OUR COMMITMENT TO SUSTAINABILITY

ESA helps a variety of public and private sector clients plan and prepare for climate change and emerging regulations that limit GHG emissions. ESA is a registered assessor with the California Climate Action Registry, a Climate Leader, and founding reporter for the Climate Registry. ESA is also a corporate member of the U.S. Green Building Council and the Business Council on Climate Change (BC3). Internally, ESA has adopted a Sustainability Vision and Policy Statement and a plan to reduce waste and energy within our operations. This document was produced using recycled paper.
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## ACRONYMS AND ABBREVIATIONS

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SUMMARY

S.1 Introduction

This environmental impact report (EIR) has been prepared by the Pajaro Valley Water Management Agency (PV Water) in conformance with the provisions of the California Environmental Quality Act (CEQA) and the CEQA Guidelines. PV Water serves as the lead agency for development of the EIR for the proposed College Lake Integrated Resources Management Project (Project), with input and coordination provided by other agencies and local jurisdictions. PV Water has determined that the Project could cause significant environmental impacts, and that preparation of an EIR is warranted. Pursuant to CEQA Guidelines Section 15161, this is a project-level EIR. PV Water has prepared this EIR to provide information about the Project’s potential effects on the environment to the public and responsible and trustee agencies reviewing the Project. This EIR describes the potential environmental impacts that could result from implementation of the Project, identifies mitigation measures for reducing impacts to less-than-significant levels where feasible, and evaluates alternatives to the Project.

S.2 Background

PV Water was formed in 1984 by the Pajaro Valley Water Management Agency Act, for the primary purpose of managing groundwater resources and supplemental water supplies in its service area. In the coastal areas and throughout much of the Pajaro Valley Groundwater Basin, overdraft conditions have caused groundwater levels to drop below sea level, creating a landward pressure gradient that causes seawater to move inland. Seawater intrusion has elevated the chloride concentrations in groundwater up to two and a half miles inland from the coast, in some areas contaminating the groundwater to the point that it is unsuitable for agricultural irrigation and domestic (potable) uses without treatment. PV Water’s objective is to manage local groundwater resources to reduce, and eventually halt, long-term overdraft of the groundwater basin, while ensuring sufficient water supplies for present and anticipated needs. To achieve this objective, PV Water has prepared and periodically updates a basin-wide groundwater management plan (the Basin Management Plan [BMP]), which serves as the guiding document for its major projects and programs. Most recently, PV Water approved the BMP Update and certified the Environmental Impact Report for the Basin Management Plan Update in 2014 (2014 BMP Update PEIR).

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1 Overdraft occurs when the amount of groundwater withdrawn from a basin exceeds the volume of freshwater replenishing the basin.
The Project represents the largest single source of surface water proposed as part of the BMP Update.

### S.3 Project Objectives

The primary purposes of the Project are to help balance the Pajaro Valley Groundwater Basin, prevent further seawater intrusion, and meet water supply needs in the Pajaro Valley by developing College Lake as a water storage and supply source for agricultural irrigation. The following objectives were included in the 2014 BMP Update PEIR:

- Prevent seawater intrusion, long-term groundwater overdraft, land subsidence, and water quality degradation;
- Manage existing and supplemental water supplies to control overdraft and provide for present and future water needs;
- Create a reliable, long-term water supply, which has been identified as an important cornerstone of the long-term economic vitality of the Pajaro Valley;
- Develop water conservation programs; and
- Recommend a program that is cost effective and environmentally sound.

In addition, the Board of Directors adopted the following project-specific objectives for the Project:

- Design and implement reliable facilities to help achieve sustainable groundwater management of the Pajaro Valley Groundwater Subbasin by 2040, taking into account potential future hydrologic changes, including those associated with climate change.\(^2\)

- Substantially contribute to the Pajaro Valley’s water supply needs in a timely manner, consistent with the Basin Management Plan Update implementation goals.

- Use locally controlled surface water for agricultural purposes to offset groundwater pumping in a manner consistent with habitat preservation and enhancement, and in coordination with resource agencies, the public, and other stakeholders.

- Make efficient use of, and leverage federal, state, and local investments in, existing Agency infrastructure.

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\(^2\) Sustainable groundwater management is defined under the SGMA as management and use of groundwater in a manner that can be maintained during the planning and implementation horizon without causing undesirable results (Water Code, § 10721, subd. (v)).
S.4 Project Description

S.4.1 Project Location and Proposed Components

Chapter 2 of this EIR presents the Project Description. The essential function of the Project, depicted in Figure S-1, is to store water in and divert water from College Lake for treatment, transmission, and distribution for agricultural irrigation. College Lake is located in unincorporated Santa Cruz County northeast of the Watsonville city limits, north of Holohan Road and west of State Route (SR) 152. Figure S-2 shows the location of College Lake and the other components of the Project, described below:

- **Weir Structure and Intake Pump Station.** The Project includes a weir structure and intake pump station facility. The concrete weir structure would be equipped with a mechanically adjustable weir and would be designed and operated to accommodate release of bypass flows and to facilitate fish passage between Salsipuedes Creek and College Lake. The screened intake and pump station would divert surface water from College Lake and deliver raw (untreated) water impounded behind the weir to a Water Treatment Plant (WTP).

- **Water Treatment Plant.** The WTP would remove sediment, filter and disinfect the water diverted from College Lake. PV Water’s preferred WTP site is north of Holohan Road between Laken Drive and Grimmer Road. An optional WTP site is also described and evaluated in the EIR. The WTP would contain sedimentation basins and solids drying beds, filtration and disinfection systems, and an effluent pump station.

- **College Lake Pipeline.** The Project would include an approximately 5.5-mile-long, 24-inch-diameter pipeline from the proposed WTP to the Coastal Distribution System and the Recycled Water Facility. At the State Route 1 crossing, PV Water’s preferred pipeline alignment is in West Beach Street; an optional pipeline alignment at the SR 1 crossing is also identified and evaluated in the EIR.

![Figure S-1](source: PV Water, Proposed College Lake Integrated Resources Management Project, NOP Scoping Meeting Presentation, December 12, 2017.)
S.4.2 Construction

Construction is expected to begin in 2022 and last about 18 months, and would be initiated following project approval, procurement of property rights, issuance of permits, and completion of design. Details (e.g., construction techniques, hours, work force, equipment, staging areas, traffic routing) are presented in Section 2.6 of Chapter 2.

S.4.3 Operations

As part of Project development, PV Water estimated College Lake watershed inflows, outflows and lake water levels; determined flows required for fish passage; and modeled water budgets for existing, future with-project, and future cumulative conditions. Key aspects of proposed operations include the following:

- **Proposed Fish Passage and Bypass of Casserly Creek During Operations.** The Project includes proposed minimum flows and lake levels for adult and smolt steelhead passage between December 15th and May 31st.

- **Proposed Weir Operations.** PV Water would manage the adjustable weir to avoid exacerbating flood risk. During the wet season prior to the last anticipated major precipitation event of the year, the proposed weir would remain at 60.1 feet NAVD88 (the same elevation as an existing weir that would be demolished as part of the Project). The proposed weir would not be raised to 62.5 feet NAVD88 until after the last anticipated major precipitation event of the season, such that the College Lake water surface elevation is not expected to exceed approximately 62.5 feet NAVD88 after that point in the season.

- **Water Supply Extractions.** Depending on water year type, monthly demand was estimated at anywhere from 14 acre-feet to 470 acre-feet. Water supply diversions would occur after minimum lake levels and fish passage flows have been achieved. Water pumped from College Lake would be treated at the proposed WTP, and pumped through the College Lake pipeline for irrigation use. On average, the Project would generally supply approximately 1,800 to 2,300 acre-feet per year (AFY) of water to growers in the Pajaro Valley; the maximum potential yield for the Project based on the water right application submitted by PV Water to the State Water Resources Control Board is 3,000 AFY.

- **Adaptive Management.** The Project includes development and implementation of an adaptive management plan to help operate the lake and maintain seasonally-inundated areas in a manner that preserves water storage capacity while promoting wildlife habitat functions. Initial development of the Adaptive Management Plan would occur during environmental permitting.

S.4.4 Maintenance

PV Water staff would conduct maintenance activities on Project components and within College Lake as needed. The amount and type of maintenance needed would vary by year. Routine maintenance activities in select areas of College Lake would include disking and mowing, and sediment and debris removal. Refer to Section 2.7 of Chapter 2 for more information on proposed operations and maintenance.
S.5 Summary of Project Impacts and Mitigation Measures

Chapter 3 of this EIR presents the environmental impacts analyses for several resource areas consistent with Appendix G of the CEQA Guidelines. For each resource area, the impact analysis describes the environmental and regulatory setting, identifies significance criteria used in the analysis, evaluates potential physical effects of the Project on both a project and cumulative basis, and provides feasible mitigation measures that would reduce the severity of significant impacts.

Table S-1 summarizes all impacts identified for the Project in this EIR, lists the significance determination for each impact, and presents the full text of the mitigation measures identified to avoid, reduce, or otherwise lessen significant impacts. As shown in the table, although a majority of the impacts were determined to be less than significant or could be mitigated to less-than-significant levels, implementation of the Project was determined to result in significant and unavoidable impacts in the areas of agricultural resources (conversion of Important Farmland) and construction noise.

S.6 Alternatives to the Proposed Project

Chapter 5 presents the CEQA alternatives analysis for the Project. This chapter describes the methodology used to screen and select feasible alternatives that could avoid or substantially lessen the significant impacts identified for the Project while still meeting most of the Project objectives. In addition to the water treatment plant location and College Lake pipeline alignment options described and evaluated in detail in Chapters 2 and 3 of the EIR, the alternatives selected for evaluation in Chapter 5 include:

1. **No Project.** This alternative describes conditions that would generally be expected to occur without implementation of the Project.

2. **Farmland Preservation – Lake Deepening Alternative.** This alternative involves deepening parts of the lake basin and depositing the excavated materials in the southwestern portion of the basin. This alternative would effectively reduce the areal extent of the wetted area of College Lake compared to the Project, resulting in a reduction in the conversion of Important Farmland.

There are trade-offs, in terms of environmental impacts, between the Farmland Preservation-Lake Deepening Alternative and the Project. The Farmland Preservation-Lake Deepening Alternative would reduce the conversion of Important Farmland, a significant and unavoidable impact even with implementation of Mitigation Measures LU-1a (Promote Farming), LU-1b (Compensate for Conversion of Important Farmland), and LU-1c (Replacement of Topsoil). However, the Farmland Preservation-Lake Deepening Alternative would worsen impacts associated with biological resources, flooding, air quality, and cultural resources. In particular, the magnitude of impacts to state and federally protected wetlands would require a substantially larger area of compensatory mitigation to reduce the impact, complicating permitting; and there would be an increase in water surface elevations during the 10- and 100-year flood events compared to the Project. Refer to Chapter 5, *Alternatives*, for more information.
## TABLE S-1
### SUMMARY OF IMPACTS AND MITIGATION MEASURES

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<tr>
<th>IMPACT</th>
<th>Significance Determination</th>
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<tr>
<td>Land Use and Agricultural Resources, EIR Section 3.2</td>
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| Impact LU-1: The Project would convert Important Farmland to non-agricultural use and could involve changes in the existing environment which, due to their location or nature, could result in conversion of Important Farmland to non-agricultural use. | SUM | **Mitigation Measure LU-1a: Promote Farming**
To reduce the amount of Farmland of Statewide Importance and Unique Farmland converted to other uses and in coordination with affected landowners, PV Water shall adopt practices to promote farming within the areas depicted with red hatching on Figure 3.2-4 of the College Lake Integrated Resources Management Project EIR. Such practices may include, but are not limited to, the following:
- Maintain, improve and potentially expand tile drain systems.
- If controlling land by easement, establish terms that require land owners to cultivate crops or otherwise productively use the land for agricultural purposes at least once every five years, hydrologic conditions permitting.
- If acquiring land outright, enter into lease arrangements for the land to be cultivated or otherwise productively used for agricultural purposes at least once every five years, hydrologic conditions permitting. |
|                                                                        |                            | **Mitigation Measure LU-1b: Compensate for Conversion of Important Farmland**
Track Conversion of Important Farmland. PV Water shall review California Department of Conservation’s Farmland Mapping and Monitoring Program farmland designations for College Lake annually beginning with the first year of construction and continuing for five years of Project operation. PV Water shall identify Prime Farmland, Farmland of Statewide Importance, and Unique Farmland referred to herein as Important Farmland that is within the College Lake basin below elevation 63 feet NAVD88 that converts due to water management operations.
Establish Memorandum of Understand for Agricultural Easement Fund. PV Water shall enter into a Memorandum of Understanding with the Santa Cruz Land Trust or similar entity. The Memorandum of Understanding shall include details regarding an Agricultural Easement Fund to be paid by PV Water and the timing of acquisition of agricultural easements for the purpose of offsetting impacts on Important Farmland caused by the Project. Acceptance of this fee by the Santa Cruz Land Trust or similar entity shall serve as an acknowledgment and commitment to: (1) secure agricultural easements to offset the conversion of Important Farmland caused by the Project; and (2) provide documentation to PV Water describing the project(s) funded by the mitigation fee. If there is any remaining unspent portion of the Agricultural Easement Fund following implementation, PV Water shall be entitled to a refund in that amount. To qualify under this mitigation measure, the specific agricultural easement acquisition projects must preserve acreage of farmland of an equal or greater Farmland Mapping and Monitoring Program designation value within the PV Water service area to offset the permanent conversion of Important Farmland by the Project.
Contribute to Agricultural Easement Fund. PV Water shall initially designate funds to secure easements for up to 6 acres of Prime Farmland to offset impacts associated with the water treatment plant. In addition, for Prime Farmland, Farmland of Statewide Importance, or Unique Farmland within the lake basin that the Department of Conservation converts to non-agricultural designations after the Project has operated for a period of one year, PV Water shall designate for the Agricultural Easement Fund an amount to cover the costs associated with acquisition of agricultural easements of equivalent value.
Directly Fund Agricultural Easements. As an alternative approach to establishing a memorandum of understanding for, and contributing to an agricultural easement fund, PV Water could elect to directly fund the purchase of agricultural easements for Important Farmland in the Pajaro Valley. |

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3 Text that has been revised in adopted mitigation measures is indicated with **underlining** where text has been added, and *strikethrough* where text has been deleted.

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</table>
| Impact LU-1 (cont.) | Mitigation Measure LU-1c: Replacement of Topsoil | In agricultural areas, PV Water shall require contractors to stockpile topsoil at Project sites during Project grading and reapply it in situ after construction to promote vegetative growth. In agricultural areas temporarily disturbed by construction and where excavation occurs, the following measures shall apply:  
  • Strip 18 inches of topsoil from the area excavated unless otherwise stipulated by landowner. The topsoil shall be stored separately from subsoil and other construction materials.  
  • Clearly mark topsoil signs, and store topsoil separately from other excavated and imported materials in such a manner that the topsoil is not damaged, mixed, or covered by subsoil or surface rocks, and so that it is not continually disturbed.  
  • Stockpile topsoil on the same property from which it was stripped and return topsoil to same property from which it was stripped. |
| Impact LU-2: The Project could conflict with a Williamson Act contract, or conflict with an applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project adopted for the purpose of avoiding or mitigating an environmental effect. | LS | No mitigation required. |
| Impact C-LU-1: The Project, in combination with past, present, and probable future projects in the Project area, would have a cumulatively considerable impact on the conversion of Important Farmland to non-agricultural use. | SUM | Mitigation Measure LU-1a: Promote Farming (refer to Impact LU-1)  
Mitigation Measure LU-1b: Compensate for Conversion of Important Farmland (refer to Impact LU-1) |
| Surface Water, Groundwater, and Water Quality, EIR Section 3.3 | | |
| Impact HYD-1: Project construction could violate water quality standards and/or waste discharge requirements, or otherwise substantially degrade surface or ground water quality. | LSM | Mitigation Measure BR-1b: Frac-out Contingency Plan (refer to Impact BR-1)  
Mitigation Measure HYD-1: Implement Dewatering Best Management Practices for In-Water Construction  
For in-water construction during pipeline installation activities, PV Water shall require its contractor(s) to prepare a Dewatering Plan. The Dewatering Plan shall identify best management practices that ensure construction activities at Salsipuedes and Pinto Creeks meet water quality objectives. This work shall be timed to take place as flows are receding and only after instream measures to reduce downstream turbidity are in place. In addition, PV Water shall require its contractors to implement the measures below, and water quality protection measures required by the RWQCB.  
1. All work performed in-water shall be completed in a manner that meets the water quality objectives to ensure the protection of beneficial uses as specified in the 2017 Basin Plan.  
2. All dewatering and diversion methods shall be installed such that natural flow is maintained upstream and downstream of the Project area. |
### Table S-1 (continued)
**Summary of Impacts and Mitigation Measures**

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<tr>
<td>Impact HYD-1 (cont.)</td>
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<tr>
<td>3.</td>
<td>Any temporary dams or diversion shall be installed such that the diversion does not cause sedimentation, siltation, or erosion upstream or downstream of the Project area.</td>
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<td>4.</td>
<td>Screened pumps shall be used in accordance with CDFW’s fish screening criteria and in accordance with the NMFS Fish Screening Criteria for Anadromous Salmonids and the Addendum for Juvenile Fish Screen Criteria for Pump Intakes.</td>
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<tr>
<td>5.</td>
<td>Cofferdams shall remain in place and functional throughout the in-stream construction.</td>
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<td>6.</td>
<td>Disturbance of protected riparian vegetation shall be limited or avoided entirely.</td>
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<tr>
<td>Impact HYD-2: Project operations could adversely affect surface water quality.</td>
<td>LSM</td>
<td>Mitigation Measure HYD-2a. Water Quality Adaptive Management for College Lake</td>
</tr>
<tr>
<td></td>
<td>To learn about potential impacts of the Project on College Lake water quality and the quality of downstream water bodies, PV Water shall monitor College Lake water for indications of Cyanobacteria blooms. When the proposed weir crest is elevated to 62.5 feet NAVD88, PV Water shall monitor College Lake water temperature within the water column to establish whether a thermocline develops. PV Water shall use results of this monitoring to support the development of the Adaptive Management Plan (refer to Section 2.7) that establishes management actions to minimize the conditions that can contribute to algal blooms, including cyanobacteria blooms, such that this impact is mitigated.</td>
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<td>Impact HYD-3: The Project could cause localized temporary or seasonal changes in shallow groundwater levels, but would not degrade groundwater quality or decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.</td>
<td>LS</td>
<td>No mitigation required.</td>
</tr>
<tr>
<td>Impact HYD-4: The Project would alter drainage patterns, changing erosion and sedimentation patterns in College Lake and downstream water bodies.</td>
<td>LSM</td>
<td>Mitigation Measure HYD-2b. Scour Analysis for Pinto Creek Crossing (refer to Impact HYD-2)</td>
</tr>
<tr>
<td>Impact HYD-5: The Project would not substantially increase the rate or amount of surface runoff, but would impede or redirect flood flows and alter the seasonality of surface runoff.</td>
<td>LS</td>
<td>Mitigation Measure HYD-3: Avoid Flooding at Pajaro Dunes During Pumped Flow Events</td>
</tr>
<tr>
<td>PV Water shall not pump flow exceeding fish passage requirements into Salsipuedes Creek until receiving approval from the Santa Cruz County Flood Control District indicating that pumped flow can occur without lagoon breaching, based on current water surface elevation conditions in Pajaro Lagoon. The threshold water surface elevations described in the Santa Cruz County Flood Control District current lagoon breaching permits from the U.S. Army Corps of Engineers, the Central Coast Regional Water Quality Control Board, and the California Department of Fish and Wildlife will be used to assess whether pumped flows would require lagoon breaching. PV Water pumped flows shall not result in lagoon water surface elevations exceeding the threshold elevation identified in the lagoon breaching permits.</td>
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Draft EIR  
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ESA / 160822  
April 2019
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<td><strong>Impact HYD-6:</strong> The Project could conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.</td>
<td>LSM</td>
<td>Mitigation Measure BR-1b: Frac-out Contingency Plan (refer to Impact BR-1) Mitigation Measure HYD-1: Implement Dewatering Best Management Practices for In-Water Construction (refer to Impact HYD-1) Mitigation Measure HYD-2a: Water Quality Adaptive Management for College Lake (refer to Impact HYD-2) Mitigation Measure HYD-2b: Scour Analysis for Pinto Creek Crossing (refer to Impact HYD-2)</td>
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<td><strong>Impact C-HYD-1:</strong> The Project, in combination with past, present, and probable future projects in the Project area, would not result in significant adverse cumulative hydrology impacts.</td>
<td>LS</td>
<td>No mitigation required.</td>
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<tr>
<td><strong>Impact C-HYD-2:</strong> The Project, in combination with past, present, and probable future projects in the Project area, would not result in significant adverse cumulative water quality impacts.</td>
<td>LS</td>
<td>No mitigation required.</td>
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<tr>
<td><strong>Biological Resources, EIR Section 3.4</strong></td>
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<tr>
<td><strong>Impact BR-1:</strong> Construction of Project components could result in a substantial adverse effect on special-status species.</td>
<td>LSM</td>
<td>Mitigation Measure BR-1a: Fish Relocations. Prior to, or concurrent with, draining of College Lake and/or dewatering of the construction site, special-status and other native fish species shall be captured and relocated by a qualified fisheries biologist. The following measures shall be taken to minimize harm and mortality to steelhead and other native fish resulting from fish relocation and dewatering activities: 1) Fish relocation shall be performed by a qualified fisheries biologist, with all necessary state and federal authorizations. Captured fish shall be moved to the nearest appropriate site outside of the work area. A record of relocation activities shall be maintained and include the date of capture and relocation, the method of capture, the location of the relocation site in relation to the Project site, and the number and species of fish captured and relocated; 2) Electrofishing shall be conducted by properly trained personnel following NOAA Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act, June 2000. 3) Prior to capturing fish, the most appropriate release location(s) shall be determined. 4) The most efficient method for capturing fish shall be determined by the biologist. Complex stream habitat generally requires the use of electrofishing equipment, whereas in outlet pools, fish may be concentrated by pumping-down the pool and then seining or dip-netting fish. 5) Handling of salmonids shall be minimized. However, when handling is necessary, hands or nets shall be wetted prior to touching fish. 6) Captured fish shall be held in cool, shaded, aerated water in a container with a lid. Aeration shall be provided with a battery-powered external bubbler. Fish shall be protected from jostling and noise, and shall not be removed from this container until time of release.</td>
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<td>Impact BR-1 (cont.)</td>
<td>7) Air and water temperatures shall be measured periodically. A thermometer shall be placed in holding containers and, if necessary, periodically conduct partial water changes to maintain a stable water temperature. If water temperature reaches or exceeds 18 degrees Celsius, fish shall be released and rescue operations ceased, if feasible.</td>
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<td>8) Overcrowding in containers shall be avoided by having at least two containers and segregating young-of-year fish from larger age-classes to avoid predation. If fish are abundant, the capturing of fish and amphibians shall cease periodically and shall be released at the predetermined locations.</td>
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<td>Species and year-class of fish shall be visually estimated at time of release. The number of fish captured shall be counted and recorded. Anesthetization or measuring fish shall be avoided unless requested by appropriate resource agencies (NMFS, CDFW).</td>
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<td>Fish relocation activities are typically restricted to the period of June 15 through November 1. However, draining of College Lake may have to commence prior to June 1 to ensure the lake is fully drained prior to the start of construction. If lake draining commences prior to June 1 (as it regularly does under existing conditions), fish relocations would be timed accordingly. Given that steelhead present at the time of draining are likely to be smolts attempting to reach the ocean, pre-June 1 relocations concurrent with lake draining would ensure suitable downstream passage conditions and timing for relocated smolts.</td>
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<td>Mitigation Measure BR-1b: Frac-out Contingency Plan.</td>
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<td>If HDD installation is implemented, PV Water shall require the contractor to retain a licensed geotechnical engineer to develop a Frac-out Contingency Plan. PV Water would submit the Frac-out Contingency Plan to the appropriate resource agencies (CDFW, RWQCB, USACE, USFWS, and NMFS) for review prior to the start of construction of any pipeline that would use HDD installation to avoid surface waters. The Frac-out Contingency Plan shall be implemented where HDD installation under a waterway will occur to avoid, minimize, or mitigate for potential Project impacts during HDD installation, as specified in the Frac-out Contingency Plan. The Frac-out Contingency Plan shall include, at a minimum:</td>
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<td>1) Measures describing training of construction personnel about monitoring procedures, equipment, materials and procedures in place for the prevention, containment, clean-up (such as creating a containment area and using a pump, using a vacuum truck, etc.), and disposal of released bentonite slurry, and agency notification protocols;</td>
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<td>2) Methods for preventing frac-out including maintaining pressure in the borehole to avoid exceeding the strength of the overlying soil.</td>
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<td>3) Methods for detecting an accidental release of bentonite slurry that include: (a) monitoring by a minimum of one biological monitor throughout drilling operations to ensure swift response if a frac-out occurs; (b) continuous monitoring of drilling pressures to ensure they do not exceed those needed to penetrate the formation; (c) continuous monitoring of slurry returns at the exit and entry pits to determine if slurry circulation has been lost; and (d) continuous monitoring by spotters to follow the progress of the drill bit during the pilot hole operation, and reaming and pull back operations.</td>
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<td>4) Protocols that the contractor would follow if there is a loss of circulation or other indicator of a release of slurry.</td>
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<td>5) Cleanup and disposal procedures and equipment the contractor would use if a frac-out occurs.</td>
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<td>6) If a frac-out occurs, the contractor shall immediately halt work, implement the measures outlined in Item 5 of the Frac-out Contingency Plan to contain, clean-up, and dispose of the bentonite slurry, and, if the frac-out occurs in the water channel, notify and consult with the staffs of the agencies listed above before HDD activities can begin again.</td>
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<td>PV Water shall require the contractor to implement Frac-out Contingency Plan to ensure that measures are implemented to prevent frac-out and if a frac-out occurs, implement measures to contain, clean-up, and dispose of the bentonite slurry.</td>
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### Table S-1 (continued)
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<tr>
<td>Biological Resources, EIR Section 3.4 (cont.)</td>
<td>Mitigation Measure BIO-1c (Revised): Where construction impacts on mixed riparian or willow riparian forest occur, revegetation and restoration measures will be developed as part of a revegetation plan approved by CDFW, RWQCB, and if applicable, USACE and/or California Coastal Commission, pursuant to regulatory agency permitting. The revegetation plan will include specific plans for the revegetation of impacted riparian forest, and for restoration of nearby creek riparian habitat, as appropriate. Upon approval by Santa Cruz County and other applicable agencies, PV Water the PVWMA may choose to coordinate with the Natural Resources Conservation Service (NRCS) and the Santa Cruz County Resource Conservation District (RCD) to develop and implement the required riparian revegetation, including providing funds to the RCD for their implementation of the revegetation. Revegetation measures will include the use of locally obtained plant materials, detailed descriptions of installation methods, after-installation care, weed control measures, success criteria, and corrective measures if the success criteria are not met. Temporarily impacted areas will be restored to pre-construction conditions with equivalent or greater habitat quality. Revegetation will include a 3:1 replacement ratio of the acreage of riparian habitat lost and for all trees lost as result of the Project to account for the reduced habitat values of smaller trees compared with mature vegetation. Success criteria for replanting will be less than 20 percent mortality of individual species annually yearly for 5 years. Replanting will be conducted each year that plantings exceed 20 percent mortality, such that 80 percent plant survival is maintained each year of the 5-year monitoring period. Cover provided by invasive, non-native plant species shall not exceed 5 percent. Mitigation will occur at a site acceptable to permitting agencies and pursuant to the Project’s permit requirements. If the compensatory mitigation includes restoration, enhancement, or creation of wetlands or waters, a qualified biologist will monitor the designated wetland mitigation area for a minimum of five years to ascertain if the wetland mitigation is successful. Annual reports will be submitted to permitting agencies by December 31 of each monitoring year, describing the results of the monitoring and any remedial actions needed to achieve a minimum 3:1 habitat replacement ratio or equivalent for permanent impacts on wetlands and other waters.</td>
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<tr>
<td>Impact BR-1 (cont.)</td>
<td>Mitigation Measure BIO-1d (Revised): Where construction impacts on open water (creeks, streams, jurisdictional ditches), seasonal wetlands, or coastal freshwater marsh occurs, revegetation and restoration measures will be developed as part of a revegetation plan approved by CDFW, RWQCB, USACE, and/or California Coastal Commission and/or Santa Cruz County, pursuant to regulatory agency permitting. Upon approval by Santa Cruz County and other applicable agencies, PV Water the PVWMA may choose to coordinate with the Natural Resources Conservation Service (NRCS) and the Santa Cruz County Resource Conservation District (RCD) to develop and implement the required wetland revegetation and restoration, including providing funds to the RCD for their implementation of the revegetation and restoration. The revegetation plan will include specific plans for the revegetation of impacted coastal marsh wetlands, and for restoration of nearby wetland habitat, as appropriate. Revegetation measures will include the use of locally obtained plant materials, detailed descriptions of installation methods, after-installation care, weed control measures, success criteria, and corrective measures if the success criteria are not met. Temporarily impacted areas will be restored to pre-construction conditions with equivalent or greater habitat quality. Revegetation will include a 3:1 replacement ratio (or an equivalent habitat replacement strategy as agreed upon by PV Water the PVWMA and regulatory agencies) for impacted wetlands. If natural recovery is a viable strategy, then a wetland plant cover exceeding 50 percent should be attained after two growing seasons. Mitigation may occur via restoration, creation, or preservation of wetlands or waters. Mitigation will occur at a site acceptable to permitting agencies and pursuant to the Project’s permit requirements. If the compensatory mitigation includes restoration, enhancement, or creation of wetlands or waters, a qualified biologist will monitor the designated wetland mitigation area for a minimum of five years to ascertain if the wetland mitigation is successful. Annual reports will be submitted to permitting agencies by December 31 of each monitoring year, describing the results of the monitoring and any remedial actions needed to achieve a minimum 3:1 habitat replacement ratio or equivalent for permanent impacts on wetlands and other waters.</td>
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**LSM = Less than Significant with Mitigation**  
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### TABLE S-1 (CONTINUED)
#### SUMMARY OF IMPACTS AND MITIGATION MEASURES

