

10 HYDROLOGY AND WATER QUALITY

10.1 INTRODUCTION

This section analyzes potential impacts to hydrology and water quality from construction and operation of Pacific Gas and Electric Company's (PGandE) Delta Distribution Planning Area Capacity Increase Substation Project (project). Project water quality management activities will comply with all applicable federal, state, and local regulatory requirements. With implementation of the proposed mitigation measures, activities associated with construction and operation of the substation will result in less than significant impacts to hydrology and water quality.

10.2 METHODOLOGY

The hydrologic setting was evaluated by field inspecting nearby waterbodies and drainages in August 2004 and November 2004, reviewing the *Draft Environmental Impact Report for the Sand Creek Specific Plan* (Mundie and Associates, 2003), and reviewing stream and watershed information prepared by special interest groups.

10.3 EXISTING CONDITIONS

10.3.1 Regulatory Background

10.3.1.1 Federal and State

10.3.1.1.1 Section 404 Permits

"Waters of the U.S.," including wetlands, are subject to U.S. Army Corps of Engineers (ACOE) jurisdiction under Section 404 of the Clean Water Act. Section 404 regulates the filling and dredging of U.S. waters. The limits of non-tidal waters extend to the Ordinary High Water Mark, defined as the line on the shore established by the fluctuations of water and indicated by physical characteristics, such as a 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 signs that describe the characteristics of the surrounding areas. In general, ditches excavated on dry land that do not convey flows from historical streams are considered nonjurisdictional. However, the ACOE determines jurisdiction on a case-by-case basis.

A Section 404 permit is required for construction activities involving excavation from or placement of fill material into waters of the U.S. Because the project will require modification to one drainage delineated as waters of the U.S., as defined by the ACOE, a Section 404 permit will be required.

10.3.1.1.2 Streambed Alteration Agreements

Section 1602 of the California Department of Fish and Game (CDFG) Code protects the natural flow, bed, channel, and bank of any river, stream, or lake designated by the CDFG in which there is either an existing fish or wildlife resource or a resource from which these resources derive

benefit. General project plans must be submitted to the CDFG in sufficient detail to indicate the nature of planned construction where the project would:

- divert, obstruct, or change a streambed,
- drill under a jurisdictional drainage,
- use material from the streambeds, or
- result in the disposal or deposition of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into a stream.

The CDFG Code requires completion of formal notification and subsequent agreements prior to initiating construction activities. Because the project will require modification to one streambed, a Streambed Alteration Agreement will be required.

10.3.1.2 National Pollution Discharge Elimination System

Surface and groundwater quality in the project area are under the jurisdiction of the Central Valley Regional Water Quality Control Board (RWQCB). The RWQCB manages the beneficial uses of water, and is one of the lead agencies (with the California Environmental Protection Agency's Department of Toxic Substance Control and the Contra Costa County Environmental Health Department) that oversee the remediation of hazardous material releases to soil and water. The RWQCB issues National Pollution Discharge Elimination System (NPDES) non-point source permits for discharges to waterbodies for municipalities and major industries.

Projects disturbing more than 1 acre of land during construction are required to file a Notice of Intent to be covered under the State NPDES General Construction Permit for discharges of stormwater associated with construction activities. A Stormwater Pollution Prevention Plan (SWPPP) must be developed and implemented for each project covered by the general permit. The SWPPP must include best management practices (BMPs) that are designed to reduce potential impacts to surface water quality through project construction and operation.

10.3.1.3 Local

10.3.1.3.1 Contra Costa County

The Contra Costa County Flood Control and Water Conservation District (CCCFCWCD) provides flood protection in the cities of Antioch and Brentwood, and in unincorporated areas of the County. Drainage and floodplain permits are required by the CCCFCWCD for construction in flood zones. They administer County Ordinance No. 90-74, which establishes the requirement to collect drainage fees from new development for the creation of new impervious surfaces. The ordinance requires the collection of fees based on the amount of new impervious surface area. The fees support upgrades to and maintenance of existing drainage systems.

The Contra Costa County Environmental Health Department provides oversight of the remediation of certain hazardous-waste releases to soil or water.

10.3.1.4 Antioch General Plan

The *Antioch General Plan* contains the following policies for water quality and flood protection that are relevant to the project:

- requires public and private development projects to be in compliance with applicable NPDES permit requirements, and requires the implementation of BMPs to minimize erosion and sedimentation resulting from new development,
- prohibits all development within the 100-year floodplain, unless mitigation measures consistent with the National Flood Insurance Program are provided,
- requires that new developments minimize encroachment on floodways so that flood flows are conveyed without property damage and risk to public safety. It also requires that such development be capable of withstanding flooding and minimize the use of fill,
- prohibits alteration of floodways and channelization of natural creeks if alternative methods of flood control are technically and financially feasible,
- requires drainage studies to assess storm runoff impacts on the local and regional storm drain and flood control system, with implementation of appropriate detention and drainage facilities to ensure that the community's storm drainage system capacity will be maintained and peak flow limitations will not be exceeded,
- requires the development to provide for the perpetual funding and ongoing maintenance of the basin when construction of a retention basin is needed to support new development, and
- requires the elimination of hazards caused by local flooding through improvements to the area's storm drain system or creek corridors.

