Regulations, and Standards

P3 will be constructed and operated in accordance with all LORS applicable to soil resources. Federal, state, and local LORS applicable to soils are discussed below and summarized in Table 4.11-4.

4.11.6.1 Federal

4.11.6.1.1 Clean Water Act

The U.S. Environmental Protection Agency (U.S. EPA) regulates wastewater and stormwater discharges into surface waters under the Clean Water Act (CWA) by using NPDES permits and pretreatment standards. At the state level, these permits are issued by the Regional Water Quality Control Board (RWQCB), but U.S. EPA may retain jurisdiction at its discretion. The CWA's primary effect on the project site is with respect to the control of soil erosion during construction.

4.11.6.2 State

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act of 1972 is the state equivalent of the federal CWA, and its effect on the project site would be similar. The Los Angeles RWQCB has jurisdiction over the project area. CEQA requires an evaluation of impacts by the project if construction will cause substantial flooding, soil erosion, or sedimentation. Several plans, which include an SWPPP, a soil erosion control plan, and a construction grading plan, will be prepared in accordance with state and local guidelines.

4.11.6.3 Local

4.11.6.3.1 City of Oxnard Zoning Ordnance (2011)

The City of Oxnard's zoning code outlines requirements for building permits for new development projects, including the submission and approval of a Grading Plan for new development projects.

4.11.7 Involved Agencies and Agency Contacts

Several agencies will be monitoring the project and are likely to be involved. Table 4.11-5 outlines the agencies that will be concerned with stormwater management and soil erosion control.

4.11.8 Permits Required and Permit Schedule

Permits to protect soil resources are summarized in Table 4.11-6.

4.11.9 References

Google Earth Pro, 2015. K and LS Factor overlays. Accessed March 5, 2015.

Layfield (Layfield Group, Limited), 2015. Erosion Management Factors. Available online at: https://www.layfieldgroup.com/Geosynthetics/Tech-Notes/Erosion-Mgmt-Factors.aspx. Accessed March 5, 2015.

NRCS (Natural Resources Conservation Service), 2015. Web Soil Survey 8.0, Natural Cooperative Soil Survey, Ventura Area, California. Available online at: http://websoilsurvey.nrcs.usda.gov/app/. Accessed February 9, 2015.

Purdue University, 2015. Rainfall Index in the U.S. (Erosivity Index). Available online at: http://milford.nserl.purdue.edu/weppdocs/overview/images/usa.gif. Accessed March 5, 2015.

USDA (U.S. Department of Agriculture), 1970. Soil Survey for Ventura Area, California. April.

Table 4.11-1
Soil Types in the Project Vicinity

Map Unit Symbol	Map Unit Name	Slope (%)	Unit Thickness (inches)	Drainage	USCS Classification	Permeability (micrometers per second)	Wind Erodibility (tons/acre/ year)[1]	Hydrologic Soil Group	Storie Index (approx.)[2]	Land Capability[3]	pH	Salinity (decisiemens per meter at 25°C)[4]	Parent Material
Cc	Camarillo sandy loam	0-2	0-80	Poor	SM	28.0	86	B	2	3w/2w	8.2	3.0	Alluvium derived from sedimentary rock
Cd	Camarillo loam	0-2	0-80	Poor	CL-ML	9.80	56	B	2	3w/2w	8.2	3.0	Alluvium derived from sedimentary rock
Ce	Camarillo loam, sandy substratum	0-2	0-80	Poor	CL-ML	9.00	56	B	2	3w/2w	8.2	3.0	Alluvium derived from sedimentary rock
CnB	Coastal beaches	0-2	0-60	Poor	SP	92.0	250		6	8	6.5	10.0	Beach sand
Hn	Hueneme sandy loam	0-2	0-65	Poor	SM	28.0	86	A	2	3w/2w	7.9	3.0	Stratified alluvium derived from sedimentary rock
Pa	Pacheco Silty clay loam	0-2	0-60	Poor	CL	2.70	48	C	2	3w/3w	7.9	3.0	Stratified alluvium derived from sedimentary rock
PcA	Pico sandy loam, 0 to 2 percent slopes	0-2	0-60	Well drained	SM	28.0	86	A	1	3e/2s	8.2	1.0	Alluvium derived from sedimentary rock
SwA	Sorrento loam, 0 to 2 percent slopes	0-2	0-60	Well drained	ML	9.00	48	B	1	3c/1	7.3	1.0	Alluvium derived from sedimentary rock
SxA	Sorrento silty clay loam, 0 to 2 percent slopes	0-2	0-60	Well drained	CL	2.70	48	C	1	3c/1	7.3	1.0	Alluvium derived from sedimentary rock

Table 4.11-1
Soil Types in the Project Vicinity (Continued)

Map Unit Symbol	Map Unit Name	Slope (%)	Unit Thickness (inches)	Drainage	USCS Classification[a]	Permeability (micrometers per second)	Wind Erodibility (tons/acre/ year)[b]	Hydrologic Soil Group	Storie Index (approx.)[c]	Land Capability[d]	pH	Salinity (decisiemens per meter at 25°C)[e]	Parent Material
W	Water	—		—	—								

Sources: NRCS, 2015; USDA, 1970.