<table>
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| Biological Resources, EIR Section 3.4 (cont.) | Should potential roosting habitat or potentially active bat roosts be identified during the habitat assessment in trees and/or structures to be disturbed under the Project, the following measures shall be implemented: | 1. Removal or disturbance of trees or structures (e.g. the existing weir and intake pump station) identified as potential bat roosting habitat or active roosts shall occur when bats are active, approximately between the periods of March 1 to April 15 and August 15 to October 15, to the extent feasible. These dates avoid bat maternity roosting season (approximately April 15 to August 31) and periods of winter torpor (approximately October 15 to February 28).  
2. If removal or disturbance of trees and structures identified as potential bat roosting habitat or active roosts during the periods when bats are active is not feasible, a qualified biologist would conduct pre-construction surveys within 14 days prior to disturbance to further evaluate bat activity within the potential habitat or roost site:  
a. If active bat roosts are not identified in potential habitat during preconstruction surveys, no further action is required prior to removal of or disturbance to trees and structures within the preconstruction survey area.  
b. If active bat roosts or evidence of roosting is identified during pre-construction surveys, the qualified biologist shall determine, if possible, the type of roost and species.  
i. If special-status bat species or maternity or hibernation roosts are detected during these surveys, appropriate species- and roost-specific avoidance and protection measures shall be developed by the qualified biologist in coordination with CDFW. Such measures may include postponing the removal of structures or trees, or establishing exclusionary work buffers while the roost is active. A minimum 100-foot no disturbance buffer shall be established around special-status species, maternity, or hibernation roosts until the qualified biologist determines they are no longer active. The size of the no-disturbance buffer may be adjusted by the qualified biologist, in coordination with CDFW, depending on the species present, roost type, existing screening around the roost site (such as dense vegetation or a building), as well as the type of construction activity that would occur around the roost site, and if construction would not alter the behavior of the adult or young in a way that would cause injury or death to those individuals.  
Under no circumstances shall active maternity roosts be disturbed until the roost disbands at the completion of the maternity roosting season or otherwise becomes inactive, as determined by the qualified biologist.  
ii. If a non-maternity or hibernation roost (e.g., bachelor daytime roost) is identified, disturbance to- or removal of trees or structures may occur under the supervision of a qualified biologist as described under measure 3).  
3. The qualified biologist shall be present during tree and structure disturbance or removal if active non-maternity or hibernation bat roosts or potential roosting habitat are present. Trees and structures with active non-maternity or hibernation roosts or potential habitat shall be disturbed or removed only under clear weather conditions when precipitation is not forecast for three days and when nighttime temperatures are at least 50 degrees Fahrenheit, and when wind speeds are less than 15 mph.  
a. Trimming or removal of trees with active (non-maternity or hibernation) or potentially active roost sites shall follow a two-step removal process:  
i. On the first day of tree removal and under supervision of the qualified biologist, branches and limbs not containing cavities or fissures in which bats could roost, shall be cut only using hand tools (e.g., chainsaws).  
ii. On the following day and under the supervision of the qualified biologist, the remainder of the tree may be removed, either using hand tools or other equipment (e.g. excavator or backhoe). |
### TABLE S-1 (CONTINUED)
#### SUMMARY OF IMPACTS AND MITIGATION MEASURES

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<td>Biological Resources, EIR Section 3.4 (cont.)</td>
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<td>iii. All felled trees shall remain on the ground for at least 24 hours prior to chipping, off-site removal, or other processing to allow any bats to escape, or be inspected once felled by the qualified biologist to ensure no bats remain within the tree and/or branches.</td>
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<tr>
<td>Impact BR-1 (cont.)</td>
<td></td>
<td>b. Disturbance to or removal of structures containing or suspected to contain active bat (non-maternity or hibernation) or potentially active bat roosts shall be done in the evening and after bats have emerged from the roost to forage. Structures shall be partially dismantled to significantly change the roost conditions, causing bats to abandon and not return to the roost. Removal would be completed the subsequent day.</td>
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<td>4. Bat roosts that begin during construction are presumed to be unaffected as long as a similar type of construction continues, and no buffer would be necessary. Direct impacts on bat roosts or take of individual bats would be avoided.</td>
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<td>Mitigation Measure BR-1d: Avoidance and Minimization Measures for San Francisco Dusky-Footed Woodrat.</td>
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<td>The following measures shall be implemented to avoid and minimize impacts on San Francisco dusky-footed woodrat:</td>
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<td>1. A qualified wildlife biologist shall conduct preconstruction surveys for San Francisco dusky-footed woodrat in the Salsipuedes Creek riparian corridor within the existing and proposed weir structure and intake pump station work area. The surveys shall be conducted within 14 days prior to the start of construction in suitable habitat and shall identify any woodrat nests located within 50 feet of anticipated construction disturbance areas.</td>
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<td>2. If woodrat nests are found during the preconstruction surveys, the wildlife biologist shall conduct additional surveys throughout the duration of construction activities at the Project site to identify any newly constructed woodrat nests.</td>
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<td>3. If nests are observed outside of the construction area, the qualified biologist shall demarcate a minimum 50-foot buffer area with orange construction fencing and require that all construction activities and disturbance remain outside of the fencing.</td>
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<td>4. Active woodrat nests located within the anticipated construction disturbance areas shall be relocated. Nests shall be relocated outside of the peak breeding season as feasible to minimize disturbance to young woodrats. Woodrat breeding season is December to September with peak breeding in mid-spring. Relocation of woodrats and/or their nests shall be conducted by the qualified wildlife biologist as follows:</td>
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<td>a. Clear understory vegetation from around the nest using hand tools.</td>
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<td>b. After all vegetative cover has been cleared around the nest, the biologist shall gently disturb the nest to encourage the woodrat(s) to abandon the nest and seek cover in adjacent habitat.</td>
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<td>c. Once the woodrats have left the nest, the biologist shall carefully relocate the nest sticks to suitable habitat outside of the construction disturbance area, piling the sticks at the base of trees or large shrubs if available. If multiple nests are relocated, the stick piles shall be placed at least 25 feet from one another.</td>
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<td>d. The qualified biologist supervising woodrat nest relocation shall ensure potential health hazards to the biologists moving nests are addressed to minimize the risk of contracting diseases associated with woodrats and woodrat nests. These include hantavirus, Lyme disease, and plague. The biologists that relocate nests shall take the following precautionary safety measures:</td>
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<td>i. Wear a Cal/OSHA-certified facial respirator to reduce inhalation of potential disease causing organisms.</td>
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<td></td>
<td>ii. Wear a white Tyvec protective suit to provide a barrier for ticks and fleas and facilitate their detection and removal and use gloves.</td>
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<tr>
<td><strong>Impact BR-1 (cont.)</strong></td>
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<td>e. If young woodrats are encountered during dismantling of the nest, nest material shall be replaced and a 50-foot no-disturbance buffer shall be established around the active nest. The buffer shall remain in place until the young woodrats have matured enough to disperse on their own accord and the nest is no longer active. Nesting substrate shall then be collected and relocated to suitable habitat outside of the Project area.</td>
</tr>
<tr>
<td><strong>Impact BR-2: Construction of Project components would result in a substantial adverse effect on riparian habitat or other sensitive natural community or on state or federally protected wetlands or waters through direct removal, filling, hydrological interruption, or other means.</strong></td>
<td>LSM</td>
<td><strong>Mitigation Measure BIO-1e (Revised).</strong> Where construction and/or facilities are placed within a riparian or wetland development setback area (as defined in the Santa Cruz County Municipal Code), indirect impacts to adjacent riparian and wetland vegetation will be minimized. Where feasible, buffer plantings of native trees and shrubs will be installed between the facility and the adjacent wetland or riparian resource to provide a vegetated buffer. A buffer planting plan will be prepared as part of a revegetation plan approved by CDFW, RWQCB, USACE, and/or California Coastal Commission, pursuant to regulatory agency permitting. The buffer planting plan will include specific revegetation measures, including the use of locally obtained plant materials, detailed descriptions of installation methods, after-installation care, weed control measures, success criteria, and corrective measures if the success criteria are not met.</td>
</tr>
<tr>
<td><strong>Impact BR-3: Construction of Project components could interfere substantially with the movement of any native resident or migratory wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.</strong></td>
<td>LS</td>
<td>No mitigation required.</td>
</tr>
<tr>
<td><strong>Impact BR-4: Project operations could result in a substantial adverse effect on riparian habitat or other sensitive natural community or on state or federally protected wetlands or waters through direct removal, filling, hydrological interruption, or other means.</strong></td>
<td>LS</td>
<td>No mitigation required.</td>
</tr>
<tr>
<td><strong>Impact BR-5: Project operations could result in a substantial adverse effect on terrestrial special-status species.</strong></td>
<td>LSM</td>
<td><strong>Mitigation Measure BIO-2i: Nesting Bird Surveys (Revised):</strong> Prior to any project construction or maintenance activities, the project proponent will take the following steps to avoid direct losses of nests, eggs, and nestlings and indirect impacts on avian breeding success:</td>
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<td>• If construction or maintenance activities occur only during the non-breeding season, between August 31 and February 1, no surveys will be required.</td>
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<tr>
<td>Impact BR-5 (cont.)</td>
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<td>• During the breeding bird season (February 1 through August 31), a qualified biologist will survey construction or maintenance areas in the vicinity of the Project site for nesting raptors and passerine birds not more than 14 days prior to any ground-disturbing activity or vegetation removal.</td>
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<td>• Surveys will include all potential habitats within 500 feet (for raptors) of activities and all onsite vegetation including bare ground within 250 feet of activities (for all other species).</td>
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<td>• If results are positive for nesting birds, avoidance procedures will be adopted, if necessary, on a case-by-case basis. These may include implementation of buffer areas (minimum 50-foot buffer for passerines and 250-foot minimum buffer for raptors) or seasonal avoidance.</td>
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<td>Mitigation Measure BIO-2j: CRFT (Revised):</td>
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<td>The following measures for avoidance and minimization of adverse impacts to California Red-Legged Frog (<em>Rana draytonii</em>) (CRF) during construction and maintenance of the Project BMP projects are those typically employed for construction activities that may result in short-term impacts to individuals and their habitat. The focus of these measures is on scheduling activities at certain times of year, keeping the disturbance footprint to a minimum, and monitoring. Consultation with the USFWS will be conducted and a Biological Opinion developed for each BMP Update component that requires a USACE Section 404 Wetland Permit.</td>
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<td>Ongoing and future CRF studies in the Project area may result in site-specific conditions that would be integrated into the future project-level BMP component designs, permitting and operations. CRF-1 through CRF-9 would apply only to Project locations identified as CRF-habitat.</td>
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<tr>
<td>CRF-1. PV Water</td>
<td>The Agency will annually submit the name(s) and credentials of biologists who would conduct activities specified in the following measures. No project activities will begin until the Agency receives approval from the Service that the biologist(s) is qualified to conduct the work.</td>
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<tr>
<td>CRF-2. A USFWS-approved biologist will survey the work construction or maintenance site 48 hours prior to the onset of activities. If CRF, tadpoles, or eggs are found, the approved biologist will determine the closest appropriate relocation site. The approved biologist will be allowed sufficient time to move them from the work site before work activities begin. Only USFWS-approved biologists will participate in activities associated with the capture, handling, and moving of CRF.</td>
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<td>CRF-3. Before any construction or maintenance activities begin on a project, a USFWS-approved biologist will conduct a training session for all construction personnel. At a minimum, the training will include a description of the CRF and its habitat, the importance of the CRF and its habitat, general measures that are being implemented to conserve the CRF as they relate to the Project, and the boundaries within which the Project may be accomplished. Brochures, books and briefings may be used in the training session, provided that a qualified person is on hand to answer any questions.</td>
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<td>CRF-4. A USFWS-approved biologist will be present at the work construction or maintenance site until such time as all removal of CRF, instruction of workers, and disturbance of habitat have been completed. After this time, the biologist will designate a person to monitor on-site compliance with all minimization measures and any future staff training. The USFWS-approved biologist will ensure that this individual receives training outlined in measure WPT-2 and in the identification of CRF. The monitor and the USFWS-approved biologist will have the authority to stop work if CRF are in harm’s way.</td>
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<td>CRF-5. The number of access routes, number and size of staging areas, and the total area of the activity will be limited to the minimum necessary to achieve the project goal. Routes and boundaries will be clearly demarcated, and these areas will be outside of riparian and wetland areas to the extent practicable.</td>
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<tr>
<td>Impact BR-5 (cont.)</td>
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<td>CRF-6. Work Construction and maintenance activities will be completed between April 1 and November 1 to the extent practicable. Should the Agency demonstrate a need to conduct activities outside this period, the Agency may conduct such activities after obtaining the Service’s USFWS approval.</td>
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<td>CRF-7. If a construction or maintenance work site is to be temporarily dewatered by pumping, and would take place within or adjacent to suitable CRF habitat, intakes will be completely screened with wire mesh not larger than five millimeters (mm) to prevent CRF from entering the pump system where applicable. Water will be released or pumped downstream at an appropriate rate to maintain downstream flows during construction. Upon completion of construction or maintenance activities, any barriers to flow will be removed in a manner that would allow flow to resume with the least disturbance to the substrate.</td>
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<td>CRF-8. The Declining Amphibian Populations Task Force’s Fieldwork Code of Practice will be followed to minimize the possible spread of chytrid fungus or other amphibian pathogens and parasites.</td>
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<td>Mitigation Measure BIO-2k: WPT (Revised):</td>
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<td>The following measures for avoidance and minimization of adverse impacts on western pond turtle (Actinemys marmorata) (WPT) during construction and maintenance of the Project BMP project elements are those typically employed for construction activities that may result in short-term impacts on individuals and their habitat. The focus of these measures is on keeping the disturbance footprint to a minimum and aggressive monitoring of WPTs before vegetation removal and during the construction and revegetation phase.</td>
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<td>WPT-1. PV Water The Agency will annually submit the name(s) and credentials of biologists who would conduct activities specified in the following measures. No project activities will begin until proponents have received approval from CDFW that the biologist(s) is qualified to conduct the work.</td>
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<td>WPT-2. A CDFW-approved biologist will survey the work site 48 hours prior to the onset of construction or maintenance activities. If WPT adults, juveniles or eggs are found, the approved biologist will determine the closest appropriate relocation site. The approved biologist will be allowed sufficient time to move them from the work site before work activities begin. Only CDFW-approved biologists will participate in activities associated with the capture, handling, and moving of WPT.</td>
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<td>WPT-3. Before any construction or maintenance activities begin on a project, a CDFW-approved biologist will conduct a training session for all construction personnel. At a minimum, the training will include a description of the WPT and its habitat, the importance of the WPT and its habitat, general measures that are being implemented to conserve the WPT as they relate to the project, and the boundaries within which the project may be accomplished. Brochures, books and briefings may be used in the training session, provided that a qualified person is on hand to answer any questions.</td>
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<td>WPT-4. A CDFW-approved biologist will be present at the construction or maintenance work site until such time as all removal of WPT, instruction of workers, and disturbance of habitat have been completed.</td>
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<td>WPT-5. The number of access routes, number and size of staging areas, and the total area of the activity will be limited to the project plans. Routes and boundaries will be clearly demarcated. Where impacts occur in these staging areas and access routes, restoration will occur as identified in the general best management practices BMP measures above.</td>
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<td><strong>Biological Resources, EIR Section 3.4 (cont.)</strong></td>
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<tr>
<td>Impact BR-6: Project operations could result in a substantial adverse effect on special-status fish species.</td>
<td>LSM</td>
<td>Mitigation Measure BR-2: Invasive Fish Species Control Plan. PV Water shall develop an Invasive Fish Species Control Plan. PV Water would submit the plan to the appropriate resource agencies (CDFW, USFWS, and NMFS) for approval within one year of Project implementation. The Fish Species Control Plan shall be implemented at College Lake within two years of Project implementation. The Fish Species Control Plan shall include, at a minimum: 1. Measures describing PV Water’s methods of draining College Lake to the greatest extent feasible; 2. Measures describing PV Water’s methods, equipment, and timing of invasive species eradication efforts to be conducted in association with lake drawdown efforts; 3. Measures describing the frequency at which invasive species control efforts are to be implemented.</td>
</tr>
<tr>
<td>Impact BR-7: Project operations could interfere substantially with the movement of native resident or migratory wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.</td>
<td>LS</td>
<td>No mitigation required.</td>
</tr>
<tr>
<td>Impact BR-8: Implementation of the Project could conflict with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.</td>
<td>LS</td>
<td>No mitigation required.</td>
</tr>
<tr>
<td>C-BR-1: The Project, in combination with past, present, and probable future projects in the Project area, could result in significant adverse impacts on special-status species, sensitive natural communities and wetlands, wildlife corridors or nursery sites, or conflicts with local plans and policies.</td>
<td>LS</td>
<td>No mitigation required.</td>
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<tr>
<td><strong>Air Quality and Greenhouse Gases, EIR Section 3.5</strong></td>
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<td>Impact AIR-1: Construction and operational activities associated with the Project could generate criteria air pollutant emissions that would conflict with implementation of the Clean Air Plan.</td>
<td>LS</td>
<td>No mitigation required.</td>
</tr>
<tr>
<td>Impact AIR-2: The Project could expose sensitive receptors to substantial levels of pollutants.</td>
<td>LS</td>
<td>No mitigation required.</td>
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<td>Impact AIR-3: The Project could create objectionable odors that would affect a substantial number of people.</td>
<td>LS</td>
<td>No mitigation required.</td>
</tr>
<tr>
<td>Impact AIR-4: The Project could lead to an increase of GHG emissions that are associated with global climate change; however, not at a cumulatively considerable level.</td>
<td>LS</td>
<td>No mitigation required.</td>
</tr>
<tr>
<td>Impact AIR-5: The Project would not conflict with the Executive Order B-30-15 Emissions Reduction Goal.</td>
<td>LS</td>
<td>No mitigation required.</td>
</tr>
<tr>
<td>Impact C.AIR-1: The Project, in combination with past, present, and probable future projects in the Project area, would not result in significant adverse cumulative air quality or greenhouse gas impacts.</td>
<td>LS</td>
<td>No mitigation required.</td>
</tr>
<tr>
<td><strong>Geology and Soils, EIR Section 3.6</strong></td>
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<tr>
<td>Impact GEO-1: The Project could directly or indirectly cause potential substantial adverse effects, including risk of loss, injury, or death involving an exacerbation of existing risks related to earthquake rupture, strong seismic ground shaking, seismic related ground failure including liquefaction, and landslides.</td>
<td>LS</td>
<td>Mitigation Measure GS-1 (Revised). Future construction of proposed BMP Update facilities shall be designed in accordance with design recommendations of geotechnical reports and in compliance with applicable policies and appropriate engineering investigation practices necessary to reduce the potential detrimental effects of ground shaking and liquefaction. Construction shall be in accordance with applicable requirements, City and County ordinances and policies regarding mitigation of seismic and geologic hazards, and appropriate geotechnical studies shall be conducted.</td>
</tr>
<tr>
<td>Impact GEO-2: The Project could result in substantial soil erosion.</td>
<td>LS</td>
<td>Mitigation Measure GS-2 (Revised). Construction of future BMP Update facilities shall include preparation and implementation of erosion control plans to minimize erosion and inadvertent transport of sediments into water bodies during installation of facilities. Measures shall include, but not be limited to: limiting the area of ground disturbance and vegetation removal at any one time during construction; conducting work prior to the rainy season if possible and protecting disturbed areas during the rainy season; installing bales or other appropriate barriers adjacent to water bodies to prevent transport of sediments into sloughs and water courses; immediately revegetating disturbed areas; and other Best Management Practices during construction to protect water quality. All grading and construction shall conform to applicable requirements, of the Santa Cruz County Grading Ordinance. To the extent possible, grading activities in non-cropped areas shall be limited to the period between April 15 and October 31.</td>
</tr>
<tr>
<td>IMPACT</td>
<td>Significance Determination</td>
<td>Mitigation Measure</td>
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<tr>
<td>Geology and Soils, EIR Section 3.6 (cont.)</td>
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<tr>
<td>Impact GEO-3: The Project could be located on a geologic unit or soil that becomes unstable as a result of the Project or that could potentially result in landslide, lateral spreading, subsidence, liquefaction, or collapse for reasons caused or exacerbated by the Project.</td>
<td>LS</td>
<td>Mitigation Measure GS-3 (Revised). All diversion and pipeline facilities shall be designed and engineered in accordance with recommendations of a geotechnical report and appropriate engineering designs to reduce the potential detrimental effects of expansive soils, corrosivity, and/or other identified soils constraints. A licensed geotechnical engineer shall prepare recommendations applicable to foundation design, earthwork, and site preparation prior to or during the project design phase. Recommendations will address mitigation of site-specific, adverse soil and bedrock conditions that could hinder development. Project engineers shall implement the recommendations. Geotechnical design and design criteria will comply with applicable codes and requirements of the California Building Code with California additions (CCR Title 24), applicable City and County construction and grading ordinances.</td>
</tr>
<tr>
<td>Impact GEO-4: The Project could be located on expansive soil, creating or exacerbating substantial risks to life and property.</td>
<td>LS</td>
<td>No mitigation required.</td>
</tr>
<tr>
<td>Impact GEO-5: The Project could directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.</td>
<td>LSM</td>
<td>Mitigation Measure GEO-1: Inadvertent Discovery of Paleontological Resources If construction or other Project personnel discover any potential fossils during construction, work at the discovery location shall cease in a 50-foot radius of the discovery until a qualified paleontologist meeting the Society of Vertebrate Paleontology standards has assessed the discovery and made recommendations as to the appropriate treatment. If the find is deemed significant, it shall be salvaged following the standards of the Society of Vertebrate Paleontology and curated with a certified repository. Following a discovery, the qualified paleontologist shall also provide PV Water with recommendations regarding future paleontological monitoring, if deemed warranted.</td>
</tr>
<tr>
<td>Impact C-GEO-1: The Project, in combination with past, present, and probable future projects in the Project area, could have cumulatively considerable impacts on a unique paleontological resource.</td>
<td>LSM</td>
<td>Mitigation Measure GEO-1: Inadvertent Discovery of Paleontological Resources (refer to Impact GEO-5)</td>
</tr>
<tr>
<td>Hazards and Hazardous Materials, EIR Section 3.7</td>
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</tr>
<tr>
<td>Impact HAZ-1: Project construction and operation could result in a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.</td>
<td>LS</td>
<td>No mitigation required.</td>
</tr>
<tr>
<td>Impact HAZ-2: Project construction and operation could result in reasonably foreseeable conditions involving the release of hazardous materials to the environment.</td>
<td>LS</td>
<td>No mitigation required.</td>
</tr>
</tbody>
</table>