10.3.1.5 Special Interest Groups

The Natural Heritage Institute prepared the *Corridor Width Report, Parcel Inventory and Conceptual Stream Corridor Master Plan* (2002) for Marsh, Sand, and Deer creeks in the City of Brentwood, and has partnered with the City of Brentwood, the Delta Science Center, and the Coastal Conservancy on how to create corridors along Marsh Creek. The report summarizes the existing condition of stream protection in the City of Brentwood and the current science of setback-width requirements for urban creeks. The institute recommends a 100-foot minimum setback to allow for channel expansion, flood protection, and habitat benefits.

10.3.2 Surface Water Hydrology and Quality

10.3.2.1 Waterbodies

Sand Creek is the only surface waterbody in the vicinity of the project. At its nearest point, the creek is approximately 250 feet north of the substation site and crossed by the access road. Sand Creek is within the Marsh Creek watershed. As one of Marsh Creek's major tributaries, Sand Creek flows into Marsh Creek within the city limits of Brentwood.

Sand Creek, the largest of the lower-zone tributaries, drains 14.4 square miles from its headwaters in Black Diamond Mines Regional Park to its confluence with Marsh Creek. It has seasonal flow in its more natural upland reaches, and perennial flow supported by agricultural return flows in the lowland reaches. The Creek flows through deep sandy soils in its lower reaches, and is likely a major sediment source for lower Marsh Creek, Marsh Creek Reservoir, and Big Break.

Sand Creek receives surface-water flow from several tributaries, including the unnamed drainage in Oil Canyon to the west, and Horse Creek to the south.

10.3.2.2 Ponds and Reservoirs

There are no ponds or reservoirs in the vicinity of the project.

10.3.2.3 Surface Water Quality

The land use history of the Marsh Creek watershed has included coal mining and oil and gas exploration and production. These past activities may have affected water quality in the creeks in the watershed. Discharges of wastewater to Sand Creek from oil/water separation processes associated with production have commonly occurred in the past. Contaminants associated with the oily water discharges could include volatile aromatic compounds (e.g., benzene) and oil and grease. It is unknown to what extent residuals from these releases still exist in the creek. Little or no data are available on the water quality of Sand Creek.

10.3.3 Groundwater Resources and Quality

The project is within the San Joaquin Valley Groundwater Basin. In general, groundwater quality tends to improve with distance from the Delta due to less salt water mixing. There are no designated groundwater recharge areas in the project area. The lack of major development in the project vicinity allows unencumbered infiltration of precipitation to the subsurface. Surface water that does not infiltrate or evaporate, flows to local surface waterways, which are typically unlined.

Some residences in the project area use well water as their water supply. Planned infrastructure improvements will provide municipal water to the area. Existing well-water users will have the option to switch to municipal water as it becomes available. Local groundwater will not be used for domestic water supply to new development proposed in the area. No perennial springs have been identified in the project vicinity. Ephemeral groundwater springs may supply bank recharge along Sand Creek during the winter and spring.

10.3.4 Flooding Potential

Flood control efforts throughout this century straightened and confined the lower 9 miles of Marsh Creek and the lower reaches of Sand Creek. Most of the Sand Creek area is not susceptible to regional flooding hazards. A band of land along Sand Creek ranging from about 100 to 400 feet in width is designated within the 100-year flood hazard zone, as mapped by the Federal Emergency Management Agency (see Figure 10-1).

Figure 10-1: 100-Year Flood Zone Map

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The project area is not within the 100-year flood zone. The nearest 100-year flood zone, along Sand Creek, is about 200 feet north and 70 feet west of the substation site.

None of the Sand Creek watershed is in a dam failure inundation hazard area. The predicted inundation zone of the Los Vaqueros Reservoir is limited to the Kellogg Creek watershed, a considerable distance south of the project. The elevation of the project area and distance from the Sacramento-San Joaquin Delta preclude potential inundation by coastal hazards, such as tsunamis, high tides, or future sea-level rise.

10.4 IMPACTS

10.4.1 Significance Criteria

According to Appendix G of the revised California Environmental Quality Act guidelines, the project will have a significant impact if it:

- violates any water quality standards or waste discharge requirements;
- 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 local groundwater table level;
- substantially alters the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on- or off-site;
- substantially alters the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increases the rate or amount of surface runoff in a manner that would result in flooding on- or off-site;
- creates or contributes runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provides substantial additional sources of polluted runoff;
- otherwise substantially degrades water quality;
- places housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map;
- places within a 100-year flood hazard area structures that would impede or redirect flood flows;
- exposes people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam; and/or
- causes inundation by seiche, tsunami, or mudflow.