Notes:

1 The wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

2 The Storie Index is a soil rating based on soil properties that govern a soil's potential for cultivated agriculture in California. For simplification, Storie Index ratings have been combined into six grades, as follows: Grade 1 (excellent), 100 to 80; grade 2 (good), 79 to 60; grade 3 (fair), 59 to 40; grade 4 (poor), 39 to 20; grade 5 (very poor), 19 to 10; and grade 6 (nonagricultural), less than 10.

3 Land Capability – An indication of the suitability of soils for most kinds of field crops. Capability classes are 1 through 8. Subclasses are letters e, w, s, or c. First index refers to non-irrigated land, and second index number refers to irrigated land. Capability classes, the broadest groups, are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

- Class 1 soils have slight limitations that restrict their use.
- Class 2 soils have moderate limitations that restrict the choice of plants or that require moderate conservation practices.
- Class 3 soils have severe limitations that restrict the choice of plants or that require special conservation practices, or both.
- Class 4 soils have very severe limitations that restrict the choice of plants or that require very careful management, or both.
- Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.
- Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.
- Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.
- Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, e, w, s, or c, to the class numeral; for example, 2e. The letter e shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; w shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); s shows that the soil is limited mainly because it is shallow, droughty, or stony; and c, used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

4 Salinity is a measure of soluble salts in the soil at saturation. It is expressed as electrolytic conductivity of an extract from saturated soil paste, in decisiemens per meter at 25 degrees Celsius. High concentrations of neutral salts, such as sodium chloride and sodium sulfate, may interfere with the absorption of water by plants because the osmotic pressure in the soil solution is nearly as high as or higher than that in the plant cells.

°C = degrees Celsius
USCS = Unified Soil Classification System

Table 4.11-2
Erodibility Rating of Project Soils

Soil Name	USDA Texture		Water Erosion Rating[1]	Wind Erosion Rating[2]	Wind Erodibility (tons/acre/ year)[3]
Coastal beaches	0 to 6 inches	Fine sand	0.02	1	250
	6 to 60 inches	Coarse sand, sand, and fine sand	0.02	N/A	N/A

Source: NRCS, 2015.

Notes:

[1] Erodibility rating indicates the susceptibility of the whole soil to sheet and rill erosion by water. This rating is one of six factors used in the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. Values range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

[2] A wind erodibility group (WEG) consists of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible.

[3] The wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

USDA = U.S. Department of Agriculture

Table 4.11-3
Construction Soil Loss Using the Revised Universal Soil Loss Equation[1]

Feature	Activity	Duration (months)	Soil Loss (tons) without BMPs	Soil Loss (tons) with BMPs	Soil Loss (tons/year) Existing
Project Site (3.76 acres)[2]	Grading	2	0.85	0.42	0.51
Project Site and Overflow material storage/laydown area (5.76 acres)[3]	Construction	11	7.13	3.56	0.78

Sources: Google Earth Pro, 2015; Layfield, 2015; Purdue University, 2015.

Notes:

[1] Soil losses (tons/acre/year) are estimated using the RUSLE equation.

[2] Includes gas turbine erection and material storage and laydown area (3.26 acres), and the craft trailer shop and fabrication area (0.5 acre).

[3] Includes gas turbine erection and material storage and laydown area (3.26 acres), craft trailer shop and fabrication area (0.5 acre), and additional laydown area (1.0 acre).

BMP = best management practice

Table 4.11-4
Summary of Laws, Ordinances, Regulations and Standards – Soil Resources

LORS	Administering Agency	Applicability	AFC Section
Federal			
Clean Water Act	U.S. EPA, RWQCB	Federal regulation of wastewater and stormwater. Controls erosion of soil and disruption or displacement of surface soil.	4.11.6.1
State			
Porter-Cologne Water Quality Act	RWQCB	State regulation of soil erosion during construction	4.11.6.2
Local			
City of Oxnard Zoning Code	City of Oxnard Building and Engineering Services	Requires grading plans to be shown on site plans. Approval required for building permit issuance.	4.11.6.3

Notes:
AFC = Application for Certification
LORS = laws, ordinances, regulations, and standards
U.S. EPA = U.S. Environmental Protection Agency
RWQCB = Regional Water Quality Control Board