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### Table S-1 (continued)

**SUMMARY OF IMPACTS AND MITIGATION MEASURES**

<table>
<thead>
<tr>
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<tr>
<td>Hazards and Hazardous Materials, EIR Section 3.7 (cont.)</td>
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</tr>
<tr>
<td><strong>Impact HAZ-3:</strong> Project construction and operation could release hazardous emissions or handle acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.</td>
<td>LS</td>
<td>No mitigation required.</td>
</tr>
<tr>
<td><strong>Impact HAZ-4:</strong> The Project could be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5.</td>
<td>LSM</td>
<td>Mitigation Measure HM-2 (Revised).</td>
</tr>
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<td></td>
<td></td>
<td>Prior to initiation of earthwork activities on properties along the College Lake pipeline alignment not sampled as part of adopted Mitigation Measure HM-1. During the design phase of the proposed pipeline alignment from College Lake to Coastal Distribution System (CDS), PVWMA PV Water shall perform a Phase I Environmental Site Assessment for the alignment to determine the potential for encountering hazardous materials contamination in soils to be excavated and identify appropriate recommendations. Appropriate health and safety measures shall be identified as needed for worker safety, soil handling, and disposal of contaminated soils.</td>
</tr>
<tr>
<td>Mitigation Measure HAZ-1a: Health and Safety Plan (HASP)</td>
<td></td>
<td>Using information from the soil testing performed as part of adopted Mitigation Measure HM-1 and from the Phase I Environmental Site Assessment performed as part of adopted Mitigation Measure HM-2, the construction contractor(s) shall prepare and implement a site-specific HASP in accordance with 29 CFR 1910.120 to protect construction workers and the public during all excavation and grading activities. The HASP shall include, but is not limited to, the following elements:</td>
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<td>1. Designation of a trained, experienced site safety and health supervisor who has the responsibility and authority to develop and implement the site HASP;</td>
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<td>2. A summary of all potential risks to construction workers and maximum exposure limits for all known and reasonably foreseeable site chemicals based on the most recent data collection and reporting;</td>
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<td>3. Specified personal protective equipment and decontamination procedures, if needed;</td>
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<td>4. Emergency procedures, including route to the nearest hospital; and</td>
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<td>5. Procedures to be followed in the event that evidence of potential soil or groundwater contamination (such as soil staining, noxious odors, debris or buried storage containers) is encountered.</td>
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<td>These procedures shall be in accordance with hazardous waste operations regulations and specifically include, but are not limited to, the following: immediately stopping work in the vicinity of unknown discovered or suspected hazardous materials release and notifying the Santa Cruz County CUPA (415-473-7085).</td>
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</table>
TABLE S-1 (CONTINUED)
SUMMARY OF IMPACTS AND MITIGATION MEASURES

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<tr>
<td>Hazards and Hazardous Materials, EIR Section 3.7 (cont.)</td>
<td></td>
<td>Mitigation Measure HAZ-1b: Soil Management Plan (SMP)</td>
</tr>
<tr>
<td>Impact HAZ 4 (cont.)</td>
<td></td>
<td>Using information from the soil testing performed as part of adopted Mitigation Measure HM-1 and from the Phase I Environmental Site Assessment performed as part of adopted Mitigation Measure HM-2, PV Water or its contractor shall develop and implement a SMP that includes a materials disposal plan specifying how the construction contractor shall remove, handle, transport, and dispose of all excavated material in a safe, appropriate, and lawful manner. The plan shall identify protocols for training workers to recognize potential soil contamination (such as soil staining, noxious odors, debris or buried storage containers), soil testing and disposal by a qualified contractor in the event that contamination is identified, and identification of approved disposal sites (e.g., approved landfill or reuse site). Contract specifications shall mandate approval of the SMP by PV Water as well as full compliance with all applicable local, state, and federal regulations related to the identification, transportation, and disposal of hazardous materials</td>
</tr>
<tr>
<td>Impact HAZ-5: Project construction and operation could impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.</td>
<td>LSM</td>
<td>Mitigation Measure TRA-1b: Construction Traffic Control/Traffic Management Plan (refer to Impact TRA-1)</td>
</tr>
<tr>
<td>Impact C-HAZ-1: The Project, in combination with past, present, and probable future projects in the Project area, would not result in significant adverse cumulative hazards and hazardous materials impacts.</td>
<td>LS</td>
<td>No mitigation required.</td>
</tr>
<tr>
<td>Noise and Vibration, EIR Section 3.8</td>
<td></td>
<td>Mitigation Measure NOI-1a: Construction Noise Reduction Plan</td>
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</tbody>
</table>
| Impact NOI-1: Construction of the Project would result in a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plans or noise ordinances. | SU                          | PV Water shall develop and implement a Construction Noise Reduction Plan prior to initiating construction at the weir structure and intake pump station, the preferred WTP site, College Lake pipeline (trench construction) and trenchless construction activities near SR 152 and Walker Street. A disturbance coordinator shall be designated for the Project to implement the provisions of the plan. At a minimum, the Construction Noise Reduction Plan shall implement the following measures:  
  • Distribute to the potentially affected residences and other sensitive receptors within 200 feet of the Project construction site boundaries notice including a “hotline” telephone number, which shall be attended during active construction working hours, for use by the public to register complaints. The notice shall identify the noise disturbance coordinator who would be responsible for responding to any local complaints about construction noise. The disturbance coordinator would determine the reason for the noise complaints and institute actions warranted to correct the problem, if any. All complaints shall be logged noting date, time, complainant’s name, nature of complaint, and any corrective action taken. The notice shall also include the construction schedule. |

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### Summary of Impacts and Mitigation Measures

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<tr>
<td><strong>Impact NOI-1</strong> (cont.)</td>
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<td>• All construction equipment shall have intake and exhaust mufflers recommended by the manufacturers thereof.</td>
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<td>• The use of impact and vibratory pile drivers is limited to the daytime and evening hours permissible under the County of Santa Cruz noise ordinance. All impact pile driving activities shall be restricted to the hours of 8:00 a.m. to 10:00 p.m.</td>
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<td>• Maintain maximum physical separation, as far as practicable, between noise sources (construction equipment) and sensitive noise receptors. Separation may be achieved by locating stationary equipment (such as generators) in areas that would minimize noise impacts on the community.</td>
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<td>• Impact tools (e.g., jack hammers, pavement breakers) used during construction activities shall be hydraulically or electrically powered to avoid noise associated with compressed air exhaust from pneumatically powered tools to the extent feasible. Where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust shall be used.</td>
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<td>• Use construction noise barriers such as paneled noise shields, blankets, and/or enclosures adjacent to noisy stationary and off-road equipment. Noise control shields, blankets and/or enclosures shall be made featuring a solid panel and a weather-protected, sound-absorbent material on the construction-activity side of the noise shield. This measure does not apply to pipeline construction.</td>
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<tr>
<td><strong>Mitigation Measure NOI-1b: Off-site Accommodations for Substantially Affected Nighttime Receptors</strong></td>
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<tr>
<td>PV Water shall offer to provide temporary hotel accommodations for all residences within 200 feet of where trenchless construction activities would occur at the SR 152 and Walker Street crossings. The accommodations shall be provided for the duration of nighttime drilling activities. PV Water shall provide accommodations reasonably similar to those of the impacted residents (e.g., in terms of number of beds).</td>
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<tr>
<td><strong>Impact NOI-2</strong>: Operation of the Project could result in a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance.</td>
<td>LS</td>
<td>No mitigation required.</td>
</tr>
<tr>
<td><strong>Impact NOI-3</strong>: Project construction would generate excessive groundborne vibration.</td>
<td>LSM</td>
<td><strong>Mitigation Measure NOI-2: Vibration Monitoring Plan</strong></td>
</tr>
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<td></td>
<td>Prior to construction, PV Water shall require the pipeline construction contractor to develop a Vibration Monitoring Plan in coordination with a structural engineer, geotechnical engineer, and construction contractor if trenchless construction methods are used at the following intersections: East Lake Avenue/Palm Avenue/Hushbeck Avenue, East Beach Street/Lincoln Street, and 2nd Street/Walker Street. The Vibration Monitoring Plan shall include the following elements:</td>
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<td>• To mitigate vibration, the Vibration Monitoring Plan shall include measures such that surrounding buildings will be exposed to less than 0.25 in/sec PPV for historic or potentially historic buildings to prevent building damage. Measures may include restricting the use of vibratory pile driving and drill rigs from operating within 13 and 19 feet from historic structures, respectively.</td>
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<tr>
<td></td>
<td>• With permission of applicable property owners, conduct a pre-construction survey of buildings and other sensitive structures within the area of potential effects due to vibration-generating activities. Respond to any claims by inspecting the affected property promptly, but in no case more than five working days after the claim was filed. Any new cracks or other changes in structure will be compared to preconstruction conditions and a determination made as to whether the Project could have caused such damage.</td>
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<td>In the event that the Project is demonstrated to have caused any damage, such damage will be repaired to the pre-existing conditions.</td>
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<tr>
<td><strong>Transportation and Traffic, EIR Section 3.9</strong></td>
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</table>
| Impact C.NOI-1: The Project, in combination with past, present, and probable future projects in the Project area, would have a cumulatively considerable impact associated with construction noise. | SU | Mitigation Measure NOI-1a: Construction Noise Reduction Plan (refer to Impact NOI-1)  
Mitigation Measure NOI-1b: Off-site Accommodations for Substantially affected Nighttime receptors (refer to Impact NOI-1)  
Mitigation Measure NOI-2: Vibration Monitoring Plan (refer to Impact NOI-3) |
| Impact TRA-1: Construction of the Project would have temporary and intermittent effects on traffic and transportation conditions in the Project area. | LSM | Mitigation Measure TRA-1a: Encroachment Permits  
PV Water shall require the construction contractor to obtain any necessary road encroachment permits from the appropriate local jurisdiction (i.e., City of Watsonville, Santa Cruz County) prior to constructing each Project component and shall comply with the conditions of approval attached to all Project permits and approvals.  
Mitigation Measure TRA-1b: Construction Traffic Control/Traffic Management Plan  
PV Water shall require the construction contractor to prepare a Construction Traffic Control/Traffic Management Plan and submit it to the appropriate local jurisdiction (i.e., City of Watsonville, Santa Cruz County) for review and approval prior to construction. The plan shall be prepared in accordance with professional engineering standards and may include, but not be limited to, the following elements as appropriate:  
- Identify hours of construction for each Project component.  
- Schedule truck trips outside of peak morning and evening commute hours when feasible to minimize adverse impacts on traffic flow if agencies with jurisdiction over the affected roads identify highly congested roadway segments during their review of the encroachment permit applications. Haul routes that minimize truck traffic on local roadways and residential streets shall be used.  
- Develop circulation and detour plans to minimize impacts on local street circulation. This may include the use of signing and flagging to guide vehicles, bicyclists, and pedestrians through and/or around the construction zone.  
- Control and monitor construction vehicle movements by enforcing current standard construction specifications as defined by the appropriate local jurisdiction (i.e., City of Watsonville, Santa Cruz County) through periodic onsite inspections by the construction contractor.  
- Install traffic control devices where traffic conditions warrant, as specified in the applicable jurisdiction’s standards (e.g., the California Manual of Uniform Traffic Controls for Construction and Maintenance Work Zones).  
- Perform construction that crosses on-street and off-street bikeways, sidewalks, and other walkways in a manner that allows for safe access for bicyclists and pedestrians. Alternatively, provide safe detours to reroute affected bicycle/pedestrian traffic.  
- Consult with the Santa Cruz Metro at least one month prior to construction to coordinate bus stop relocations (as necessary) and to reduce potential interruption of transit service.  
- Comply with roadside safety protocols to reduce the risk of accidents, as defined in the Caltrans Division of Construction Code of Safe Practices and the California Manual of Uniform Traffic Controls for Construction and Maintenance Work Zones. Provide “Road Work Ahead” warning signs and speed control (including signs informing drivers of state-legislated double fines for speed infractions in a construction zone) to achieve required speed reductions for safe traffic flow through the work zone.  
- Store all equipment and materials in designated contractor staging areas. |
### Table S-1 (continued)
#### Summary of Impacts and Mitigation Measures

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<tr>
<td><strong>Impact TRA-1 (cont.)</strong></td>
<td>LSM</td>
<td>Mitigation Measure TRA-1b: Construction Traffic Control/Traffic Management Plan (refer to Impact TRA-1)</td>
</tr>
<tr>
<td>• Encourage construction crews to park at staging areas to limit lane closures in the public rights-of-way.</td>
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<tr>
<td>• Include a plan and implementation process for notifications and a process for communication with affected residents and businesses prior to the start of construction. Advance public notification shall include posting of notices and appropriate signage of construction activities at least one week in advance. The written notification shall include the construction schedule, the exact location and duration of activities within each street (i.e., which lanes and access point/driveways would be blocked on which days and for how long), and a toll-free telephone number for receiving questions or complaints.</td>
<td></td>
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<tr>
<td>• Include a plan and implementation process to coordinate all construction activities with emergency service providers in the area at least one month in advance. Emergency service providers shall be notified of the timing, location, and duration of construction activities. All roads shall remain passable to emergency service vehicles at all times.</td>
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<tr>
<td>• Include a plan and implementation process to coordinate all construction activities with the Pajaro Valley Unified School District at least two months in advance. The Pajaro Valley Unified School District shall be notified of the timing, location, and duration of construction activities. PV Water shall coordinate with the Pajaro Valley Unified School District to identify peak circulation periods at schools along the College Lake pipeline alignment (i.e., the arrival and departure of students), and require their contractor to avoid construction and lane closures during those periods, if feasible.</td>
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<tr>
<td>• Identify all roadway locations where special construction techniques (e.g., trenchless pipeline installation or night construction) will be used to minimize impacts on traffic flow. Require all open trenches and pits be covered with metal plates at the end of each workday to accommodate traffic and access.</td>
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</tr>
<tr>
<td><strong>Impact TRA-2:</strong> Construction of the Project would temporarily disrupt circulation patterns near sensitive land uses (schools, hospitals, fire stations, police stations, and other emergency providers).</td>
<td>LSM</td>
<td>Mitigation Measure TRA-1b: Construction Traffic Control/Traffic Management Plan (refer to Impact TRA-1)</td>
</tr>
<tr>
<td><strong>Impact TRA-3:</strong> Construction of the Project would have temporary effects on alternative transportation or alternative transportation facilities in the Project area.</td>
<td>LSM</td>
<td>Mitigation Measure TRA-1b: Construction Traffic Control/Traffic Management Plan (refer to Impact TRA-1)</td>
</tr>
<tr>
<td><strong>Impact TRA-4:</strong> Construction of the Project could temporarily increase the potential for accidents on Project area roadways.</td>
<td>LSM</td>
<td>Mitigation Measure TRA-1b: Construction Traffic Control/Traffic Management Plan (refer to Impact TRA-1)</td>
</tr>
<tr>
<td><strong>Impact TRA-5:</strong> Construction of the Project could increase wear-and-tear on the designated haul routes used by construction vehicles to access the Project sites.</td>
<td>LS</td>
<td>No mitigation required.</td>
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<td></td>
<td><strong>Mitigation Measure TRA-1a: Encroachment Permits (refer to Impact TRA-1)</strong></td>
</tr>
<tr>
<td>Impact C.TRA-1: The Project, in combination with past, present, and probable future projects in the Project area, would have cumulatively considerable impacts on transportation and traffic.</td>
<td>LSM</td>
<td><strong>Mitigation Measure TRA-1b: Construction Traffic Control/Traffic Management Plan (refer to Impact TRA-1)</strong></td>
</tr>
<tr>
<td><strong>Cultural Resources, EIR Section 3.10</strong></td>
<td></td>
<td><strong>Mitigation Measure NOI-2: Vibration Monitoring Plan (refer to Impact NOI-3)</strong></td>
</tr>
<tr>
<td>Impact CUL-1: The Project could cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines Section 15064.5.</td>
<td>LSM</td>
<td></td>
</tr>
<tr>
<td>Impact CUL-2: The Project could cause a substantial adverse change in the significance of an archaeological resource, including those determined to be a historical resource defined in Section 15064.5 or a unique archaeological resource defined in Public Resources Code 21083.2.</td>
<td>LSM</td>
<td><strong>Mitigation Measure CUL-1a: Retention of a Qualified Archaeologist</strong></td>
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<td>Prior to start of any ground-disturbing activities (i.e., demolition, pavement removal, pot-holing or auguring, boring, drilling, grubbing, vegetation removal, brush clearance, weed abatement, grading, excavation, trenching, or any other activity that has potential to disturb soil), PV Water shall retain a qualified archaeologist meeting the Secretary of the Interior’s Professional Qualifications Standards for archaeology (codified in 36 CFR Part 61; 48 FR 44738-44739) to oversee and ensure that all mitigation related to archaeological resources is carried out. <strong>Mitigation Measure CUL-1b: Pre-Construction Phase I Cultural Resources Survey</strong></td>
</tr>
</tbody>
</table>
|                                                                      |                            | Prior to the start of any ground-disturbing activity, the qualified archaeologist shall conduct a pre-construction Phase I Cultural Resources Survey of all areas that have not been previously surveyed within the last five years. The survey shall document resources potentially qualifying as historical resources or unique archaeological resources under CEQA. The qualified archaeologist shall document the results of the survey in a Phase I Cultural Resources Survey Report that follows Archaeological Resource Management Reports (ARMR); Recommended Contents and Format. The qualified archaeologist shall also prepare Department of Parks and Recreation 523 forms for resources encountered during the survey, which shall be appended to the report. If historic architectural resources are encountered that could potentially be impacted by the Project, the qualified archaeologist shall consult with a Qualified Architectural Historian meeting the Secretary of the Interior’s Professional Qualifications Standards for architectural history (codified in 36 CFR Part 61; 48 FR 44738-44739). The qualified archaeologist shall submit the draft Phase I Cultural Resources Survey Report to PV Water at least 90 days prior to the start of ground disturbance. The qualified archaeologist shall submit the final Phase I Cultural Resources Survey Report to the Northwest Information Center. In the event resources potentially qualifying as historical resources or unique archaeological resources under CEQA are identified during the survey, avoidance and preservation in place shall be the preferred manner of mitigating impacts to the resources. Preservation in place maintains the important relationship between artifacts and their archaeological context and also serves to avoid conflict with traditional and religious values of groups who may ascribe meaning to the resource. Preservation in place may be accomplished by, but is not limited to, avoidance, incorporating the resource into open space, capping, or deeding the site into a permanent conservation easement. If avoidance of archaeological resources is determined by PV Water to be infeasible in light of factors such as the nature of the find, Project design, costs, and other considerations, then the portion of the resource within the Area of Direct Impact shall be subject to presence/absence testing and if potentially significant deposits are identified, the resource shall be evaluated for significance under all four National Register/California