10.4.2 Construction

The project will not violate any water quality standards or waste discharge requirements, or otherwise substantially degrade water quality.

10.4.2.1 Surface Water

10.4.2.1.1 Erosion and Sedimentation

Project ground disturbance will be limited to the footprint of the substation (approximately 5 acres), plus temporary disturbance for two tower sites that will be approximately 100 by 200 feet. Additionally, there will be approximately 0.64 acre of temporary disturbance for the installation of an access road and 0.44 acre of permanent disturbance. Accelerated sedimentation and reduced surface water quality could occur during project construction. Surface runoff from excavation stockpiles or freshly graded areas could contain turbid water and sediment. However, this will be limited to the immediate area of the substation, tower sites, and the access road. With implementation of the measures identified in Section 10.5 Mitigation Measures, impacts will be less than significant.

10.4.2.1.2 Hazardous Materials Spills

During construction, hazardous materials spills could impact surface water quality. However, with the development and implementation of a Spill Prevention, Countermeasure, and Control (SPCC) Plan as described in Section 10.5 Mitigation Measures, impacts will be less than significant.

10.4.2.2 Groundwater

Construction activities will not require the use of groundwater; therefore, there will be no impact to groundwater supply levels during construction. Also, with implementation of the SPCC Plan, potential groundwater quality impacts from hazardous materials spills will be less than significant during construction.

10.4.2.3 Flooding

No houses or structures will be constructed within the 100-year floodplain. The project is not near any dams, large waterbodies, or steep terrain and will not cause any coastal hazards, such as tsunamis, high tides, or future sea-level rise. As a result, there will be no flood-related impacts.

10.4.3 Operations and Maintenance

10.4.3.1 Surface Water

10.4.3.1.1 Erosion and Sedimentation

Runoff rates could increase due to the construction of up to 3 acres of permeable, semi-permeable, and impermeable surface, which could accelerate erosion and sedimentation rates in nearby waterways. However, stormwater runoff from the paved portion of the substation will pass through a SPCC retention pond, which will allow for settlement of suspended solids and

removal of any oil that might be present. A discharge system will be constructed to minimize the potential for erosion or enhanced sedimentation. As a result, there will be no impacts to surface runoff rates or existing drainage patterns.

10.4.3.1.2 Hazardous Materials Spills

Oil-filled electric equipment will be present at the substation. In the event that this equipment leaks or bursts, mineral oil could be released to the soil or Sand Creek, which could impact water quality. However, implementation of the measures identified in Section 10.5 Mitigation Measures will reduce these impacts to less than significant.

10.4.3.2 Groundwater

Groundwater recharge could be impacted by the construction of impervious surfaces at the substation. However, given the amount of open space surrounding the substation site, and the limited amount of impervious surface to be constructed, this impact will be less than significant.

A well will be installed on the substation site. This well will provide water for the irrigation of the landscaped areas located outside of the substation walls. The landscaped area will be planted with drought-resistant plants and, therefore, water use for irrigation will be an insignificant impact to groundwater levels. Water use will generally only occur for the first few years until the plants are established.

10.4.3.3 Flooding

The project will not expose structures or land to inundation by a wave that oscillates in lakes, bays, or estuaries (seiche); tsunami; or mudflow. Likewise, no houses will be constructed within a 100-year floodplain. Therefore, there will be no impacts.

10.5 MITIGATION MEASURES

The following mitigation measures are proposed to help limit impacts to less than significant levels.

10.5.1 Construction

- PGandE will develop a SWPPP that will describe BMPs to prevent the acceleration of natural erosion and sedimentation rates. A monitoring program will be established to ensure that the prescribed BMPs are followed throughout project construction.
- PGandE will develop an SPCC Plan that will describe BMPs for preventing, controlling, and cleaning up hazardous material spills.
- A worker-education program will be established for all field personnel prior to initiating fieldwork, to provide training in the appropriate application and construction of erosion and sediment control measures. This education program will also discuss appropriate hazardous materials management and spill response.

10.5.2 Operation and Maintenance

- The SPCC plan will include engineered methods for containing and controlling an oil release, including a water-collection system and retention pond equipped with an oil/water separator. This collection and retention system will also regulate the release of stormwater runoff from the paved portion of the substation. The retention pond will serve as a settling basin to reduce turbidity and sedimentation downstream. Oil-absorbent material, tarps, and storage drums will be present on-site to contain and control any minor releases.

10.6 REFERENCES

City of Antioch. 2003. Antioch General Plan.

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