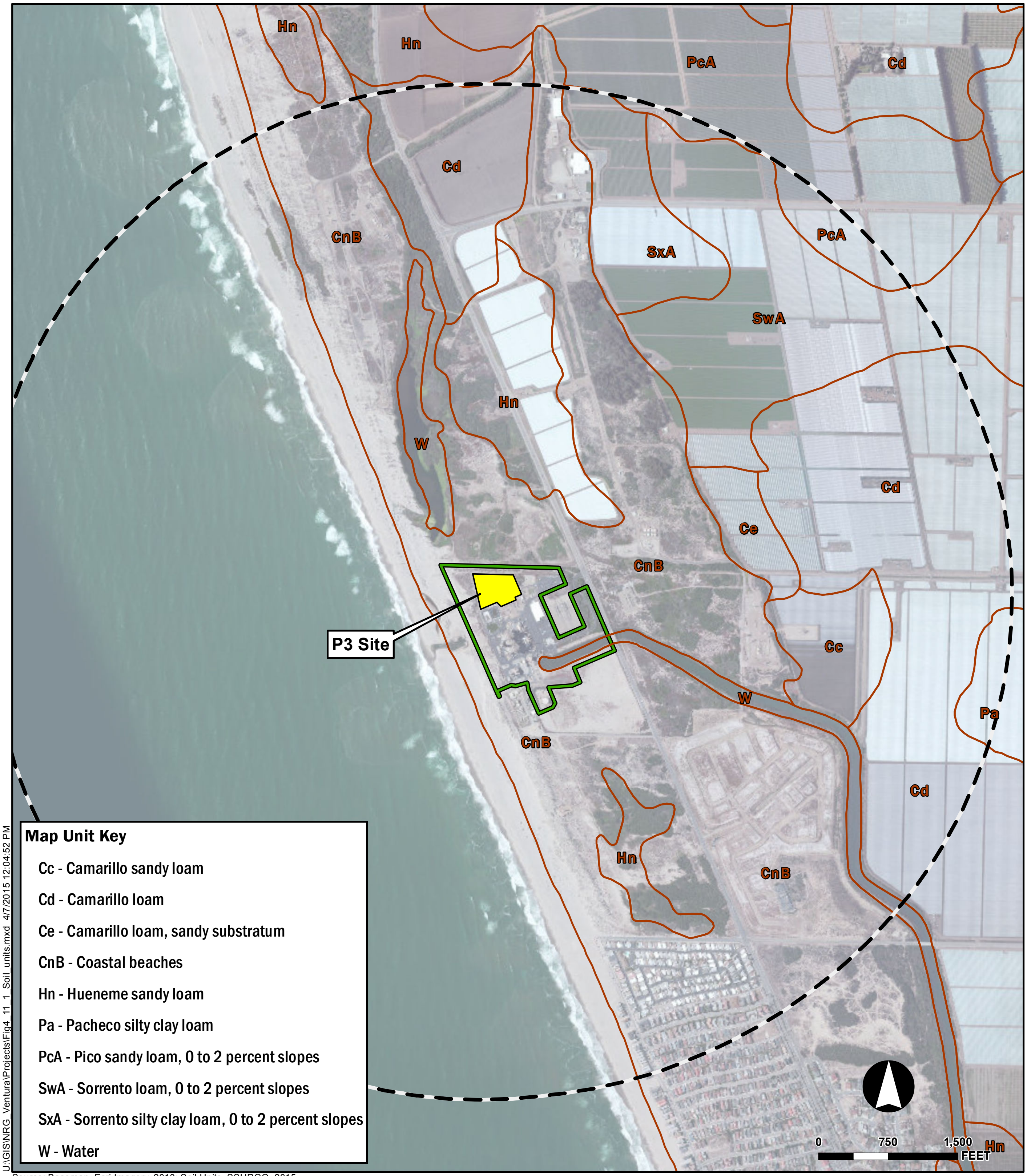
Table 4.11-5
Involved Agencies and Agency Contacts

Issue	Agency/Address	Telephone
Stormwater Runoff and erosion control	Los Angeles Regional Water Quality Control Board 320 West Fourth Street, Suite 200 Los Angeles, CA 90013	(213) 576-6600 (213) 576-6640 fax
Grading and Construction	City of Oxnard, Building and Engineering Services City of Oxnard Service Center 214 South C Street Oxnard, CA 93030	(805) 385-7925 (805) 385-7854 fax

Table 4.11-6
Soil Resources Permits Required and Permit Schedule

Responsible Agency	Permit/Approval	Schedule
Los Angeles Regional Water Quality Control Board	NDPES Construction General Permit	At least 30 days prior to construction, Applicant must submit NOI to RWQCB.
City of Oxnard, Building and Engineering Services	Construction (and Grading) Permit	To be obtained before construction begins.

Notes:
NOI = Notice of Intent
NPDES = National Pollutant Discharge Elimination System
RWQCB = Regional Water Quality Control Board



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Source: Basemap, Esri Imagery, 2013; Soil Units, SSURGO, 2015.

Soil Unit Boundary

Puente Power Project (P3) Site

Mandalay Generating Station (MGS) Property

2-mile Buffer of Property

MAPPED SOIL UNITS IN THE VICINITY OF THE PUENTE POWER PROJECT

NRG
Puente Power Project
Oxnard, California

April 2015

FIGURE 4.11-1