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<td><strong>Impact CUL-2 (cont.)</strong></td>
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<td><strong>Register Criteria (A/1-D/4).</strong> If a resource is found to be significant (i.e., meets the definition for historical resource in CEQA Guidelines Section 15064.5(a) or unique archaeological resource in Public Resources Code Section 21083.2(g)), the qualified archaeologist shall develop an Archaeological Data Recovery and Treatment Plan for the resource. When assessing significance and developing treatment for resources that are Native American in origin, the qualified archaeologist and PV Water shall consult with the appropriate Native American representatives.**</td>
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<td><strong>Mitigation Measure CUL-1c: Development of a Cultural Resources Monitoring and Mitigation Program</strong></td>
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<td><strong>The qualified archaeologist shall prepare a Cultural Resources Mitigation and Monitoring Program (CRMMP) based on the final approved Project design plans. The CRMMP shall be submitted to PV Water at least 60 days prior to the start of any ground-disturbing activities. The CRMMP shall include:</strong></td>
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<td><strong>- <strong>Provisions for Archaeological Monitoring.</strong> The CRMMP shall outline the archaeological monitor(s) responsibilities and requirements (refer to Mitigation Measure CUL-1f). The qualified archaeologist, in consultation with PV Water, shall have the ability to modify monitoring frequencies (i.e., either increase, decrease, or discontinue entirely) at all locations described below, based on soil observations (if it is determined that the likelihood of encountering intact significant resources is low due to disturbances or soil types, monitoring may be decreased or cease entirely) or discoveries (discovery of archaeological resources may warrant increased frequency of monitoring).</strong></td>
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<td><strong>- Full-time archaeological monitoring shall be required during all ground disturbance in the following locations:</strong></td>
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<td><strong>• Areas shaded purple and green on Figure 3.10-1 of the College Lake Integrated Resources Management Project EIR that are within agricultural fields (i.e., not within paved roadway right-of-ways)</strong></td>
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<td><strong>• The area along Maple Street/2nd Street between Main Street and Union Street within the City of Watsonville</strong></td>
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<td><strong>• Within 100 feet of Environmentally Sensitive Areas established through implementation of Mitigation Measure CUL-1e.</strong></td>
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<td><strong>- Part-time archaeological monitoring consisting of one 8-hour day per week shall be conducted during ground disturbance in the following locations (as noted above, the frequency of monitoring may be modified if conditions warrant):</strong></td>
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<td><strong>• Areas shaded purple on Figure 3.10-1 of the College Lake Integrated Resources Management Project EIR that are within paved roadway right-of-ways (i.e., not within agricultural fields), with the exception of area along Maple Street/2nd Street between Main Street and Union Street, which requires full-time monitoring as outlined above</strong></td>
</tr>
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<td><strong>• Areas shaded orange on Figure 3.10-1 of the College Lake Integrated Resources Management Project EIR that are within agricultural fields (i.e., not within paved roadway right-of-ways)</strong></td>
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<td><strong>- Part-time archaeological monitoring consisting of one 4-hour day per week shall be conducted during ground disturbance in the following locations (as noted above, the frequency of monitoring may be modified if conditions warrant):</strong></td>
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<td><strong>• Areas shaded orange on Figure 3.10-1 of the College Lake Integrated Resources Management Project EIR that are within paved roadway right-of-ways (i.e., not within agricultural fields)</strong></td>
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<td></td>
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<td><strong>- Procedures for Discovery of Archaeological Resources.</strong> Procedures to be implemented in the event of an archaeological discovery shall be fully defined in the CRMMP, and shall include stop-work and protective measures, notification protocols, procedures for significance assessments, and appropriate treatment measures, and shall address procedures for when an archaeological monitor is present, and when one is not present. The CRMMP shall state avoidance or preservation in place is the preferred manner of mitigating impacts to historical resources and unique archaeological resources, but shall provide procedures to follow should PV Water determine that avoidance is infeasible in light of factors such as the nature of the find, Project design, costs, and other considerations. See also Mitigation Measure CUL-1h.**</td>
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<tr>
<td>Cultural Resources, EIR Section 3.10 (cont.)</td>
<td>If, based on the recommendation of the qualified archaeologist, it is determined that a discovered archaeological resource constitutes a historical resource or unique archaeological resource pursuant to CEQA and data recovery through excavation is the only feasible mitigation available, an Archaeological Resources Data Recovery and Treatment Plan shall be prepared and implemented by the qualified archaeologist in coordination with PV Water that provides for the adequate recovery of the scientifically consequential information contained in the archaeological resource. PV Water, or its designee, will consult with appropriate Native American representatives in determining treatment of resources that are Native American in origin to ensure cultural values ascribed to the resource, beyond those that are scientifically important, are considered.</td>
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<tr>
<td>Impact CUL-2 (cont.)</td>
<td>• Procedures for Discovery of Human Remains and Associated Funerary Objects. The CRMMP shall outline the protocols and procedures to be followed in the event that human remains and associated funerary objects are encountered during construction. These shall include stop-work and protective measures, notification protocols, and compliance with California Health and Safety Code Section 7050.5 and Public Resources Code Section 5097.98 (refer to Mitigation Measure CUL-2).</td>
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<td>• Reporting Requirements. The CRMMP shall outline provisions for weekly, monthly, and final reporting. The qualified archaeologist shall prepare weekly status reports detailing activities and locations observed (including maps) and summarizing any discoveries for the duration of monitoring to be submitted to PV Water via e-mail for each week in which monitoring activities occur. Monthly progress reports summarizing monitoring efforts shall be prepared and submitted to PV Water for the duration of ground disturbance. The qualified archaeologist shall prepare a draft Archaeological Resources Monitoring Report and submit it to PV Water within 60 days after completion of the monitoring program or of treatment for significant discoveries should treatment extend beyond the cessation of monitoring. The final Archaeological Resources Monitoring Report shall be submitted to PV Water within 30 days of receipt of PV Water comments. The qualified archaeologist shall also submit the final Archaeological Resources Monitoring Report to the Northwest Information Center. If human remains are encountered, a confidential report documenting all activities shall be submitted to the California Native American Heritage Commission within 90 days after completion of any treatment (refer to Mitigation Measure CUL-2).</td>
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<td>• Curation Requirements. Disposition of Native American archaeological materials shall be determined through consultation between Native American representatives, the qualified archaeologist, and PV Water. Disposition of human remains and associated funerary objects shall be determined through consultation between the Most Likely Descendant, landowner, and PV Water (refer to Mitigation Measure CUL 2).</td>
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<td>Any historic-period archaeological materials that are not Native American in origin shall be curated at a repository accredited by the American Association of Museums that meets the standards outlined in 36 CFR 79.9. If no accredited repository accepts the collection, then it may be curated at a non-accredited repository as long as it meets the minimum standards set forth by 36 CFR 79.9. If neither an accredited nor a non-accredited repository accepts the collection, then it may be offered to a public, non-profit institution with a research interest in the materials, or donated to a local school or historical society in the area for educational purposes, to be determined by the qualified archaeologist in consultation with PV Water.</td>
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<td>• Protocols for Native American Monitoring and Input. The CRMMP shall outline the role and responsibilities of Native American Tribal representatives. It shall include communication protocols, an opportunity and timelines for review of cultural resources documents related to discoveries that are Native American in origin, and provisions for Native American monitoring. The CRMMP shall include provisions for full-time Native American monitoring of ground disturbance in the purple and green shaded areas shown on Figure 3.10-1 of the College Lake Integrated Resources Management Project EIR within agricultural fields (i.e., not within paved roadway right-of-ways), as well as during any subsurface investigation and data recovery for discovered resources that are Native American in origin (refer to Mitigation Measures CUL-1g).</td>
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### TABLE S-1 (CONTINUED)
#### SUMMARY OF IMPACTS AND MITIGATION MEASURES

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<td>Cultural Resources, EIR Section 3.10 (cont.)</td>
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<tr>
<td>Impact CUL-2 (cont.)</td>
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<td>Mitigation Measure CUL-1d: Construction Worker Cultural Resources Sensitivity Training Program</td>
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<td>A worker cultural resources sensitivity training program shall be implemented for the Project. Prior to any ground-disturbing activity, an initial sensitivity training session shall be provided by the qualified archaeologist to all project employees, contractors, subcontractors, and other professionals prior to their involvement in any ground-disturbing activities, with subsequent training sessions occurring on a monthly basis to accommodate new personnel becoming involved in the Project (subsequent sessions can be coordinated with other Worker Environmental Awareness Program or safety training that may be required). Construction personnel shall be informed of the sensitivity of the Project area and given a tutorial providing information on how to identify the types of resources that may be encountered. They shall be instructed on the proper procedures to be enacted in the event of an inadvertent discovery of archaeological resources or human remains, confidentiality of discoveries, and safety precautions to be taken when working with cultural resources monitors. PV Water shall make it a requirement that construction personnel are made available for and attend training sessions and retain documentation demonstrating attendance.</td>
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<td>Mitigation Measure CUL-1e: Designation of Environmentally Sensitive Areas</td>
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<td>Prior to the start of ground disturbance, the portion of the boundary of CA-SCR-44/H nearest Project-related activities shall be marked as an Environmentally Sensitive Area. This area shall not be marked as an archaeological resource, but shall be designated as an “exclusion zone” on Project plans and protective fencing in order to discourage unauthorized disturbance or collection of artifacts. The qualified archaeologist, or his/her designee, shall periodically inspect this area for the duration of Project activities in the vicinity to ensure that protective fencing remains intact and no incursions into the exclusion zone have occurred. Upon completion of all Project-related activities in the vicinity, all protective fencing and signage shall be removed.</td>
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<td>Mitigation Measure CUL-1f: Archaeological Monitoring</td>
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<td>Project-related ground disturbance shall be subject to archaeological monitoring as outlined in Mitigation Measure CUL-1c. The archaeological monitor(s) shall be familiar with the types of resources that could be encountered and shall work under the direct supervision of the qualified archaeologist. The archaeological monitor(s) shall keep daily logs detailing the types of activities and soils observed, and any discoveries. Archaeological monitor(s) shall have the authority to halt and re-direct ground disturbing activities in the event of a discovery until it has been assessed for significance and treatment implemented, if necessary, based on the recommendations of the qualified archaeologist in coordination with PV Water, and the Native American representatives in the event the resource is Native American in origin, and in accordance with the protocols and procedures outlined in the CRMMP (refer to Mitigation Measure CUL-1c). The qualified archaeologist shall have the authority to modify monitoring frequencies based on soil observations and/or discoveries.</td>
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<td>Mitigation Measure CUL-1g: Native American Monitoring</td>
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<td>Prior to the start of any ground-disturbing activity, PV Water shall retain a qualified Native American monitor to provide monitoring services as outlined in Mitigation Measure CUL-1c. The Native American monitor shall be from a Tribe that is culturally and geographically affiliated with the Project area (according to the California Native American Heritage Commission contact list for this project). If resources of Native American origin are discovered, the Native American monitor shall provide monitoring services in accordance with protocols and procedures outlined in the CRMMP (refer to Mitigation Measure CUL-1c).</td>
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<td>IMPACT</td>
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<td>Cultural Resources, EIR Section 3.10 (cont.)</td>
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<tr>
<td>Impact CUL-2 (cont.)</td>
<td>Mitigation Measure CUL-1h: Inadvertent Discovery of Archaeological Resources</td>
<td>In the event that archaeological resources are encountered during ground disturbance, all activity in the vicinity of the find shall cease (within 100 feet), and the protocols and procedures for discoveries outlined in the CRMMP shall be implemented (refer to Mitigation Measure CUL-1c). The discovery shall be evaluated for potential significance by the qualified archaeologist. If the qualified archaeologist determines that the resource may be significant, the qualified archaeologist shall develop an appropriate treatment plan for the resource in accordance with the CRMMP (refer to Mitigation Measure CUL-1c). When assessing significance and developing treatment for resources that are Native American in origin, the qualified archaeologist and PV Water shall consult with the appropriate Native American representatives. The qualified archaeologist shall also determine if work may proceed in other parts of the Project area while treatment for cultural resources is being carried out, and whether additional archaeological and/or Native American monitoring is warranted.</td>
</tr>
<tr>
<td>Impact CUL-3: The Project could disturb human remains, including those interred outside of formal cemeteries.</td>
<td>LSM Mitigation Measure CUL-2: Inadvertent Discovery of Human Remains</td>
<td>If human remains are encountered, then PV Water shall halt work in the vicinity (within 100 feet) of the discovery and contact the County Coroner in accordance with Public Resources Code Section 5097.98 and Health and Safety Code Section 7050.5. If the County Coroner determines the remains are Native American, then the Coroner shall notify the California Native American Heritage Commission in accordance with Health and Safety Code subdivision 7050.5(c), and Public Resources Code Section 5097.98. The California Native American Heritage Commission shall designate a Most Likely Descendant for the remains pursuant to Public Resources Code Section 5097.98. Until the landowner has conferred with the Most Likely Descendant, the contractor shall ensure the immediate vicinity where the discovery occurred is not disturbed by further activity, is adequately protected according to generally accepted cultural or archaeological standards or practices, and that further activities take into account the possibility of multiple burials. If human remains are encountered, the qualified archaeologist, in consultation with the Most Likely Descendant shall prepare a confidential report documenting all activities and it shall be submitted to the California Native American Heritage Commission within 90 days after completion of any treatment.</td>
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<td>IMPACT</td>
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<td><strong>Cultural Resources, EIR Section 3.10 (cont.)</strong></td>
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<td>Impact C-CUL-1: The Project, in combination with past, present, and probable future projects in the Project area, could have cumulatively considerable impacts on cultural resources.</td>
<td>LSM</td>
<td>Mitigation Measures NOI-2: Vibration Monitoring Plan (refer to Impact NOI-4)</td>
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<td>Mitigation Measure CUL-1a: Retention of a Qualified Archaeologist (refer to Impact CUL-2)</td>
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<td>Mitigation Measure CUL-1b: Pre-Construction Phase I Cultural Resources Survey (refer to Impact CUL-2)</td>
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<td>Mitigation Measure CUL-1c: Development of a Cultural Resources Monitoring and Mitigation Program (refer to Impact CUL-2)</td>
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<td>Mitigation Measure CUL-1d: Construction Worker Cultural Resources Sensitivity Training Program (refer to Impact CUL-2)</td>
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<td>Mitigation Measure CUL-1e: Designation of Environmentally Sensitive Areas (refer to Impact CUL-2)</td>
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<td>Mitigation Measure CUL-1f: Archaeological Monitoring (refer to Impact CUL-2)</td>
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<td>Mitigation Measure CUL-1g: Native American Monitoring (refer to Impact CUL-2)</td>
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<td>Mitigation Measure CUL-1h: Inadvertent Discovery of Archaeological Resources (refer to Impact CUL-2)</td>
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<td>Mitigation Measure CUL-1i: Long-Term Monitoring of CA-SCR-44/H and CA-SCR-150 (refer to Impact CUL-2)</td>
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<tr>
<td>Tribal Cultural Resources, EIR Section 3.11</td>
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<tr>
<td>Impact TCR-1: The Project would not result in a substantial adverse change in the significance of a tribal cultural resource.</td>
<td>NI</td>
<td>No mitigation required.</td>
</tr>
<tr>
<td>Impact TCR-2: The Project would not result in a substantial adverse change in the significance of a tribal cultural resource.</td>
<td>NI</td>
<td>No mitigation required.</td>
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<tr>
<td>Tribal Cultural Resources, EIR Section 3.11 (cont.)</td>
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<tr>
<td>Impact C-TCR-1: The Project, in combination with past, present, and probable future projects in the Project area, would not result in significant adverse cumulative tribal cultural resources impacts.</td>
<td>NI</td>
<td>No mitigation required.</td>
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<tr>
<td>Energy, Utilities, Public Services, and Recreation, EIR Section 3.12</td>
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<tr>
<td>Impact EUP-1: Implementation of the Project could result in wasteful, inefficient, or unnecessary consumption of energy during Project construction or operation, or conflict with or obstruct a state or local plan for renewable energy or energy efficiency.</td>
<td>LS</td>
<td>No mitigation required.</td>
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</tbody>
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### TABLE S-1 (CONTINUED)
#### SUMMARY OF IMPACTS AND MITIGATION MEASURES

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**Energy, Utilities, Public Services, and Recreation, EIR Section 3.12 (cont.)**

**Impact EUP-2**: Project construction and operation could result in a substantial adverse effect related to generating solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impairing the attainment of solid waste reduction goals.

- **LS**: No mitigation required.

**Impact EUP-3**: The Project would comply with federal, state, and local management and reduction statutes and regulations related to solid waste.

- **LS**: No mitigation required.

**Impact EUP-4**: The Project could result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or increase the demand for new or increased staff and/or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for public services including, fire protection, police protection, schools, or other public facilities.

- **LS**: No mitigation required.

**Impact EUP-5**: The Project could increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.

- **LS**: No mitigation required.

**Impact C-EUP-1**: The Project, in combination with past, present, and probable future projects in the Project area, would not result in significant adverse cumulative energy impacts.

- **LS**: No mitigation required.

**Impact C-EUP-2**: The Project, in combination with past, present, and probable future projects in the Project area, would not result in significant adverse cumulative utilities impacts.

- **LS**: No mitigation required.

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<td><strong>Energy, Utilities, Public Services, and Recreation, EIR Section 3.12 (cont.)</strong></td>
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<tr>
<td>Impact C-EUP-3: The Project, in combination with past, present, and probable future projects in the Project area, would not result in significant adverse cumulative public services impacts.</td>
<td>LS</td>
<td>No mitigation required.</td>
</tr>
<tr>
<td>Impact C-EUP-4: The Project, in combination with past, present, and probable future projects in the Project area, would not result in significant adverse cumulative recreational impacts.</td>
<td>LS</td>
<td>No mitigation required.</td>
</tr>
<tr>
<td><strong>Aesthetics Resources, EIR Section 3.13</strong></td>
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</table>
| Impact AES-1: Implementation of the Project could have a substantial adverse effect on scenic vistas. | LSM | **Mitigation Measure AES-1a: Aboveground Facility Treatment**  
PV Water shall paint or otherwise treat aboveground facilities using low-glare paint that blends with predominant color(s) of the surrounding terrain, unless colors otherwise specified by regulatory agencies. Concrete structures need not be painted.  
**Mitigation Measure AES-1b: Landscaping**  
For the preferred WTP site, PV Water shall shift the site plan northward in order to preserve orchard trees along Holohan Road and several orchard trees northeast of 116 Holohan Road, to the extent feasible and in accordance with PV Water security requirements.  
Where preservation of orchard trees along Holohan Road is not feasible (e.g., due to the access road and the College Lake pipeline), PV Water shall use landscaping to reduce textural contrasts and enhance visual integration of the WTP with its surroundings.  
Landscaping shall include shrubs and other vegetation typical of the surrounding area.  
For the optional WTP site, PV Water shall use landscaping to reduce textural contrasts and enhance visual integration of the WTP with its surroundings when viewed from SR 152. Landscaping shall include shrubs and other vegetation typical of the surrounding area. |
| Impact AES-2: Implementation of the Project could substantially damage scenic resources. | LS | No mitigation required. |
| Impact AES-3: Implementation of the Project could degrade the existing visual character or quality of public views of the sites in non-urbanized areas. | LSM | **Mitigation Measures AES-1a: Aboveground Facility Treatment** (refer to Impact AES-1)  
**Mitigation Measure AES-1b: Landscaping** (refer to Impact AES-1) |
| Impact AES-4: Project components could introduce significant new sources of light or glare. | LSM | **Mitigation Measure AES-2: Construction Lighting**  
PV Water shall require contractors to direct nighttime lighting used during construction away from residential areas, use the minimum amount of night lighting necessary for construction and safety, and shield and hood outdoor lighting to prevent light spillover effects during Project construction. |

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<td>LS</td>
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**IMPACT**

- **Aesthetics Resources, EIR Section 3.13 (cont.)**

  - **Impact C-AES-1:** The Project, in combination with past, present, and probable future projects in the Project area, would not result in significant adverse cumulative aesthetic impacts.  

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CHAPTER 1

Introduction

1.1 Purpose of this Environmental Impact Report

This environmental impact report (EIR) has been prepared by the Pajaro Valley Water Management Agency (PV Water) in conformance with the provisions of the California Environmental Quality Act1 (CEQA) and the CEQA Guidelines.2 PV Water serves as the lead agency for development of the EIR for the proposed College Lake Integrated Resources Management Project (Project), with input and coordination provided by other agencies and local jurisdictions. The lead agency is the public agency that has principal responsibility for carrying out or approving a project. CEQA requires the preparation of an EIR when a project could have significant impacts on the physical environment. PV Water determined that the Project, for which PV Water is the project sponsor, could cause significant environmental impacts, and that preparation of an EIR was warranted.

The Project would consist of construction and operation of a weir structure and intake pump station and water treatment plant and demolition of an existing weir and pump station at the south side of College Lake in unincorporated Santa Cruz County, California; and construction and operation of a 5.5-mile long pipeline in unincorporated Santa Cruz County and the City of Watsonville to convey treated water to agricultural users in the Pajaro Valley. The Project location and components are described in Chapter 2, Project Description.

Pursuant to CEQA Guidelines Section 15161, this is a project-level EIR, defined as an EIR that examines the physical environmental impacts of a specific development project. PV Water has prepared this EIR to provide the public and responsible and trustee agencies reviewing the Project with information about the Project’s potential effects on the environment. This EIR describes the potential environmental impacts that could result from implementation of the Project, identifies mitigation measures for reducing impacts to a less-than-significant level where feasible, and evaluates alternatives to the Project.

1 Public Resources Code Sections 21000 et seq.
2 California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000 et seq.
1. Introduction

1.2 Environmental Review Process

The environmental review process for the Project includes multiple steps: publication of a Notice of Preparation (NOP), public scoping period, publication of a Draft EIR, public and agency review of the Draft EIR, publication of responses to public and agency comments on the Draft EIR, and certification of the Final EIR. Each of these steps involves public outreach, as described below. Additional public outreach for the Project is described in Section 1.3.

1.2.1 Notice of Preparation

In accordance with Sections 15063 and 15082 of the CEQA Guidelines, on November 28, 2017, PV Water distributed an NOP to responsible and other public agencies and interested parties to begin the formal CEQA scoping process for the Project. The NOP informed agencies and the public about the Project and PV Water’s decision to prepare an EIR, and included a request for comments on environmental issues that should be addressed in the EIR. PV Water also distributed a Public Notice of the Availability of the NOP and Notice of Public Scoping Meeting to additional public agencies, interested parties, and landowners/occupants located near the Project, which was posted on PV Water’s website and placed in the legal classified section of the Register-Pajaronian on November 28, 2017.

PV Water held two public scoping meetings at 3:00 p.m. and 7:00 p.m. on Tuesday, December 12, 2017, in the Community Room at the City of Watsonville Civic Plaza (275 Main Street, Fourth Floor, Watsonville) to receive comments on the scope of the EIR. PV Water extended the public comment period from the required 30 calendar days to 38 calendar days to account for holidays. The public comment period ended on January 5, 2018. Appendix NOP presents the NOP and written comments received during the scoping period. PV Water has considered all comments pertaining to the scope and content of the EIR made by the public and agencies in preparing this EIR.

1.2.2 Draft EIR

This Draft EIR has been prepared in accordance with CEQA and the CEQA Guidelines. It provides an analysis of the Project-specific physical environmental impacts of construction and operation of the Project, and the Project’s contribution to the environmental impacts of foreseeable cumulative development.

The CEQA Guidelines encourage public participation in the planning and environmental review process. Publication of this Draft EIR marks the beginning of a comment period, during which the Draft EIR will be available to local, state and federal agencies, interested organizations and individuals for review. The Draft EIR is available for public review on PV Water’s web page (https://www.pvwater.org/college-lake-project). CDs and paper copies are also available at PV Water’s offices at 36 Brennan Street, Watsonville.3

3 Paper copies are also available for review at Watsonville Public Library, Watsonville Public Library, Freedom Branch, and Monterey County Library, Pajaro Branch.
Written comments on the Draft EIR may be submitted by 5:00 p.m. on June 7, 2019, to:

Pajaro Valley Water Management Agency
ATTN: Brian Lockwood, General Manager
36 Brennan Street
Watsonville, CA 95076

During the Draft EIR public comment period, PV Water will hold a public meeting on the Draft EIR. Written comments on the Draft EIR may be submitted at that meeting or may be sent by electronic mail to: eir@pvwater.org by 5:00 p.m. June 7, 2019.

1.2.3 Final EIR

Following the close of the Draft EIR public comment period, PV Water will prepare and publish a document entitled “Responses to Comments,” which will contain a copy of all comments received on this Draft EIR and written responses to all substantive comments. The document may also contain specific changes and revisions to the Draft EIR. This Draft EIR, together with the Responses to Comments document, will constitute the Final EIR. In an advertised public meeting, the Board of Directors will consider whether to certify the Final EIR as adequate and in compliance with CEQA.

1.2.4 Mitigation Monitoring and Reporting Program

PV Water will use the information in the certified Final EIR in its deliberations on whether to approve, modify, or deny the Project or aspects of the Project. If PV Water approves the Project, it will adopt CEQA findings that identify the Project-related impacts and the mitigation measures or alternatives that have been adopted to reduce significant impacts. A Mitigation Monitoring and Reporting Program must be adopted by PV Water as part of the adoption of the CEQA findings. The Mitigation Monitoring and Reporting Program lists the mitigation measures included in the Project as identified in the Final EIR, entities responsible for carrying out the measures, timing of implementation of the measures, and associated reporting requirements. If significant and unavoidable impacts would occur even with implementation of all identified mitigation measures, PV Water must adopt as a condition of Project approval a Statement of Overriding Considerations documenting how the benefits of Project implementation outweigh its significant and unavoidable impacts on the environment.

1.3 Other Public Outreach

In addition to the EIR public scoping meetings held on December 12, 2017, PV Water hosted a College Lake Community Meeting on September 29, 2016, with presentations relating to hydrology, wildlife, flood control, the state of the groundwater basin, and Reclamation District 2049. On July 10, 2017, PV Water also held a public meeting to inform community members about the Project. The Board of Directors meets monthly in meetings that are open for the public to attend. Staff provide monthly updates to the Board on the progress of Basin Management Plan implementation, including activities associated with the Project. In addition, staff have provided regular updates to groups such as the Santa Cruz County Farm Bureau, the Community Water
Dialogue, Rotary, and others. Staff have also organized meetings, or been invited to present at meetings, to provide updates to the California Water Commission, the Santa Cruz County Zone 7 Flood Control and Water Conservation District, the City of Watsonville, the Pajaro Valley Unified School District, the Pajaro Valley Public Cemetery District, Reclamation District 2049, the Santa Cruz Mid-County Groundwater Agency, and individual stakeholders.

1.4 Organization of the EIR

This EIR is organized as follows:

- **Chapter 5, Summary.** This chapter summarizes the Project, identifies significant environmental impacts and mitigation measures, and describes the alternatives considered in this EIR. It also identifies areas of controversy and issues to be resolved.

- **Chapter 1, Introduction.** This chapter describes the purpose and organization of the EIR, as well as the environmental review process and additional public outreach efforts.

- **Chapter 2, Project Description.** This chapter describes the Project (including Project background and Project objectives), summarizes Project components, and provides information about Project construction and operation. The chapter also lists permits and approvals relevant to the construction and operation of the Project.

- **Chapter 3, Environmental Setting, Impacts, and Mitigation Measures.** This chapter is subdivided into sections for each environmental resource topic analyzed. Each section describes the environmental and regulatory setting, the criteria used to determine impact significance, and the approach to the analysis for that resource topic. It then presents analyses of potential environmental impacts as well as mitigation measures that have been developed to address significant and potentially significant impacts. Each section also includes an evaluation of cumulative impacts with respect to that resource topic.

- **Chapter 4, Other CEQA Considerations.** This chapter identifies the significant environmental effects that cannot be avoided if the Project is implemented, and describes significant irreversible impacts.

- **Chapter 5, Alternatives.** This chapter describes the alternatives to the Project and compares their impacts to those of the Project. This chapter also summarizes the alternatives that were considered but eliminated from further analysis.

- **Chapter 6, Report Preparers.** This chapter lists the authors of this EIR.

Technical and supporting information for the EIR are included as appendices to the EIR.
CHAPTER 2
Project Description

2.1 Project Background

2.1.1 Pajaro Valley Water Management Agency

Pajaro Valley Water Management Agency (PV Water) was formed in 1984 by the Pajaro Valley Water Management Agency Act, for the primary purpose of managing groundwater resources and supplemental water supplies in its service area. The 2014 Sustainable Groundwater Management Act designated PV Water as the exclusive Groundwater Sustainability Agency within its service area (Water Code Section 10723), and in 2015 the Board of Directors (the Board) agreed that PV Water would be this Groundwater Sustainability Agency. PV Water’s service area encompasses approximately 70,000 acres in the Pajaro Valley, located in southern Santa Cruz County, northern Monterey County, and a small portion of San Benito County. Seawater intrusion in the Pajaro Valley Groundwater Basin was first documented in 1953. In the coastal areas and throughout much of the Pajaro Valley Groundwater Basin, overdraft conditions1 have caused groundwater levels to drop below sea level, creating a landward pressure gradient that causes seawater to move inland. Seawater intrusion has elevated the chloride concentrations in groundwater up to two and a half miles inland from the coast, in some areas contaminating the groundwater to the point that it is unsuitable for agricultural irrigation and domestic (potable) uses without treatment. Section 2.3, Need for the Project, describes overdraft and seawater intrusion conditions in the basin in greater detail.

PV Water was created to manage existing and supplemental water supplies for its service area. Its objective is to manage local groundwater resources to reduce, and eventually halt, long-term overdraft of the groundwater basin while ensuring sufficient water supplies for present and anticipated needs. To achieve this objective, PV Water has prepared and periodically updates a basin-wide groundwater management plan, the Basin Management Plan (BMP), which serves as the guiding document for its major projects and programs. The BMP preparation process includes engaging the public, forming a stakeholder committee, reviewing existing groundwater basin conditions, evaluating the results of implemented projects to reduce overdraft and seawater intrusion, as well as identifying additional projects and management strategies to achieve its stated goals and testing the strategies with the Pajaro Valley Hydrologic Model.

1 Overdraft occurs when the amount of groundwater withdrawn from a basin exceeds the volume of freshwater replenishing the basin.
2.1.2 Basin Management Planning

2.1.2.1 Previous Basin Management Planning Efforts

PV Water prepared its first BMP in the 1990s. The “1993 BMP” identified a preferred alternative that called for importing a surface water supply to the region from the federal Central Valley Project to substantially augment the use of local surface water supplies. A program environmental impact report (1993 BMP PEIR) was prepared for the 1993 BMP to analyze, at a program-level, these concepts.²

A redraft of the BMP was prepared in 2000 but its completion was delayed to allow additional analyses of local water supply options, which were then incorporated into the 2002 Revised BMP. The 2002 Revised BMP EIR provided a program-level analysis of the environmental impacts of two alternatives, and a project-level analysis of local projects. The final strategy of the 2002 Revised BMP adopted by the Board was called the Modified BMP 2000 Alternative and included the following major projects and programs: Harkins Slough Managed Aquifer Recharge and Recovery Facility (Harkins Slough Facility), Coastal Distribution System (CDS), 54-Inch Import Water Project with Out-of-Basin Banking, Recycled Water Project, and Conservation and Watershed Management Programs. Subsequently, PV Water constructed the Harkins Slough Facility, a significant portion of the CDS, supplemental wells, and, in cooperation with the City of Watsonville, the Recycled Water Facility (RWF). Section 2.1.3, below, briefly describes these facilities.

While the implementation of the existing Harkins Slough Facility, the RWF, supplemental wells, and the CDS has helped to reduce the magnitude of the groundwater overdraft and resulting seawater intrusion problems, these problems still persist. In 2005, PV Water contracted with the United States Geological Survey to cooperatively develop a robust, regional hydrologic model to simulate the use and movement of water within the groundwater basin. Based on the hydrologic modeling results, PV Water has established a target of reducing groundwater pumping in the Pajaro Valley Groundwater Basin by 12,100 acre-feet per year (AFY).³

2.1.2.2 Basin Management Plan Update

In 2010, PV Water formed the 21-member Ad Hoc BMP Committee as a means for the Pajaro Valley community to help guide the Board in the development of an updated BMP (BMP Update) focused on implementing locally controlled solutions (e.g., additional conservation, surface water supplies, and/or reductions in groundwater pumping). The BMP Update planning process began with the development of a comprehensive list of supplemental water supply projects, including some identified in previous BMPs, that could help meet the goals of stopping seawater intrusion and basin overdraft. Potential projects (44 in total) were identified, screened, ranked, and prioritized for feasibility, cost, and other factors. Based on this analysis, seven projects were

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² In early 2010, the Board removed the Import Pipeline Project from further consideration for a variety of reasons, including feasibility, cost, and a decision to focus on locally controlled projects.

³ One acre-foot equals about 326,000 gallons, or enough water to cover an acre of land one foot deep.
recommended by the BMP Committee, and ultimately selected by the Board for inclusion in the BMP Update portfolio. These projects are:

- Conservation;
- Increased Recycled Water Storage at the RWF;
- Increased Recycled Water Deliveries;
- Harkins Slough Recharge Facilities Upgrades;
- Watsonville Slough with Recharge Basins;
- College Lake with Inland Pipeline to Coastal Distribution System (this project was subsequently renamed the College Lake Integrated Resources Management Project); and
- Murphy Crossing with Recharge Basins.

### 2.1.2.3 2014 Program Environmental Impact Report

To address the potential environmental impacts of the BMP Update components, PV Water prepared the Final Environmental Impact Report for the Basin Management Plan Update (State Clearinghouse #2000062030, referred to herein as 2014 BMP Update PEIR), which evaluated the environmental impacts of the seven components at a program level of detail. A program EIR is prepared for a group of potential actions that can be characterized as one large project, such as the BMP Update (California Environmental Quality Act [CEQA] Guidelines Section 15168). A program EIR is a first-tier environmental document that assesses and documents the broad environmental impacts of a program with the understanding that a more detailed site-specific review may be required to assess future projects implemented under the program. The 2014 BMP Update PEIR evaluated the BMP Update components based on conceptual information available at that time, and established a framework for “tiered” or project-level environmental documents that would be prepared in accordance with the overall program.

The Board certified the 2014 BMP Update PEIR on April 16, 2014 (Resolution 2014-04). The Board then approved the BMP Update and made findings pursuant to CEQA, including a statement of overriding considerations, and adopted a mitigation monitoring and reporting program for the BMP Update (Resolution 2014-05).

### 2.1.2.4 Sustainable Groundwater Management Act

The Sustainable Groundwater Management Act (SGMA) was signed into law in September 2014, after the 2014 BMP Update PEIR was certified. SGMA defines sustainable groundwater management as the “management and use of groundwater in a manner that be maintained during the planning and implementation horizon without causing undesirable results.”

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Results” are defined in SGMA and may be summarized as any of the following effects caused by groundwater conditions occurring throughout the basin:

- Chronic lowering of groundwater levels indicating a significant and unreasonable depletion of supply;
- Significant and unreasonable reduction of groundwater storage;
- Significant and unreasonable seawater intrusion;
- Significant and unreasonable degraded water quality;
- Significant and unreasonable land subsidence; and/or
- Surface water depletions that have significant and unreasonable adverse impacts on the beneficial uses of surface water.6

SGMA requires critically over drafted, high priority basins like the Pajaro Valley Groundwater Basin7 to be managed under a Groundwater Sustainability Plan by January 31, 2020, and to achieve sustainability by 2040. SGMA also:

- Empowers local agencies to manage groundwater basins sustainably;
- Establishes basic requirements for Groundwater Sustainability Plans; and
- Provides for a review, evaluation and assessment of Groundwater Sustainability Plans by DWR (See Water Code sections 10733-10733.8) and intervention by the State Water Board if the applicable requirements of SGMA have not been met (see Water Code sections 10735-10735.8).

SGMA places the responsibility of sustainable groundwater management on Groundwater Sustainability Agencies, which can be any local agency that has water supply, water management, or land use responsibilities within a groundwater basin, or a combination of such agencies overlying a basin. SGMA designated PV Water as the exclusive local agency to manage groundwater within its statutory boundaries (Water Code Section 10723) and the Board voted to be the Groundwater Sustainability Agency for the Pajaro Valley Groundwater Basin in August 2015. In September 2015, PV Water submitted a formation notice to the California Department of Water Resources and the Department posted this notice.8,9 In 2016, PV Water submitted the BMP Update and associated documents as an Alternative to a Groundwater Sustainability Plan.10

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6 California Department of Water Resources, Sustainable Groundwater Management Act and Related Statutory Provisions from SB1168 (Pavley), AB1739 (Dickinson), and SB1319 (Pavley) as Chaptered], effective January 1, 2016.
7 Officially, the basin is referred to as the Pajaro Valley Groundwater Subbasin 3-002.01 (Corralitos Basin, Pajaro Valley Subbasin).
2.1.3 Existing PV Water Facilities and Operations

PV Water currently operates several facilities to help manage the Pajaro Valley Groundwater Basin, including the following:

- **Coastal Distribution System.** The CDS is a distribution system used to deliver supplemental water supplies (described below) to farms in coastal areas in portions of Santa Cruz and Monterey counties within the PV Water service area. The area served by the CDS is referred to as the Delivered Water Zone. Water delivered through the CDS replaces groundwater that would otherwise be pumped from coastal wells. In this sense, this delivered water provides “in–lieu-recharge” to the groundwater basin.

- **Harkins Slough Managed Aquifer Recharge and Recovery Facility.** PV Water uses the Harkins Slough Facility to divert wet-weather flows from Harkins Slough to storage in the surficial aquifers of the San Andreas Terrace, located near the coast. PV Water uses various wells to monitor (groundwater elevations and quality) and recover this stored water, and to deliver the water pumped from storage to coastal farms through the CDS.

- **Watsonville Area Recycled Water Treatment Facility.** The RWF was constructed and is operated in partnership with the City of Watsonville. Located at the Watsonville Wastewater Treatment Facility, the RWF was designed to produce and distribute about 4,000 AFY of disinfected recycled water through the CDS. The recycled water is mixed with “blend” water from Harkins Slough, water from supplemental wells operated by PV Water, and water from the City of Watsonville’s potable water system to dilute the concentrations of salts naturally occurring in the recycled water. PV Water takes these actions with the goal of achieving the water quality objectives established by the Projects and Facility Operations Committee, and to increase the quantity of the CDS supply.

- **Supplemental Wells.** In addition to the wells associated with the Harkins Slough Facility, PV Water operates several other supplemental water supply wells to dilute the concentrations of salts naturally occurring in the recycled water and to increase the quantity of the CDS supply.

2.1.4 Current College Lake Operations

2.1.4.1 Local Hydrology and Hydraulics

College Lake is a seasonal lake that forms in a topographic depression along the Zayante-Vergeles Fault zone. College Lake receives inflows from several tributaries (including Green Valley, Casserly, and Hughes Creeks, shown on Figure 2-1) and drains into Salsipuedes Creek, which is a tributary to the Pajaro River. Salsipuedes Creek receives an average of 4,700 AFY of surface water inflow from the College Lake watershed. The College Lake watershed consists of approximately 11,000 acres of range, rural residential, and crop lands. Approximately 2,000 feet

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11 The Watsonville Wastewater Treatment Facility and RWF are now collectively referred to as the Water Resources Center.

12 The recycled water is treated to meet requirements for agricultural irrigation use in Title 22 of the California Government Code.

13 This blending of water improves the overall quality of the delivered water by reducing the concentrations of salts.

downstream of College Lake, surface water enters Salsipuedes Creek from Corralitos Creek. At times during the west season, the flow direction in the reach of Salsipuedes Creek between College Lake and the creek’s confluence with Corralitos Creek can reverse. When these conditions occur, surface water can flow from Salsipuedes Creek into College Lake. Flow magnitudes and directions in this reach of Salsipuedes Creek are controlled by several factors, including the water level of College Lake, the flow rate in Corralitos Creek, the flow rate in Salsipuedes Creek downstream of the Corralitos Creek confluence, and the elevation of the existing weir at the College Lake outlet (headwall elevation of 60.1 feet North American Vertical Datum of 1988 [NAVD88]). During wet years, surface water overflowing from Pinto Lake flows through a drainage channel (called Pinto Creek) into this reach of Salsipuedes Creek between College Lake and the creek’s confluence with Corralitos Creek.

The existing weir and associated pump station operated by Reclamation District 2049 (RD 2049) are located at the outlet of College Lake, which is at its south end. Under existing conditions, flooding in and around College Lake occurs in association with wet weather events; during the wet season, water surface elevations regularly exceed the elevation of the existing weir (refer to Figure 3.3-2 in Section 3.2, Surface Water, Groundwater, and Water Quality). The purpose of the weir is to prevent water that is pumped from College Lake into Salsipuedes Creek from flowing back into the lake. (The existing weir leaks, which allows some water to flow in either direction through the weir, depending on hydrological conditions.) At the initiation of this pumping, the elevation of the weir is raised by approximately 2 feet with sandbags to prevent water discharged from the pumps into Salsipuedes Creek from flowing back into College Lake. The channel bed elevation on the south side of the existing weir is approximately 57 feet NAVD88. On the north side of the existing weir, the elevation of the channel bed is approximately 49 feet NAVD88. When College Lake’s water surface elevation is at the existing weir elevation of 60.1 feet NAVD88 (that is, prior to pumping), approximately 228 acres of the lake basin is inundated, and about 1,150 AF of water are in the lake.

2.1.4.2 Current Pumping and Farming Operations

Under existing conditions, all pumping to drain College Lake is conducted by RD 2049. RD 2049 conducts this pumping to allow farming in the lakebed; no water currently is pumped out of the lake for water supply purposes. To allow summer farming in the lakebed, RD 2049 pumps water out of College Lake in the spring, usually beginning in mid-March, with each year’s starting date depending on spring rain patterns. RD 2049 uses two unmetered pumps to pump water from the lake into Salsipuedes Creek. Pumping the water to drain the lake for farming generally takes 30 to 40 days. Intermittent pumping continues after this date as needed to keep the farmed areas in the
Figure 2-1
Project Location Map
lakebed dry.\textsuperscript{18} Once tractors are able to turn the land at the bottom of College Lake (normally approximately May 30), it takes about one month to prepare the land for planting, so planting normally begins between July 1 and 7. Most of the crops grown in the College Lake lakebed take 60 to 90 days to grow, so crops planted on July 7 are normally harvested between September 7 and October 7.\textsuperscript{19} Farming operations can be threatened and adversely affected by late summer or early fall rains that cause inflows into the lakebed to exceed the rates at which water can be pumped from the lakebed. The sandbags on the existing weir are usually removed by October 31.\textsuperscript{20}

\section*{2.1.4.3 Existing Biological Resources}

As indicated in the preceding text, College Lake is a managed, seasonal lake. Farmed wetland, farmed upland, riparian forest, seasonal wetland, open water and freshwater emergent wetland habitats occur throughout the lake basin (refer to Section 3.4, Biological Resources). The habitats in and around College Lake support a diverse assemblage of bird and other wildlife species. Casserly Creek and two of its tributaries, Banks Creek and Gaffey Creek, are known to support the state and federally listed south-central California coast steelhead (\textit{Oncorhynchus mykiss}).

College Lake also provides winter and spring rearing habitat for juvenile steelhead. Refer to Section 3.4, Biological Resources, in Chapter 3 for more information.\textsuperscript{21}

\section*{2.2 Project Location}

The proposed College Lake Integrated Resources Management Project (College Lake Project or Project) includes components that would be located in portions of the City of Watsonville and unincorporated Santa Cruz County (refer to Figure 2-1). The locations of the following Project components and related construction staging areas are collectively referred to as the “Project sites”. Refer to Section 2.5 for descriptions of the Project components of the College Lake Project.

\begin{itemize}
  \item \textbf{College Lake Water Storage Area.} College Lake is located in unincorporated Santa Cruz County approximately one-mile northeast of the Watsonville city limits, north of Holohan Road and west of State Route (SR) 152. \textbf{Appendix PD-1} lists by Assessor Parcel Number (APN) the properties located within the proposed College Lake water storage area. (With respect to potential adverse effects on agricultural land associated with development and operation of the Project, refer to the discussion in Section 3.2, Land Use and Agricultural Resources.)
  \item \textbf{Weir Structure and Intake Pump Station.} The proposed weir structure and intake pump station facility would be located in Salsipuedes Creek at the College Lake outlet, which is at
\end{itemize}

\begin{flushright}
\textsuperscript{18} The pumping rate has been estimated to range from 10 to 22 cubic feet per second based on observed change in lake water surface elevation at the existing pump house in 2012 and 2013. The actual pumping rate depends on the number of pumps running and the difference between the water surface elevations upstream and downstream of the weir; generally, the pumping rate is higher when the water surface elevations on either side of the existing weir are similar and drops as the lake level drops. (RCD-SCC, College Lake Multi-Objective Management Project Final Report, prepared by cbec, November 14, 2014.)
\textsuperscript{19} Letter from D. Peixoto, Lakeside Organic Gardens, LLC, to Mary Banister, PV Water, regarding College Lake farming operations, May 12, 2014.
\textsuperscript{20} RCD-SCC, College Lake Multi-Objective Management Report Final Report, prepared by cbec, November 14, 2014.
\textsuperscript{21} Refer also to Table BIO-1 in Appendix BIO for a list of special-status species with potential to occur in the College Lake study area.
\end{flushright}
the south end of the lake near the location of the existing weir (Figure 2-2). The proposed sites for the weir structure, intake pump station, and associated pipeline are within portions of APNs 051-441-24, 051-441-28, 051-441-01, and 051-101-47.

- **Water Treatment Plant.** The proposed water treatment plant (WTP) would be located at one of two possible locations (refer to Figure 2-2). The preferred WTP site is north of Holohan Road between Laken Drive and Grimmer Road, southwest of College Lake (within APN 051-101-47). The optional WTP site is west of the proposed weir structure (within APN 051-441-24). Although the preferred site was chosen due to geotechnical concerns regarding the optional site, both sites are described and evaluated in equal detail in this document.

- **College Lake Pipeline.** The proposed College Lake pipeline would extend from the proposed WTP to the CDS and the RWF. The proposed alignment traverses portions of unincorporated Santa Cruz County and the City of Watsonville (refer to Figures 2-3a through 2-3e). The College Lake pipeline alignment follows existing developed road rights-of-way and agricultural land. At the SR 1 crossing, PV Water’s preferred pipeline alignment is in West Beach Street; however, an optional pipeline segment is included at this location (shown on Figures 2-3d and 2-3e) because the number and location of existing utilities in this segment of West Beach Street could complicate or preclude pipeline construction in this street. This optional pipeline segment is described and analyzed in this EIR at an equal level of detail as the preferred alignment.

- **Point of Diversion and Place of Use.** As part of the Project, PV Water has filed an application (A032881) for a new water-right permit and a request for release from the priority of water right Application A018334 under Water Code Section 10504 with the State Water Resources Control Board. The application is for a permit to appropriate up to 3,000 AFY of water in College Lake. The proposed point of diversion would be located near the existing weir. Figure 2-4 depicts the proposed place of use (the “College Lake Project Use Area”), which would be the areas where the appropriated water would be used.

PV Water would obtain rights to access and use the Project sites.

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22 The elevation contours shown on figures depicting the College Lake basin are based on elevation data collected in 2010 using LiDAR (light detection and ranging) technology. The Association of Monterey Bay Area Governments commissioned the collection of the elevation data, which after collection was quality-controlled in accordance with U.S. Geological Survey standards. Evaluation of the LiDAR elevation data indicated that its accuracy varied due to the presence of vegetation, in some cases overestimating the ground surface elevation by up to 5 feet. Correction of the LiDAR data to address this overestimation was made based on 308 individual point comparisons of LiDAR results to ground survey data collected by cbec in 2012. The elevation data along with supplemental ground survey data were then used by cbec to develop the digital elevation model of the College Lake area. The elevation contours shown on figures in this EIR were generated using statistical methods based on the 2012 digital elevation model. Therefore, while the data shown is based on the most recent elevation information available, it may not represent current elevation conditions due to the date and variable accuracy of the data collection (RCD-SCC, College Lake Multi-Objective Management Project Final Report, prepared by cbec, November 14, 2014).
Figure 2-2
College Lake

SOURCE: Carollo Engineers, 2017; ESRI World Imagery, 7/23/2016; ESA
College Lake Integrated Resources Management Project
Corralitos Creek Crossing

Our Lady Help of Christians Catholic Church

St. Francis Catholic High School

Lakeview Middle School

McQuiddy Elementary School

Lakeview Middle School

St. Francis Catholic High School

College Lake Integrated Resources Management Project

Figure 2-3a
Pipeline Alignment
Figure 2-3b
Pipeline Alignment
Figure 2-3c
Pipeline Alignment
Figure 2-3d
Pipeline Alignment

SOURCE: Carollo Engineers, 2017; ESRI World Imagery, 7/23/2016; ESA

College Lake Integrated Resources Management Project
Potential Trenchless Construction

Preferred Pipeline Route

Optional Pipeline Route

Connection to Coastal Distribution System and Recycled Water Facility

Recycled Water Facility

Watsonville Wastewater Treatment Plant
Figure 2-4
Place of Use

Notes:
1. The Point of Diversion is in Salispuedes Creek.
2. The proposed place of use includes parcels served by the existing Coastal Distribution System (CDS), parcels that may be served by an expanded CDS, and parcels near the College Lake pipeline.
3. PLSS - Public Land Survey System; MDB&M - Mount Diablo Baseline and Meridian
2.3 Need for the Project

Land use within the Pajaro Valley is primarily agricultural, with crop values estimated at approximately $900,000,000 annually.\(^{23}\) Approximately 95 percent of the water used in the Pajaro Valley is pumped groundwater. In the Pajaro Valley Groundwater Basin, groundwater levels have declined as a result of long-term groundwater overdraft. These overdraft conditions have caused groundwater levels within the basin to drop below sea level (refer to Figure 2-5), creating a landward pressure gradient that causes seawater to flow inland and mix with fresh groundwater. As seawater encroaches into the fresh groundwater basin, water quality degrades, limiting its use for irrigation and domestic purposes. Intrusion into freshwater aquifers also results in a loss of freshwater storage capacity. Seawater intrusion creates progressive increases in the concentrations of chloride, boron, magnesium, and other constituents in groundwater; chloride is used as an indicator constituent of seawater intrusion.

As shown on Figure 2-6, the extent of seawater intrusion has increased in the coastal part of the basin. Numerous wells in the coastal area have had substantial increases in chloride concentrations over the last few decades, indicating that the volume of freshwater displaced in the intruded area continues to increase. Figure 2-7 depicts water demands in Pajaro Valley between 2000 and 2017, as well as rainfall totals by calendar year. Although total demands and agricultural groundwater pumping amounts were lower in 2016-2018 than in previous years, the total amounts of groundwater pumping continue to exceed total amounts of groundwater recharge, so the cumulative groundwater overdraft and seawater intrusion rates continue to increase. These conditions are not expected to improve without reductions in coastal groundwater pumping\(^{24}\) and development and delivery of supplemental water supplies.

Historical, existing, and future conditions of the groundwater basin within PV Water’s service area were modeled utilizing the Pajaro Valley Hydrologic Model.\(^{25}\) This modeling confirms that projects built and implemented by PV Water to date have reduced, but have not eliminated, the seawater intrusion and the groundwater overdraft problems. The basin 30-year average annual deficit is estimated to be approximately 12,100 AFY.\(^{26}\)

\(^{24}\) Elimination of groundwater pumping within PV Water’s Delivered Water Zone (i.e., the areas currently served by the CDS) is considered the most effective method of reducing seawater intrusion.
Figure 2-5
Pajaro Basin Groundwater Elevation (Fall 2018)

College Lake Integrated Resources Management Project

Seawater Intrusion within the Pajaro Valley

Figure 2-6

2. Project Description

In 2014, the Board adopted the BMP Update. The BMP Update consists of three primary components to eliminate the estimated 12,100 AFY deficit. These three elements are shown on Figure 2-8. The Project is the potential new water supply project with the largest estimated new water supply yield.

### 2.4 Project Objectives

The primary purposes of the Project are to help balance the groundwater basin, prevent further seawater intrusion, and meet water supply needs in PV Water’s service area by developing College Lake as a water storage and supply source. The following objectives were included in the 2014 BMP Update PEIR:

- Prevent seawater intrusion, long-term groundwater overdraft, land subsidence, and water quality degradation;
- Manage existing and supplemental water supplies to control overdraft and provide for present and future water needs;
- Create a reliable, long-term water supply, which has been identified as an important cornerstone of the long-term economic vitality of the Pajaro Valley;

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• Develop water conservation programs; and
• Recommend a program that is cost effective and environmentally sound.

PV Water anticipates that the Project would advance all of these objectives, with the exception of development of water conservation programs.28

As discussed in Section 2.1.2.4, SGMA was signed into law after PV Water’s approval of the 2014 BMP Update PEIR. In light of the BMP objectives, the requirements of SGMA, and the mitigation measures adopted as part of its approval of the BMP Update, the Board adopted the following project-specific objectives for the College Lake Project on December 20, 2017:

• Design and implement reliable facilities to help achieve sustainable groundwater management of the Pajaro Valley Groundwater Subbasin by 2040, taking into account potential future hydrologic changes, including those associated with climate change.
• Substantially contribute to the Pajaro Valley’s water supply needs in a timely manner, consistent with the Basin Management Plan Update implementation goals.
• Use locally controlled surface water for agricultural purposes to offset groundwater pumping in a manner consistent with habitat preservation and enhancement, and in coordination with resource agencies, the public, and other stakeholders.
• Make efficient use of, and leverage federal, state, and local investments in, existing Agency infrastructure.

2.5 Project Components

2.5.1 Overview

Table 2-1 summarizes key features of the Project. Figure 2-9 presents the overall estimated schedule and the general steps involved in implementing the Project. (Table 2-5, below, presents details on the proposed construction schedule.)

2.5.2 Environmental Commitments Proposed as Part of the Project

Appendix PD-2 identifies mitigation measures that apply to the Project and were adopted by the Board on April 16, 2014 as part of the mitigation monitoring and reporting program for the 2014 BMP Update PEIR. For the purposes of this EIR, the mitigation measures in Appendix PD-2 are considered parts of the College Lake Project, except that, as indicated in Chapter 3, Environmental Setting, Impacts, and Mitigation Measures, in some cases mitigation measures in Appendix PD-2 have been revised, replaced or augmented to reflect current conditions and to address project-specific and site-specific impacts.

28 While the Project would conserve groundwater by creating a reliable source of surface water to offset groundwater pumping, PV Water’s water conservation programs are designed to reduce water use in the Pajaro Valley. Information on PV Water’s water conservation programs is available at https://www.pvwater.org/.
## TABLE 2-1
**KEY FEATURES OF COLLEGE LAKE INTEGRATED RESOURCES MANAGEMENT PROJECT**

<table>
<thead>
<tr>
<th>Key Feature</th>
<th>Summary Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Annual Yield</strong></td>
<td>- Normal Range: Approximately 1,800 to 2,300 AFY&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>- Maximum: 3,000 AFY</td>
</tr>
<tr>
<td><strong>Storage Capacity&lt;sup&gt;b&lt;/sup&gt;</strong></td>
<td>Approximately 1,800 AF at water surface elevation 62.5 feet NAVD88</td>
</tr>
<tr>
<td><strong>Water Surface Area&lt;sup&gt;b&lt;/sup&gt;</strong></td>
<td>285 acres at water surface elevation of 62.5 feet NAVD88</td>
</tr>
</tbody>
</table>
| **Components**                  | - Weir Structure, Intake pump station:  
  - Concrete structure equipped with adjustable weir and designed to accommodate fish passage. Weir height adjustable from 60.1 feet NAVD88 (elevation of existing weir) to 62.5 feet NAVD88.
  - Intake would be screened compliant with NMFS and CDFW screening criteria for anadromous salmonids.
  - Pump station would be located on western bank adjacent to weir structure

- Water Treatment Plant:  
  - The preferred WTP site is located adjacent to Holohan Road; the optional WTP site is located just west of the weir structure and pump station sites.
  - Includes sedimentation, filtration, electrical/operations buildings, chemical storage and feed, chlorine contact basin<sup>c</sup>, filter influent pump station and effluent pump station. Intermediate ozonation could be added if necessary for meeting water quality objectives.

- Pipelines:  
  - Pipeline from intake pump station to WTP
  - 5.5 miles from WTP to Coastal Distribution System and Recycled Water Facility (same distance for preferred and optional pipeline alignments)

<table>
<thead>
<tr>
<th>Proposed Fish Passage, Bypass of Casserly Creek Flows:&lt;sup&gt;d&lt;/sup&gt;</th>
<th>Adult Steelhead Migration</th>
<th>Smolt Outmigration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum flow between Corralitos-Salsipuedes Confluence and Pajaro River</td>
<td>21 cfs</td>
<td>8 cfs</td>
</tr>
<tr>
<td>Minimum flow at weir&lt;sup&gt;e&lt;/sup&gt; and in Salsipuedes Creek between weir and Corralitos Creek</td>
<td>1.8 cfs</td>
<td>1.0 cfs</td>
</tr>
<tr>
<td>Minimum lake level</td>
<td>59.5 feet NAVD88</td>
<td>59.3 feet NAVD88</td>
</tr>
</tbody>
</table>

**Operations and Maintenance**

- Dec. 15 – May 31: would occur after minimum lake level and proposed fish passage flows have been achieved, and would be based on demand
- May 31 – Dec. 14: would occur based on demand, considering water supply portfolio priorities

- Flood Hazards: Weir height during wet season would be managed so as not to exacerbate upstream or downstream flooding (refer to Section 2.7, Operations and Maintenance)

- Water supply diversions
  - Sediment and debris removal
  - Vegetation maintenance (disking/tilling, trimming and mowing, removal)
  - Vector control

- Maintenance
  - Periodic inspections and maintenance of Project components
  - Within College Lake Basin
  - With water treatment plant

**NOTES:**
- AFY = acre-feet per year
- AF = acre-feet
- CDFW = California Department of Fish and Wildlife
- NMFS = National Marine Fisheries Service
- NOAA = National Oceanic and Atmospheric Administration
- NAVD88 = North American Vertical Datum of 1988
- WTP = water treatment plant

<sup>a</sup> Average water yield for College Lake would vary year to year, depending on hydrologic conditions (e.g., rainfall), weir structure operations, and water demand.

<sup>b</sup> Information is from cbec, inc. eco engineering (cbec), College Lake Integrated Resources Management Project, Hydrologic and Hydraulic Modeling Technical Memorandum, November 2018.

<sup>c</sup> Chlorine contact basins provide disinfection contact time between free chlorine (sodium hypochlorite) and water.

<sup>d</sup> Instream flow requirements based on critical riffle surveys conducted in 2017 and 2018. Each minimum flow requirement would be the number specified in this table or the flow resulting from bypassing the total inflow into College Lake, whichever is less. Minimum flow between the Corralitos Creek-Salsipuedes Creek confluence and Pajaro River is for the combined flow from Corralitos Creek and College Lake. Refinements to fish passage assumptions and modeling may occur during permitting based on agency consultations.

<sup>e</sup> The minimum flows may be refined during design phase of the proposed weir and fish passage structure.
2. Project Description

2.5.3 Water Budget

As part of project development, PV Water estimated College Lake watershed inflows and outflows and lake water levels, and prepared water budgets for existing and future with-project conditions. A water budget provides a temporal accounting of the volumes of inflow, outflow, and change in storage over a specified time period and under different hydrologic conditions. For the purposes of defining and evaluating the Project, four water years (October 1 through September 30) were modeled:

- 2014, representative of a critically dry water year;
- 2015, representative of a below-average water year;
- 2016, representative of an above-average water year; and
- 2017, representative of an extremely wet water year.

In general, the water budgets were developed using field measurements, topographic surveys, development of a digital elevation model (which in turn was used to convert College Lake’s water surface elevation to an impounded volume, and estimate water surface area and evaporation rate), data collection and analysis (e.g., stream gage and rainfall data), and hydrologic and hydraulic modeling (refer to Table 2-2).

---

## TABLE 2-2
### ELEMENTS OF WATER BUDGET DEVELOPED FOR THE PROJECT

<table>
<thead>
<tr>
<th>Time-Varying Feature</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Inflows</strong></td>
<td></td>
</tr>
<tr>
<td>Tributary inflows, direct precipitation, runoff</td>
<td>Hydrologic model, data from stream gages</td>
</tr>
<tr>
<td>Agricultural returns from Casserly Creek</td>
<td>Measured stage recorda and flows</td>
</tr>
<tr>
<td>Local agricultural returns</td>
<td>Assumed to be negligible</td>
</tr>
<tr>
<td>Reverse flow over weir</td>
<td>Hydraulic model</td>
</tr>
<tr>
<td><strong>Outflows</strong></td>
<td></td>
</tr>
<tr>
<td>Evaporation and evapotranspiration</td>
<td>Estimated based on California Irrigation Management Information System data</td>
</tr>
<tr>
<td>Natural outflow over weir</td>
<td>Hydraulic model</td>
</tr>
<tr>
<td>Water pumped from lake into intake</td>
<td>Estimated based on historical agency water demand data and modeled available supplies</td>
</tr>
<tr>
<td>Groundwater recharge through infiltration</td>
<td>Estimated</td>
</tr>
<tr>
<td><strong>Change of Lake Volume</strong></td>
<td></td>
</tr>
<tr>
<td>Lake water surface elevation in combination with hypsometric curveb from Digital Elevation Model</td>
<td></td>
</tr>
</tbody>
</table>

**NOTES:**

a A hydrologic stage is defined by the National Oceanic and Atmospheric Administration as the level of water surface above a given datum at a given location.

b A hypsometric curve depicts a relationship between an elevation and a water volume to convert the lake’s water surface elevation to a volume of impounded water.

**SOURCE:** cbec, College Lake Integrated Resources Management Project, Hydrologic and Hydraulic Modeling Technical Memorandum, November 2018.

### 2.5.4 Weir Structure and Intake Pump Station

The Project would include a proposed weir structure with an adjustable crest, and a diversion and intake pump station to divert surface water from College Lake. The intake pump station would pump raw (untreated) water from an intake just upstream of the weir to the proposed WTP via a 30-inch diameter intake pipeline. The intake pump station would have a maximum pumping capacity of 30 cubic feet per second (cfs). The proposed weir structure would consist of a reinforced concrete spillway with mechanically adjustable weir, abutment retaining walls on both sides of the structure, and reinforced concrete aprons upstream and downstream of the weir. Figures 2-10 and 2-11 present a site plan and cross sections for the weir structure; Table 2-3 presents the estimated dimensions of the proposed weir structure (as well as other project components). The proposed height of the weir (measured from the maximum possible water storage elevation to the downstream toe of the weir) is 5.2 feet. The proposed weir structure would also be designed to accommodate fish bypass flows and fish passage, in coordination with the National Oceanic and Atmospheric Administration National Marine Fisheries Service (NMFS). The proposed adjustable weir would be capable of raising the College Lake water level by up to 2.4 feet above the elevation of the existing weir to a water surface elevation of 62.5 feet NAVD88. The storage capacity of College Lake is approximately 1,150 AF at a water surface elevation of 60.1 feet NAVD88 and approximately 1,800 AF at a water surface elevation of 62.5 feet NAVD88 (Figure 2-12).30

30 cbec, College Lake Stage-Volume and Stage-Area Curves, November 10, 2017.
Exist existing concrete weir walls, core backfilling Buddha, 672.72.

EXISTING CONCRETE WEIR WALLS, CORE BACKFILLING, 672.72.

RENEWAL OF A 48.0 FOOT EL TOE.

NEW GRADING CONTOURS NOT SHOWN. DRAINAGE SHALL BE GRADED TO CONFORM TO STRUCTURE ELEVATIONS.

WEIR DIVERSION STRUCTURE AND INTAKE PUMP STATION - PLAN

WEIR DIVERSION STRUCTURE

EXISTING CONCRETE WEIR ABUTMENTS

INTAKE PUMP STATION

EXISTING CONCRETE WEIR WALL, CORE BACKFILLING, BUDDHA, 672.72.

GENERAL NOTES:

1. NEW GRADING CONTOURS NOT SHOWN. DRAINAGE SHALL BE GRADED TO CONFORM TO STRUCTURE ELEVATIONS.

Figure 2-11
Preliminary Weir Diversion Structure and Intake
Pump Station Site Plan - Cross Sections B & C

The point of diversion on this map is based on the following coordinate system:
California State Plane, Zone 3, NAD 83, Horizontal Datum, Feet.
Survey Source: cbec 2014 Topographic Survey and Digital Elevation Model, Vertical Datum: NAVD88
Background Imagery Source: USGS
PLSS Section Source: CA Dept. of Pesticide Regulation
Quarter Section Lines: Created from PLSS Section Source

Legend
- Point of Diversion
- Lake Area at Elevation of Existing Weir (60.1 ft NAVD88)
- Lake Area at Elevation of New Weir (62.5 ft NAVD88)
- Surface Contours (5 ft interval)
- Additional Inundation Area (60.1 to 62.5 ft NAVD88)
- 7.5 Minute Quadrangle

Source: Carollo Engineers, August 14, 2017.

College Lake Integrated Resources Management Project

Figure 2-12
College Lake Topography
### TABLE 2-3
**ESTIMATED DIMENSIONS OF PROJECT COMPONENTS**

<table>
<thead>
<tr>
<th>Project Component</th>
<th>Approximate Dimensions (length x width; feet)</th>
<th>Maximum Depth of Excavation for Preferred, Optional Sites (feet)</th>
<th>Depth Below Finished Grade (feet)*</th>
<th>Depth Below Existing Grade for Preferred, Optional Sites (feet)</th>
<th>Height Above Finished Grade (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Diversion Weir and Intake Structure</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weir Structure</td>
<td>100 x 55</td>
<td>19</td>
<td>3</td>
<td>3</td>
<td>2 to 24†</td>
</tr>
<tr>
<td>Intake Pump Station</td>
<td>36 x 36</td>
<td>25</td>
<td>27</td>
<td>27</td>
<td>3</td>
</tr>
<tr>
<td><strong>Water Treatment Plant</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inlet Diversion Structure</td>
<td>30 x 25</td>
<td>20, 17</td>
<td>18</td>
<td>15, 12</td>
<td>2</td>
</tr>
<tr>
<td>Sedimentation Basins (2)</td>
<td>132 x 34</td>
<td>13, 10</td>
<td>16</td>
<td>12, 9</td>
<td>0</td>
</tr>
<tr>
<td>Filter Influent Pump Station</td>
<td>30 x 25</td>
<td>25, 21</td>
<td>23</td>
<td>20, 16</td>
<td>2</td>
</tr>
<tr>
<td>Filters</td>
<td>92 x 52</td>
<td>Above grade</td>
<td>1</td>
<td>Above grade</td>
<td>15</td>
</tr>
<tr>
<td>Electrical/Operations Building</td>
<td>40 x 60</td>
<td>Above grade</td>
<td>2</td>
<td>Above grade</td>
<td>18</td>
</tr>
<tr>
<td>Coagulation Chemical Storage and Feed Facility</td>
<td>40 x 60</td>
<td>Above grade</td>
<td>2</td>
<td>Above grade</td>
<td>18</td>
</tr>
<tr>
<td>Sodium Hypochlorite Storage and Feed Facility</td>
<td>40 x 60</td>
<td>Above grade</td>
<td>2</td>
<td>Above grade</td>
<td>23</td>
</tr>
<tr>
<td>Chlorine Contact Basin for Local Users</td>
<td>60 x 25</td>
<td>14, 10</td>
<td>12</td>
<td>9, 5</td>
<td>2</td>
</tr>
<tr>
<td>Potential Future Ozone Building</td>
<td>45 x 20</td>
<td>Above grade</td>
<td>2</td>
<td>Above grade</td>
<td>16</td>
</tr>
<tr>
<td>Potential Future Ozone Contactor</td>
<td>50 x 20</td>
<td>14, 10</td>
<td>12</td>
<td>9, 5</td>
<td>2</td>
</tr>
<tr>
<td>Potential Future Liquid Oxygen and Evaporator</td>
<td>40 x 30</td>
<td>Above grade</td>
<td>2</td>
<td>Above grade</td>
<td>18</td>
</tr>
<tr>
<td>Local User Effluent Pump Station</td>
<td>10 x 15</td>
<td>14, 10</td>
<td>12</td>
<td>9, 5</td>
<td>2</td>
</tr>
<tr>
<td>Gravity Thickener (includes Thickened Solids Pump Station)</td>
<td>55-ft diameter</td>
<td>20, 17</td>
<td>18</td>
<td>15, 12</td>
<td>2</td>
</tr>
<tr>
<td>Solids Drying Beds (includes Decant Return Pumps)</td>
<td>230 x 115</td>
<td>11, 7</td>
<td>9</td>
<td>6, 2</td>
<td>1</td>
</tr>
</tbody>
</table>

**NOTES:**

* Refer to Figures 2-11, 2-15, and 2-17 for existing and finished grade at Project sites.

† The height of the proposed weir structure is measured from the lowest point in the existing channel which is at approximately 48 feet NAVD88.

**SOURCE:** Carollo Engineers, Request for Information, e-mail from R. Gutierrez, November 16, 2018; Carollo Engineers, e-mail from R. Gutierrez, February 12, 2018.
A screened intake would be constructed within the proposed weir structure. The proposed screen opening size is intended to comply with NMFS$^{31}$ and California Department of Fish and Wildlife (CDFW) criteria for screen opening sizes for anadromous salmonids. Refer to Figures 2-10 through 2-11 for a site plan and cross sections of the proposed weir structure and intake pump station and Figure 2-13 for a photo of the type of screens anticipated for the Project.

The Project would include a 30-inch diameter pipeline to convey the diverted surface water from the intake pump station to the WTP (refer to Figure 2-2). The intake pipeline alignment and length would depend on the location selected for the WTP; both options are evaluated in equal levels of detail in this EIR.

2.5.5 Water Treatment Plant

The Project would include a WTP to remove sediment and to filter and disinfect the diverted surface water. As shown on Figure 2-2, PV Water has identified two potential locations for the WTP, both of which are analyzed in this EIR. The preferred WTP site, shown on Figures 2-14 and 2-15, would occupy approximately five acres. The optional WTP site, shown on Figures 2-16 and 2-17, would occupy six acres. PV Water has identified the site on Holohan Road as its preferred location due to geotechnical considerations; development of the optional WTP site would require an elevated fill pad to raise the WTP site above flood elevation. As shown on Figures 2-14 and 2-16, the configuration of the WTP at either site would be similar.

The WTP would contain concrete-lined sedimentation basins, solids drying beds, a filter influent pump station, a filtration system consisting of filters installed on a concrete pad or in concrete basins, a sodium hypochlorite disinfection system, and an effluent pump station for local users.

Solids coming from the sedimentation basins and filter backwash at the WTP would be pumped to gravity thickeners before reaching solids drying beds for additional settling and drying. As the solids settle out of the water, the decant water from both the gravity thickeners and solids drying beds would be recycled to the start of the treatment process. Additional moisture from the solids would be removed via evaporation in the solids drying beds prior to off-haul of the solids to the nearest landfill. As a backup to this process, diluted solids could be bled into the Salsipuedes Sanitary District sewer system, which discharges into the City of Watsonville Wastewater Treatment Facility, at flow rates to be approved by the Salsipuedes Sanitary District and the City to not exceed the existing sewer capacity. However, off-hauling of dried solids is assumed for normal process operations.

The filter influent pump station would pump water decanted from the sedimentation basins through the filters. Effluent from the filters would be disinfected using sodium hypochlorite and the disinfected water would flow to the College Lake pipeline (described below in Section 2.5.6) and then to the CDS pipeline or to local users (refer to Figure 2-4). The WTP would have a capacity up to about 13 million gallons per day. As shown on Figures 2-14 and 2-16, the site plan provides space for a potential intermediate ozonation treatment process which could be needed in the future if PV Water deems it appropriate in terms of meeting irrigation water quality goals.32

Table 2-4 identifies the chemicals that would be stored and used at the WTP.

### Table 2-4

<table>
<thead>
<tr>
<th>Chemical</th>
<th>Purpose</th>
<th>Form</th>
<th>Estimated Storage Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium hypochlorite</td>
<td>Disinfection</td>
<td>Liquid, 12.5% solution</td>
<td>10,000 gallons</td>
</tr>
<tr>
<td>Coagulant</td>
<td>Coagulation</td>
<td>Liquid</td>
<td>3,300 gallons</td>
</tr>
<tr>
<td>High Purity Oxygen (if required)</td>
<td>Ozonation if required for removal of toxicity or inorganic compounds</td>
<td>Liquid Oxygen</td>
<td>2,000 gallons</td>
</tr>
<tr>
<td>Hydrogen Peroxide (if required)</td>
<td>Advanced oxidation for removal of toxicity</td>
<td>Liquid</td>
<td>1,600 gallons</td>
</tr>
<tr>
<td>Diesel Fuel</td>
<td>Standby generator</td>
<td>Liquid</td>
<td>600 gallons</td>
</tr>
</tbody>
</table>

SOURCE: Carollo Engineers, e-mail from R. Gutierrez, February 12, 2018.

---

32 Intermediate ozonation is an oxidation process that would use ozone gas to oxidize organic compounds and chemicals. Ozonation systems generate ozone from a feed gas (air or liquid oxygen) and feed the ozone into a contact chamber.
Preferred Water Treatment Plant Preliminary Site Plan

LEGEND
INF = Influent
SS = Sanitary Sewer
LOX = Liquid Oxygen
TS = Thickened Sludge
SL = Sludge
SD = Storm Drain

SOURCE: Carollo Engineers, 2018
Figure 2-15
Preferred Water Treatment Plant Preliminary Cross Section

SOURCE: Carollo Engineers, 2018
College Lake Integrated Resources Management Project

Figure 2-17
Optional Water Treatment Plant Preliminary Cross Section

SOURCE: Carollo Engineers, 2018
2.5.6 College Lake Pipeline

The Project would include an approximately 5.5-mile-long, 24-inch-diameter pipeline made of polyvinyl chloride or high density polyethylene from the WTP to the CDS and the RWF.33 (Refer to Figure 2-4 for a map depicting areas that could receive treated water from College Lake.) As shown on Figures 2-3a through 2-3e, the College Lake pipeline route generally follows existing road rights-of-way and traverses agricultural fields. The location of the easternmost segment of the College Lake pipeline would depend on the WTP site selected for implementation (refer to Figure 2-3a); this EIR evaluates all potential pipeline segments shown on Figure 2-3a at equal levels of detail. While PV Water prefers to install the College Lake pipeline in West Beach Street at the SR 1 crossing, there may not be sufficient room beneath the roadway at this location. The exact location of existing utilities in this segment of West Beach Street would be determined during design. Consequently, PV Water is considering a different alignment for the pipeline segment between the intersection of West Beach Street and Harvest Drive and the Watsonville Wastewater Treatment Facility (Figures 2-3d and 2-3e). Both alignments are analyzed in this EIR.

2.6 Construction

2.6.1 Construction Schedule, Hours, and Work Force

2.6.1.1 Construction Schedule

Construction is expected to last about 18 months and would be initiated following project approval, issuance of permits, and completion of design. For purposes of evaluation, it is assumed that construction would begin in 2022 and end in 2023. Table 2-5 shows the currently anticipated construction schedule and duration of each activity.

2.6.1.2 Construction Hours

Standard hours for construction activities generating noise would be 8:00 a.m. to 5:00 p.m., Monday through Saturday. Truck trips would generally be scheduled outside of peak commute hours when feasible (i.e., avoiding weekdays from 7:00 a.m. to 9:00 a.m. and 4 p.m. to 6 p.m.). Exceptions to standard construction hours would include:

- Weir Structure and Intake Pump Station Construction. Given seasonal constraints on the construction of these Project components (no work would occur during the wet weather season) and the distance from sensitive receptors, standard construction hours for the proposed weir and intake pump station would be 7:00 a.m. to 7:00 p.m. seven days per week.

- Trenchless Pipeline Construction. Tunneling requires continuous excavation. Consequently, pipeline construction at the locations circled on Figures 2-3a through 2-3e could occur for up to 24 hours per day and (for longer tunneling such as beneath Corralitos Creek) several days in a row.

33 Carollo Engineers, PV Water, BMP Program Management Services, College Lake to CDS Pipeline Routing Study, Final, August 2017.
### TABLE 2-5
**APPROXIMATE CONSTRUCTION SCHEDULE**

<table>
<thead>
<tr>
<th>Project Component/Construction Phase</th>
<th>Expected Duration</th>
<th>Estimated Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Water Treatment Plant</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mobilization</td>
<td>1 month</td>
<td>April 2022</td>
</tr>
<tr>
<td>Grading and Surcharging Fill Pad&lt;sup&gt;a&lt;/sup&gt;</td>
<td>3.5 months</td>
<td>May 2022 – August 2022</td>
</tr>
<tr>
<td>Concrete Work</td>
<td>8 months</td>
<td>September 2022 – April 2023</td>
</tr>
<tr>
<td>Mechanical Equipment installation</td>
<td>2 months</td>
<td>May 2023 – June 2023</td>
</tr>
<tr>
<td>Pre-Commissioning</td>
<td>0.5 month</td>
<td>July 2023</td>
</tr>
<tr>
<td><strong>Weir Structure and Intake Pump Station</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mobilization</td>
<td>1 month</td>
<td>April 2022</td>
</tr>
<tr>
<td>Dewatering, Grading and Excavation</td>
<td>0.5 month</td>
<td>June 2022</td>
</tr>
<tr>
<td>Pile Driving</td>
<td>0.5 month</td>
<td>June 2022</td>
</tr>
<tr>
<td>Concrete Work</td>
<td>6 months&lt;sup&gt;b&lt;/sup&gt;</td>
<td>July 2022 – December 2022</td>
</tr>
<tr>
<td>Demolition of Existing Weir Structure</td>
<td>1 month&lt;sup&gt;b&lt;/sup&gt;</td>
<td>October 2022</td>
</tr>
<tr>
<td>Mechanical Equipment Installation</td>
<td>1.5 months</td>
<td>May 2023 – July 2023</td>
</tr>
<tr>
<td>Pre-Commissioning</td>
<td>1 month</td>
<td>July 2023 – August 2023</td>
</tr>
<tr>
<td><strong>System Commissioning</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intake and Treatment Process Startup and Testing</td>
<td>1.5 months</td>
<td>July 2023 – August 2023</td>
</tr>
<tr>
<td>Begin Delivery of Treated Water</td>
<td>NA</td>
<td>August 2023</td>
</tr>
<tr>
<td>Contractor Demobilization</td>
<td>1 month</td>
<td>September 2023</td>
</tr>
<tr>
<td><strong>College Lake Pipeline</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pipeline Construction</td>
<td>13 months</td>
<td>June 2022 – June 2023</td>
</tr>
</tbody>
</table>

**NOTES:**

<sup>a</sup> Schedule based on construction of grading and surcharging fill pad for the preferred WTP site. The duration of surcharging for the optional WTP site would be increased by 12 to 18 months to allow for consolidation of fill pad at that site. There would be no construction activity at the site during consolidation. The remainder of the construction phase durations for the WTP would be the same for both site options.

<sup>b</sup> The construction site would be winterized and no work would occur within the Salsipuedes Creek channel between November 2022 and May 2023, at which point debris would be removed from the site, and winterization material would be removed from the creek. Construction of upland parts of the intake pump station could occur during this time as they would be out of the creek channel.

**SOURCE:** Carollo Engineers, Request for Information, e-mail from R. Gutierrez, November 16, 2018; Carollo Engineers, e-mail from R. Gutierrez, February 12, 2018.

### 2.6.1.3 Construction Workforce and Equipment

Table 2-6 identifies the workforce as well as the construction equipment associated with the various Project components. Between 11 to 26 workers would be working at a construction site at any given time.

### 2.6.1.4 Staging and Laydown Areas

Construction equipment and materials would be stored within the construction work areas to the extent feasible, though additional offsite laydown areas may be required. If required, the additional laydown area(s) would be located near the Project sites. Construction staging and laydown for the proposed weir structure and intake pump station would occur within an approximately 0.6-acre area surrounding the facilities. Construction staging and laydown for the proposed WTP would consist...
2. Project Description

### Table 2-6
**Construction Workforce and Equipment**

<table>
<thead>
<tr>
<th>Project Component</th>
<th>Approximate Average Daily Work Force</th>
<th>Construction Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weir Structure and Intake Pump Station</td>
<td>18</td>
<td>• Excavator (2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Concrete delivery trucks (1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Back Hoe/Track Hoe (1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Fork Lifts (2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Pile driving equipment (1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Crane (1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Pumps (4)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Generator Set (1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Wiring Pulling Machine (1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Air Compressor (1)</td>
</tr>
<tr>
<td>Water Treatment Plant (Both Site Options)</td>
<td>26</td>
<td>• Excavator (2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Concrete delivery trucks (1.9)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Dozers or Scrapers (2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Skip Loader (1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Back Hoe/Track Hoe (2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Fork Lifts (2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Crane (1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Scissor Lift (1)</td>
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<tr>
<td></td>
<td></td>
<td>• Pumps (8)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Air Compressor (4)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Water Truck (1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Generator Set (2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Asphalt/Paver Truck (1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Wiring Pulling Machine (2)</td>
</tr>
<tr>
<td>College Lake Pipeline and Pipeline from Weir Structure to Water Treatment Plant</td>
<td>11</td>
<td>• Excavator (1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Skip Loader (1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Back Hoe/Track Hoe (2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Fork Lifts (1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Plate Compactor (2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Pumps (2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Air Compressor (1)</td>
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<tr>
<td></td>
<td></td>
<td>• Water Truck (1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Generator Set (1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Concrete Saw (1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Asphalt/Paver Truck (1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Sweepers/ Scrubbers (1)</td>
</tr>
<tr>
<td>Trenchless Pipeline Installation</td>
<td>5</td>
<td>• Mud Pump (1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Drilling Rig (1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Excavator (1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Crane (1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Backhoe (2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Drill Fluid Treatment System (1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Sheet Pile Driver (1)</td>
</tr>
</tbody>
</table>

SOURCE: Carollo Engineers, Request for Information, e-mail from R. Gutierrez, November 16, 2018; Carollo Engineers, e-mail from R. Gutierrez, February 12, 2018.

of the WTP site (either preferred or optional); a construction disturbance area (e.g., to accommodate heavy equipment movement for site grading) would also occur within up to 30 feet from the WTP site boundary, although Salsipuedes Creek, the Pinto Creek drainage ditch, and Holohan Road would be avoided. Staging and laydown for pipeline construction would occur primarily within the width of the construction corridor and along the pipeline route.

### 2.6.2 Soils Management and Disposal

Table 2-7 presents the estimated volume of excess soil and rock material (spoils) that would be generated during construction of each Project component. Excess excavated material generated during project construction of each component would be off-hauled to Buena Vista Landfill or appropriate recycling facility.

Construction of the WTP at the optional site would require importing soil for the fill pad. Clean fill and other materials (e.g., pipe bedding) would also be required for other Project components.
2. Project Description

### TABLE 2-7
**EXCAVATION SOIL VOLUMES**

<table>
<thead>
<tr>
<th>Project Component</th>
<th>Excavation Soil Volume (cubic yards)</th>
<th>Bulking Factor&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Excavated Soil to be Reused as Fill (cubic yards)</th>
<th>Excess Spoils to be Hauled Away (cubic yards)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weir Structure</td>
<td>4,100</td>
<td></td>
<td>0</td>
<td>5,300</td>
</tr>
<tr>
<td>Intake Pump Station</td>
<td>1,700</td>
<td></td>
<td>0</td>
<td>2,200</td>
</tr>
<tr>
<td>Preferred Water Treatment Plant Site</td>
<td>19,800</td>
<td></td>
<td>17,800</td>
<td>4,700</td>
</tr>
<tr>
<td>Optional Water Treatment Plant&lt;sup&gt;b&lt;/sup&gt;</td>
<td>8,900</td>
<td></td>
<td>8,000</td>
<td>1,200</td>
</tr>
<tr>
<td>Pipeline from Weir Structure to Water Treatment Plant&lt;sup&gt;c&lt;/sup&gt;</td>
<td>2,500</td>
<td></td>
<td>1,100</td>
<td>1,800</td>
</tr>
<tr>
<td>College Lake Pipeline</td>
<td>34,400</td>
<td></td>
<td>21,500</td>
<td>16,300</td>
</tr>
<tr>
<td><strong>Total Excess Soils</strong>&lt;sup&gt;c&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td>26,800 - 30,300</td>
</tr>
</tbody>
</table>

**NOTES:**
<sup>a</sup> The bulking factor is the measure of change in volume of a material from when it is excavated to when it is deposited.
<sup>b</sup> Only applies to preferred WTP site since optional WTP site is adjacent to weir.
<sup>c</sup> Totals may not add due to rounding.

**SOURCE:** Carollo Engineers, Request for Information, e-mail from R. Gutierrez, November 16, 2018; Carollo Engineers, e-mail from R. Gutierrez, February 12, 2018.

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2.6.3 Construction Traffic Routing

The construction work force would likely come from Santa Cruz and Monterey County areas via SR 1 and/or SR 152. Vehicle trips would originate from a variety of locations and distances, but the primary vehicle access route for construction haul trucks and deliveries to the weir structure and treatment plant sites would be via Holohan Road. Trucks are anticipated to travel to and from Holohan Road to SR 1 using SR 152 and Airport Boulevard. Delivery trucks would use streets in the immediate area of the College Lake pipeline installation to access the construction corridor in the City of Watsonville.

Construction debris and recyclable material would be transported from the Project sites to the Buena Vista Landfill. Trucks exiting the treatment plant and weir structure construction sites would travel west on Holohan Road, continue onto Airport Boulevard, turn right onto Ranport Road, and turn left onto Buena Vista Drive to arrive at the landfill.

2.6.4 Demolition of Existing Weir Structure

Construction activities would include demolition of the existing weir and pump station. The proposed weir diversion structure would be constructed just downstream of the existing weir in Salsipuedes Creek. Demolition of the existing weir and pump station would occur after the concrete and grading work for the proposed weir structure is complete, allowing the existing weir to hold back any potential flow and facilitating diversion of flows around the construction zone. Demolition activities within the creek would take place during the dry weather season.
2.6.5 Weir Structure and Treatment Plant Construction

In general, construction of the proposed weir structure, intake pump station, and WTP facilities would involve dewatering; grading and excavation; pile driving; erecting concrete structures; installing piping, pumps, electrical and mechanical equipment; testing and commissioning facilities; finish work such as erecting enclosures; installing flooring, doors, windows, landscaping, and fencing; and painting and paving. Table 2-6 identifies the equipment that would be required for construction of these Project components.

2.6.6 Pipeline Installation

The construction method for installation of the pipelines (i.e., the pipeline connecting the pump station at the proposed weir structure to the treatment plant and the College Lake pipeline) would depend on location. Conventional open-trench construction techniques would be used for installation of pipelines in existing roadways and agricultural fields. Crossings of several surface features (creeks and other drainages, railroads, and state highways) would require trenchless construction; these locations are shown on Figures 2-3a through 2-3e and identified in Table 2-8.

Under typical circumstances in urban areas, the width of the disturbance corridor for pipeline construction would be approximately 20 feet. One full lane width and shoulder (or parking lane) closure would be required, with alternating one-way traffic control on two-lane roads. For open-trench pipeline construction in agricultural fields, a 40-foot-wide construction corridor generally would be used to facilitate construction and movement of equipment, where possible. A typical pipeline trench would be approximately 6.5 feet wide and would typically be no more than 8 feet deep (additional depth might be necessary in some locations to avoid conflict with existing utilities). Table 2-8 lists typical construction equipment for pipeline installation. Pipeline construction is estimated to occur at installation rates of approximately 100 linear feet per day for urban areas, and up to 250 linear feet per day in undeveloped areas such as agricultural fields. Each trenchless crossing would take about one week to complete. Construction of the College Lake pipeline is expected to take about 13 months.

2.6.6.1 Open Trench Installation

The overall construction sequence for installation of pipelines would involve: clearing and grading the ground surface along the pipeline alignment; excavating the trench; dewatering of the excavation if necessary; installing pipe bedding material (sand or aggregate); preparing and installing pipeline sections; backfilling the trench; regrading the ground surface; and revegetating or paving as appropriate. Construction of pipeline segments within agricultural land would disrupt farming activities; this issue is addressed in Section 3.2, Land Use and Agricultural Resources. The traditional open-trench construction method involves using a conventional backhoe, excavator, or other mechanized excavation equipment. The pipeline trench would be stabilized with trench boxes or by shoring, or (in farm fields) laying back and benching slopes to prevent the walls from collapsing during construction. The contractor would line the trench bottom with pipe bedding that would be shaped to support the pipeline. Installers would then place sections of the new pipelines in the trench, and then backfill the trench with native or imported fill material. The minimum depth of cover above the pipeline in agricultural fields is
expected to be 5 feet, which is expected to provide sufficient cover to avoid conflicts with typical farming operations, such as tilling and ripping. However, the pipeline easements would preclude certain farming practices (e.g., deep excavation, tree planting) to prevent damage to the pipeline. The pipelines would be pressure-tested and disinfected prior to being placed in operation.

2.6.6.2 Trenchless Pipeline Installation

One of the following two trenchless pipeline installation techniques would be used:

- **Horizontal Directional Drilling.** This is a type of trenchless pipeline installation that involves drilling a pilot bore using a surface-mounted drill rig with tracking and steering capabilities. The pilot bore is launched from the surface at an angle, transitions to horizontal as the required depth is reached, and finally angles back up to the surface at the exit location. Following enlargement of the pilot hole to the appropriate diameter, the pipe is pulled through the drill path to the exit pit. Drilling fluids (typically containing bentonite, an inert clay) are used to lubricate the cutting head, transport drill cuttings to the surface in a slurry, and stabilize the bore path, especially in loose or soft soils. After use, the drilling fluids would undergo treatment on site prior to disposal. Construction at the entry site would require an approximately 150-foot-wide and 250-foot-long area, and the exit site would need an approximately 100-foot-wide by 250-foot-long area.

- **Jack and Bore.** This method requires the use of a horizontal boring machine or auger to drill a hole, and a hydraulic jack to push a casing through the hole under the crossing. As the boring proceeds, a steel casing pipe is jacked into the hole and the pipeline is installed in the casing. This process requires the excavation of pits typically 10 feet by 35 feet (depth varies) at opposite ends of the crossing.

Groundwater levels in excavation areas would be measured prior to construction to help determine the extent of dewatering required. Soil removed from pits would either be stockpiled and reused, or loaded directly into dump trucks and hauled away for disposal. If existing soil is not adequate for backfilling, then new material would be imported for backfilling.

2.6.7 General Construction Activities

2.6.7.1 Construction Dewatering

Two types of dewatering discharges would be necessary during project construction: (1) dewatering of groundwater and rainwater in open excavations; and (2) discharges of water after cleaning the newly installed pipes before they are connected.

Dewatering of excavated areas would be temporary and necessary when surface water or subsurface water is encountered. Water from excavated areas would be discharged to agricultural lands, storm drains, or other waterways, and would be discharged in accordance with applicable regulatory requirements (refer to Section 3.3, Surface Water, Groundwater, and Water Quality). The contractor would treat water from excavated areas as necessary prior to discharge. The treatment could include settling tanks or filter bags to allow sediment to settle out.
TABLE 2-8
COLLEGE LAKE PIPELINE CONSTRUCTION DETAILS

<table>
<thead>
<tr>
<th>Segment</th>
<th>General Location</th>
<th>Location in Public Streets</th>
<th>From</th>
<th>To</th>
<th>Length (ft.)</th>
<th>Construction Method</th>
<th>Full Road Closures</th>
<th>Estimated Average Production Rate (linear ft./day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Preferred: Unincorporated Santa Cruz County - Located within agricultural fields and within public right of way</td>
<td>Holohan Road</td>
<td>Proposed Weir</td>
<td>Preferred Water Treatment Plant Site, Wagner Avenue &amp; Mohovy Street</td>
<td>6,400</td>
<td>Open Trench, Trenchless at Corralitos Creek Crossing</td>
<td>None</td>
<td>100-250</td>
</tr>
<tr>
<td></td>
<td>Optional: Unincorporated Santa Cruz County - Located within agricultural fields and within public right of way</td>
<td>Holohan Road</td>
<td>Proposed Weir</td>
<td>Optional Water Treatment Plant Site, Wagner Avenue &amp; Mohovy Street</td>
<td>4,700</td>
<td>Open Trench, Trenchless at Corralitos Creek Crossing</td>
<td>None</td>
<td>100-250</td>
</tr>
<tr>
<td>B</td>
<td>City of Watsonville – Located within public right of way</td>
<td>Wagner Avenue, Mohovy Street</td>
<td>Dolores Avenue</td>
<td>California Street</td>
<td>Martinez Street</td>
<td>Tilden Avenue</td>
<td>Tharp Avenue</td>
<td>Palm Avenue</td>
</tr>
<tr>
<td>C</td>
<td>City of Watsonville – Located within public right of way</td>
<td>Lincoln Street</td>
<td>Maple Avenue</td>
<td>2nd Street</td>
<td>Pine Street</td>
<td>East Beach Street &amp; Lincoln Street</td>
<td>Pine Street &amp; West Beach Street</td>
<td>5,520</td>
</tr>
<tr>
<td>D</td>
<td>Preferred: City of Watsonville and Unincorporated Santa Cruz County – Located within public right of way</td>
<td>West Beach Street</td>
<td>Pine Street &amp; West Beach Street</td>
<td>West Beach Street &amp; Lee Road</td>
<td>5,700</td>
<td>Open Trench</td>
<td>None</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>Optional: City of Watsonville and Unincorporated Santa Cruz County – Located within public right of way and agricultural fields</td>
<td>West Beach Street, Harvest Drive</td>
<td>West Beach Street &amp; Harvest Drive</td>
<td>State Route 1</td>
<td>6,250</td>
<td>Open Trench, Trenchless at State Route 129 Crossing</td>
<td>None</td>
<td>100-250</td>
</tr>
<tr>
<td>E</td>
<td>Preferred: Unincorporated Santa Cruz County – Located within public right of way</td>
<td>West Beach Street</td>
<td>Clearwater Lane</td>
<td>West Beach Street &amp; Lee Road</td>
<td>Watsonville Wastewater Treatment Facility</td>
<td>4,500</td>
<td>Open Trench</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>Optional: Unincorporated Santa Cruz County – Located within public right of way and agricultural fields</td>
<td>None</td>
<td>State Route 1</td>
<td>Watsonville Wastewater Treatment Facility</td>
<td>3,560</td>
<td>Open Trench, Trenchless at State Route 1 crossing of Optional Pipeline alignment</td>
<td>None</td>
<td>100</td>
</tr>
</tbody>
</table>

Flushing, Pressure Testing, Chlorination | Entire Pipeline | N/A | N/A | N/A

Final Paving | All segments except for Segment A | 23,400 | Paving | Same as Segment B | 700

Total | 27,070-29,160 |
After pipeline installation, the construction contractor would clean and disinfect the newly installed pipelines by removing materials and debris and flushing with chlorinated water before bringing the pipe into service. The water at the outlet end of the pipeline would be collected, transported to and treated at the Watsonville Wastewater Treatment Facility.

2.6.7.2 Site Cleanup and Restoration

Project construction activities would result in up to approximately 15 acres of ground disturbance (refer to Table 2-9, below). After construction, undeveloped areas and agricultural fields used during construction would generally be restored to pre-project conditions consistent with applicable permit conditions.

<table>
<thead>
<tr>
<th>TABLE 2-9</th>
<th>ANTICIPATED GROUND DISTURBANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Component</td>
<td>Approximate Area (square feet)</td>
</tr>
<tr>
<td>Weir Structure and Intake Pump Station</td>
<td>26,100</td>
</tr>
<tr>
<td>Water Treatment Plant(^a)</td>
<td>283,100 - 300,600</td>
</tr>
<tr>
<td>Connection from Weir Structure to Water Treatment Plant</td>
<td>24,000</td>
</tr>
<tr>
<td>College Lake Pipeline</td>
<td>300,000</td>
</tr>
<tr>
<td><strong>Total Disturbance Area(^a)</strong></td>
<td><strong>633,200 - 650,700</strong></td>
</tr>
</tbody>
</table>

NOTES:
\(^a\) The lower range of ground disturbance reflects construction at the preferred WTP site, while the higher number reflects construction at the optional WTP site.

SOURCE: Carollo Engineers, e-mail from R. Gutierrez, February 12, 2018.

2.7 Operations and Maintenance

PV Water has developed preliminary strategies to operate and maintain College Lake, described below, based on facility conceptual design, hydrologic and hydraulic modeling, information on demand for irrigation water, and Project yield. Given the complex nature of the multiple Project objectives, PV Water is also proposing to develop an Adaptive Management Plan (AMP). That framework for adaptive decision making is described below in Section 2.7.3 after the planned operations and management are described.

2.7.1 Operations

2.7.1.1 Operations Before and During Construction

For purposes of analysis, it is assumed that RD 2049 would continue its current pumping and water management practices until commencement of Project construction. During construction of the proposed weir structure and other Project components, PV Water would pump water from the College Lake lakebed in a manner similar to current procedures and then would bypass all inflows via a temporary pipeline into Salsipuedes Creek. Refer to Section 3.4, Biological
Resources, regarding measures to avoid or reduce impacts on sensitive resources during Project construction.

2.7.1.2 Proposed Fish Passage and Bypass of Casserly Creek During Operations

As described in Section 2.5.4, the proposed weir structure would be designed to accommodate release of fish bypass flows and to facilitate fish passage between Salsipuedes Creek and College Lake. Table 2-1 lists proposed minimum lake levels and minimum flows for fish passage for adult steelhead migration (December 15 through March 31) and smolt outmigration (April 1 through May 31).

Fish bypass releases would begin only when the water surface elevation in College Lake increases to the minimum level at which passable conditions for fish would have occurred without the existing weir in place and with flows being regulated only by the existing channel topography in Salsipuedes Creek. These conditions correspond to the College Lake water surface elevation that yielded a depth of 0.6 feet at the critical riffle (59.5 feet NAVD88) for the adult season, and 0.4 feet of depth (59.3 feet NAVD88) for the smolt season, as determined by a critical riffle analysis. After the simulated lake level reached this minimum level for the adult season, the Water Budget Model computed simulated fish bypass releases by determining which hydraulic reaches could be made passable. The proposed flows based on site-specific fish passage studies that included the results of the critical riffle analysis for three hydraulic reaches and locations are:

- **Salsipuedes Creek between Corralitos Creek and the Pajaro River.** This reach is considered passable when the total of the flow from Corralitos Creek and the College Lake outflow is greater than or equal to 21 cfs for adult fish and 8 cfs for smolts.

- **Salsipuedes Creek between the Proposed Weir Structure and Corralitos Creek.** Flows required to make this reach passable must produce a depth of 0.6 feet in the reach’s critical riffle for adults and 0.4 feet for smolts, which correspond to minimum College Lake outflows of 1.8 cfs and 1.0 cfs, respectively.

- **Weir Structure.** The minimum weir passage flow rates would be refined during the design phase of the fish passage structure; for modeling and evaluation purposes, these rates have been assumed to be the same as the corresponding minimum rates for the reach of Salsipuedes Creek between the proposed weir structure and Corralitos Creek.

Releases for fish passage would not exceed total inflows into College Lake during any time step. Figure 14 in **Appendix HYD** details the decision logic used in the Water Budget Model for fish bypass flows.

In addition, PV Water anticipates that other future conditions may warrant pumping flows from College Lake into Salsipuedes Creek during the summer and fall. The Project design includes a 30-inch bypass pipeline from the pump station to the downstream side of the proposed weir structure for this purpose. This bypass pipeline could be used to drain College Lake for equipment maintenance or equipment repair, to ensure the lake bottom is able to dry out for

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purposes of predator control, or to prevent water quality issues such as low dissolved oxygen, algal blooms, or other unforeseen issues from developing within the lake. Although PV Water is not presently able to anticipate the frequency of such operations, the bypass pipeline would be operated in compliance with applicable regulatory permit conditions.

### 2.7.1.3 Proposed Weir Operations

To understand the potential flood impacts of the Project compared to existing conditions, cbec, inc. eco engineering (cbec) conducted two-dimensional modeling of flood dynamics associated with the 10-year and 100-year run-off events (refer to Appendix HYD). Based on this analysis, PV Water would manage the proposed adjustable weir\(^{35}\) to avoid exacerbating flood risk while retaining water from late season precipitation events for subsequent treatment and distribution to irrigators in the Pajaro Valley. The proposed weir would be raised to 62.5 feet NAVD88 following the last anticipated significant storm event of the season. Factors that would affect the timing of the weir adjustment include water surface elevation and corresponding duration of drawdown, short- and long-term meteorological forecasts, and downstream channel conditions. Refer to Section 3.3, Surface Water, Groundwater, and Water Quality, and Appendix HYD for more detail.

### 2.7.1.4 Water Supply Extractions

Table 2-1 lists anticipated average and maximum annual water diversion rates. PV Water provided estimated monthly demands based on existing conditions for irrigation water for each modeled water year type (i.e., ranging from very wet to extremely dry). Operational criteria used in the water budget model to determine the extent to which projected monthly demand could be met included the following restrictions:

- Water supply extractions could not begin until lake achieved the lake levels for adult steelhead migration and smolt outmigration shown in Table 2-1; and
- For the period December 15 to May 31, only College Lake inflows exceeding the proposed minimum fish bypass flows in Table 2-1 could be diverted to the treatment plant for irrigation supply.

Depending on water year type, monthly demand was estimated at anywhere from 14 acre-feet to 470 acre-feet (refer to Appendix HYD).

### 2.7.1.5 Water Treatment Plant

The WTP may be operated 24 hours per day, seven days a week, at flow rates up to 9,000 gallons per minute.

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\(^{35}\) As described in Section 2.5.4, Weir Structure and Intake Pump Station, the weir crest could be adjusted from 60.1 feet NAVD88 (the height of the existing weir) to 62.5 feet NAVD88.
2.7.2 Maintenance

2.7.2.1 Weir Structure, Pump Station, Water Treatment Plant and College Lake Pipeline

Once the Project is fully operational, PV Water staff would periodically conduct routine inspections (e.g., for visual signs of wear and tear, obstructions or leakage) and perform scheduled maintenance of the weir structure, pump station, WTP and pipelines. Should damage to facilities occur, PV Water would dispatch a crew to conduct the necessary repairs. Standby equipment, including standby emergency diesel generators, would be periodically tested.

2.7.2.2 College Lake Water Storage Area

With implementation of the Project, water would be stored in College Lake longer, requiring changes in existing land use activities. PV Water would conduct routine (annual or semi-annual) maintenance activities within College Lake to preserve water storage capacity, avoid exacerbating existing flood hazards, and manage habitat in a manner consistent with requirements established in permits and approvals and in accordance with the AMP. PV Water has committed that the AMP would provide a framework for routine monitoring and maintenance of habitat. PV Water would conduct initial geomorphological assessments to confirm the factors in the watershed that control sediment production, transport, and deposition and to guide development of effective maintenance activities. The amount and type of maintenance or management actions needed in any given year would depend on weather and hydrologic conditions, and frequency and extent of past maintenance activities. For purposes of evaluation in this EIR, potential routine maintenance activities are anticipated to include the following:

- **Vegetation.** Figure 2-18 depicts areas proposed for vegetation management; these are areas that are farmed under baseline conditions and that are expected to support seasonal wetland vegetation with implementation of the Project. PV Water is not proposing any specific vegetation management activities within the existing willow forest habitat on land currently owned by the agency. In general, areas below 59 feet in elevation would be managed as open water habitat during the wet season. Vegetation management in this area during the dry season, assumed to occur as frequently as once per year, would support this habitat and could include disking and tilling, trimming and mowing, and removal of flow-constricting debris.

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36 During the life of the Project, emergencies could occur that could affect the environment. A situation is considered an “emergency” if it is a sudden, unexpected occurrence involving a clear and imminent danger that demands immediate action to prevent or mitigate loss of or damage to life, health, property, or essential public services (Public Resource Code Section 21060.3). Because emergency situations by their nature cannot be foreseen, they are not covered in this EIR.

37 The Santa Cruz County Flood Control and Water Conservation District Zone 7 (Zone 7) is responsible for the provision of drainage improvements in the Project area. Zone 7 was formed for the primary purpose of improving the flood carrying capacity of the Pajaro River, Salsipuedes Creek and Corralitos Creek systems within the Pajaro Valley floodplain. This is achieved through funding the maintenance of and minor capital improvements to existing drainage facilities within the zone’s boundaries. Santa Cruz County Flood Control and Water Conservation District Zone 7 does not currently have an existing stream maintenance plan or other adopted sediment management plan for the College Lake area. (County of Santa Cruz Department of Public Works, Flood Control and Water Conservation District: Zone No. 7, 2019. Available online at http://www.dpw.co.santacruz.ca.us/Home/FloodControlStormwater/FCWCZone7.aspx. Accessed on April 10, 2019.)

38 Depending on vegetation, sediment, and debris management, activities may require additional review under CEQA as the practices are better defined.
vegetation within channels and around Project components and equipment. Proposed vegetation management does not target a reduction of the current extent of riparian forest but aims to limit new establishment of woody riparian plants that could trap sediment and restrict flow or drainage. Aquatic vegetation in channels may also be removed mechanically using a drag-line and excavator bucket, and in association with sediment and debris removal described below. Additional preservation and potential enhancement of habitat features in College Lake would be determined in consultation with regulatory agencies with approval authority over the Project. Examples of preservation and enhancement of habitat features that could be required include restrictions on ground disturbance and removal of trash within the existing riparian forest in the lake basin.

- **Sediment and Debris.** PV Water would remove excess sediment and debris from certain areas of College Lake. Sediment removal is the act of mechanically removing sediment that has deposited within a channel. The need for sediment removal within College Lake would be evaluated annually during routine facility monitoring. Sediment and debris removal would be conducted during the dry season, and could be implemented if sediment accumulations (for example) impede fish passage, compromise channel capacity, or impair operation of the proposed weir and intake structure. As noted above, the Santa Cruz County Flood Control and Water Conservation District Zone 7 is responsible for the provision of drainage improvements in the Project area. The evaluation presented in this EIR assumes PV Water’s maintenance activities would be limited to the College Lake basin.

### 2.7.3 Adaptive Management

#### 2.7.3.1 Overview

Adaptive management is a science-based approach to manage natural resources through a cycle of continual assessment of progress and adjustment of approaches to meet project goals. The Project would apply an adaptive management approach to achieve College Lake operation and maintenance objectives, consistent with adopted Mitigation Measure BIO-2i.1 presented in Appendix PD-2 of this EIR. The AMP would identify monitoring activities linked to specific goals such as monitoring hydrology/hydraulics and wildlife populations, triggers for taking adaptive management actions, and finally a suite of potential management actions that respond to the monitoring results, such as active vegetation, sediment, and debris removal as described in Section 2.7.2.2.

Mitigation Measure BIO-2i.1 requires that an AMP for College Lake be developed in consultation with state and federal resource agencies (NMFS, U.S. Fish and Wildlife Service, and CDFW), and College Lake stakeholders. The mitigation measure calls for development of multi-year baseline waterfowl population and habitat use data, and integration of hydrology and hydraulic analyses and fish passage flow and bypass criteria (based on consultation with state and federal agencies). PV Water has collected data on waterfowl population since 2015, conducted hydrologic and hydraulic modeling for the Project that incorporates fish-bypass flows developed through site-specific fish passage studies, and estimated the projected changes in water depths that would occur due to Project operations over time and during different water year types. These data will help provide the baseline environmental conditions for the AMP. PV Water would continue monitoring wildlife, hydrologic, and hydraulic conditions according to the protocols and objectives established in the AMP.
2.7.3.2 Development of the College Lake AMP

PV Water would develop the College Lake AMP as part of Project permits and other agreements, and prior to initiation of Project operations. The first step in developing the College Lake AMP would be to confirm specific College Lake operations and maintenance objectives. The following initial concepts for AMP objectives reflect the goals of the proposed operations and maintenance procedures described in the preceding sections:

- **Fish passage**: Improve fish passage between Salsipuedes Creek and College Lake.
- **Water Storage**: Preserve water storage capacity within College Lake.
- **Flooding**: Avoid exacerbating existing flood hazards outside the proposed water storage area.
- **Farming**: Promote farming within the College Lake basin between 59 feet and 63 feet elevation NAVD88.
- **Waterfowl management**: Support continued waterfowl use of College Lake.

The AMP objectives would also address water quality (refer to Mitigation Measure HYD-2a in Section 3.3, Surface Water Groundwater, and Water Quality).

Developing and prioritizing specific AMP objectives would include modifying the proposed operations and maintenance described in the preceding sections to conform with permit conditions. Following this step, PV Water would solicit input on the draft objectives from local stakeholders. Local stakeholders could include the neighboring property owners, governmental and non-governmental agencies and organizations, and other interested parties. For each specific objective, PV Water would then develop monitoring criteria, data gathering methods, evaluation procedures, action triggers based on the evaluation results, and management actions. In addition, fundamental to any AMP is a commitment to periodically re-evaluate objectives in the presence of new data.

2.7.4 Truck Trips During Operations and Maintenance

Operations and maintenance activities would generate solids from the water treatment process, estimated at approximately 200,000 pounds annually and requiring 52 truck trips per year (assumed 9-cubic yards per truckload). Routine maintenance activities within College Lake would generate an estimated 1,300 truck trips per year. Operations and maintenance sediment and debris would be hauled to the Buena Vista Landfill for recycling or disposal.
Figure 2-18
Proposed Maintenance Areas within College Lake

Maintenance Areas

- < 59 ft NAVD88: Routine Vegetation Maintenance (mowing/disking)
- 59 - 63 ft NAVD88: Routine Vegetation Maintenance and Farming

SOURCE: USDA, 2016; ESA, 2018
Note: NAVD88 = North American Vertical Datum of 1988
2.7.5 Mosquito Abatement

With implementation of the Project, water would be stored in College Lake for a longer period of time compared to existing conditions. Standing water can be used as habitat by pest species such as mosquitoes, which can cause nuisance level populations that would be capable of dispersing into the surrounding community. The Santa Cruz County Mosquito Abatement and Vector Control, County Service Area 53 works with land owners to prevent the spread of mosquito-transmitted diseases through mosquito breeding abatement. Abatement measures commonly include reducing breeding sources and controlling the aquatic stages of larval development to prevent the hatching of adult mosquitoes. PV Water would coordinate with Mosquito Abatement and Vector Control to determine the specific measures that would be employed to control mosquitoes at College Lake, if warranted. Refer to Appendix PD-3 for background information on this issue and potential measures that could be employed to control mosquito populations.

2.8 Intended Uses of the EIR

This EIR is intended to provide the information and describe the environmental consequences of the Project in accordance with CEQA requirements for public disclosure, and to assist public agency decision-makers in considering the approvals necessary for implementing the Project. If the Board certifies this EIR as adequate and approves implementation of the Project, the Agency would then proceed with design and carry out the following actions:

- **Permits and Approvals.** PV Water would conduct the necessary studies and consultations to obtain the permits and approvals shown in Table 2-10. PV Water would also obtain any other regulatory approvals required by law.

- **Acquisition of Property, Easements and Rights-of-Way.** PV Water would obtain rights to access and use the Project sites (as described in Section 2.2, Project Location) and a water-right permit on water-right Application A032881, which PV Water has filed with the State Water Resources Control Board. The decision regarding the type of property rights (e.g., ownership, easement, or right-of-way) to obtain would depend on, among other things, characteristics of the proposed use and negotiations with landowners. After the types of property rights are determined, PV Water would work with landowners to develop and execute agreements to secure those rights, including developing legal descriptions and appraisals. PV Water would meet with the affected property owners and their representatives to attempt to reach agreements on the terms under which the Agency would procure the property rights.

- **RD 2049.** Upon PV Water’s securing all required regulatory approvals and acquiring all necessary property rights, easements and rights of way, the Project contemplates demolition of the existing weir and pump station operated by RD 2049. As noted in Section 2.1.4.2, the primary (if not sole) function of RD 2049 is to pump College Lake dry each Spring and conduct intermittent pumping thereafter to maintain a dry lake bed suitable for farming for the duration of the dry season. As it would eliminate the sole function of RD 2049, the Project also contemplates the eventual dissolution of RD 2049 in accordance with the
Cortese-Knox-Herzberg Local Government Reorganization Act of 2000.\textsuperscript{39} Dissolution proceedings would either be initiated by PV Water or RD 2049’s Board of Trustees.

- **Final Design, Bid, and Project Construction.** Refer to Table 2-5 in Section 2.6, Construction, regarding the schedule for project construction.

### TABLE 2-10
**REQUIRED PERMITS AND APPROVALS**

<table>
<thead>
<tr>
<th>Agency or Organization</th>
<th>Action Requiring Permit or Consultation</th>
<th>Permit or Approval</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Federal</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>U.S. Army Corps of Engineers</td>
<td>Impacts on wetlands/waters of the U.S.</td>
<td>Clean Water Act Permits</td>
</tr>
<tr>
<td>U.S. Fish and Wildlife Service</td>
<td>Impacts on biological resources and federal nexus</td>
<td>Endangered Species Act Section 7 compliance</td>
</tr>
<tr>
<td>U.S. Fish and Wildlife Service: National Marine Fisheries Service</td>
<td>Construction in wetland and upland areas where federally listed species may be present</td>
<td>Endangered Species Act Section 7 compliance</td>
</tr>
<tr>
<td><strong>State</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>State Historic Preservation Officer</td>
<td>Construction in or near cultural resources</td>
<td>National Historic Preservation Act Section 106 compliance</td>
</tr>
<tr>
<td>State Water Resources Control Board: Division of Water Rights</td>
<td>Diversion and beneficial use of surface water</td>
<td>Water Rights Permit (Application A032881) and Release from Priority of Application A018334</td>
</tr>
<tr>
<td></td>
<td>Fund</td>
<td>Consideration for Clean Water State Revolving Fund Loan</td>
</tr>
<tr>
<td>California Department of Fish and Wildlife</td>
<td>Alteration of streambeds during construction</td>
<td>Section 1602 Lake and Streambed Alteration Agreement</td>
</tr>
<tr>
<td></td>
<td>If state-listed species are present, or may be present, &amp; project may adversely affect such species</td>
<td>California Endangered Species Act Section 2081 Incidental Take Permit</td>
</tr>
<tr>
<td>California Department of Transportation (Caltrans)</td>
<td>Construction in Caltrans right-of-way</td>
<td>Encroachment Permit</td>
</tr>
<tr>
<td>Regional Water Quality Control Board</td>
<td>Potential for surface water quality impairment from pollutant discharge</td>
<td>Clean Water Act 401 Certification and National Pollution Discharge Elimination System Permit for Construction</td>
</tr>
<tr>
<td><strong>Local</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PV Water</td>
<td>Certification of the Final EIR and project approval</td>
<td>PV Water Board of Directors Approval of EIR</td>
</tr>
<tr>
<td>Santa Cruz County</td>
<td>Pipeline construction in unincorporated Santa Cruz County</td>
<td>Encroachment Permit Minor Coastal Development Permit</td>
</tr>
<tr>
<td>City of Watsonville</td>
<td>Pipeline construction in City of Watsonville</td>
<td>Grading and Encroachment Permits</td>
</tr>
<tr>
<td>Monterey Bay Air Resources District</td>
<td>Backup generators</td>
<td>Permit to Operate</td>
</tr>
</tbody>
</table>

\textsuperscript{39} California Government Code Section 56000, et seq.
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CHAPTER 3
Environmental Setting, Impacts, and Mitigation Measures

3.1 Overview
This chapter provides an analysis of the physical environmental effects of implementing the proposed College Lake Integrated Resources Management Project (Project) as described in Chapter 2, Project Description. This chapter describes the environmental setting, assesses impacts, and identifies mitigation measures for significant impacts.

The Project was analyzed under its former name—the College Lake with Inland Pipeline to Coastal Distribution System—at a program level of detail in the 2014 Basin Management Plan Update Program Environmental Impact Report (2014 BMP Update PEIR) as one of seven components under the BMP Update described in Section 2.1.1 This EIR provides detailed, project-level analysis of the Project based on site-specific and up-to-date information developed subsequent to the preparation of the 2014 BMP Update PEIR. While information from the 2014 BMP Update PEIR is incorporated into parts of this chapter, this EIR provides an independent analysis of the Project’s significant impacts.

The 2014 BMP Update PEIR identified mitigation measures that were adopted by the Board of Directors under Resolution No. 2014-05. The adopted mitigation measures are applicable to the BMP Update projects, including the Project. As indicated in Section 2.5.2 of Chapter 2, Project Description, for the purposes of this EIR, those mitigation measures (presented in Appendix PD-2) are considered part of the Project.

3.1.1 Scope of Analysis
This chapter is organized by environmental resource topics, as follows:

<table>
<thead>
<tr>
<th>Chapter 3 Sections</th>
<th>3.1 Overview</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.2 Land Use and Agricultural Resources (LU)</td>
<td>3.8 Noise and Vibration (NOI)</td>
</tr>
<tr>
<td>3.3 Surface Water, Groundwater, and Water Quality (HYD)</td>
<td>3.9 Transportation and Traffic (TRA)</td>
</tr>
<tr>
<td>3.4 Biological Resources (BR)</td>
<td>3.10 Cultural Resources (CUL)</td>
</tr>
<tr>
<td>3.5 Air Quality and Greenhouse Gases(AIR)</td>
<td>3.11 Tribal Cultural Resources (TCR)</td>
</tr>
<tr>
<td>3.6 Geology and Soils (GEO)</td>
<td>3.12 Energy, Utilities, Public Services, and Recreation (EUP)</td>
</tr>
<tr>
<td>3.7 Hazards and Hazardous Materials (HAZ)</td>
<td>3.13 Aesthetic Resources (AES)</td>
</tr>
</tbody>
</table>

1 The 2014 BMP Update PEIR is available for review at the PV Water offices (36 Brennan Street, Watsonville, CA 95076) and on PV Water’s website at https://www.pvwater.org/bmp-update (PV Water, Final Environmental Impact Report for the Basin Management Plan Update, February 2014).
3. Environmental Setting, Impact, and Mitigation Measures

3.1 Overview

Each section of Chapter 3 contains the following elements, based on the requirements of the California Environmental Quality Act (CEQA):

- **Setting.** This subsection describes the existing physical environmental conditions in the Project area with respect to each resource topic, at an appropriate level of detail to allow the reader to understand the impact analysis.

- **Regulatory Framework.** This subsection describes the relevant laws and regulations that apply to protecting the environmental resources within the Project area, and the governmental agencies responsible for enforcing those laws and regulations.

- **Impacts and Mitigation Measures.** This subsection evaluates the potential for the Project to result in adverse effects on the physical environment described in the setting. Each impact analysis section defines significance criteria for evaluating environmental impacts, and the Methodology explains how the significance criteria are applied in evaluating the Project impacts. The conclusion of each impact analysis is expressed in terms of the impact significance under CEQA, which is discussed further below. The analysis documents whether the adopted measures adequately avoid or mitigate significant impacts. Each impact subsection identifies mitigation measures for all of the impacts considered significant, consistent with CEQA Guidelines Section 15126.4. If needed, additional mitigation is included in the form of (1) modifications to update the adopted mitigation measures or (2) new mitigation measures to replace or augment an adopted mitigation measure. If additional impacts could result from implementation of a mitigation measure, those impacts are identified, consistent with CEQA Guidelines Section 15126.4.

- **Cumulative Impacts.** This subsection discusses cumulative impacts, if applicable, following the description of the project-specific impacts and identified mitigation measures. The cumulative impacts consider the potential impacts of the Project in combination with the impacts of other past, present, and probable future projects.

### 3.1.2 Significance Determinations

The significance criteria used in this EIR were developed by Pajaro Valley Water Management Agency (PV Water) and are largely based on CEQA Guidelines Appendix G. Each section of this chapter presents, before the discussion of impacts, the significance criteria used to analyze each resource topic. The categories used to designate impact significance are as follows:

- **No Impact (NI).** This determination applies if there is no potential for impacts or the environmental resource does not occur within the Project area or the area of potential effect.

- **Less than Significant (LS).** This determination applies if there is a potential for some limited impact but not a substantial, adverse effect that qualifies under the significance criteria as a significant impact. No mitigation is required for impacts determined to be less than significant.

- **Less than Significant with Mitigation (LSM).** This determination applies if there is a potential for the Project to result in an adverse effect that would or could meet or exceed the significance criteria, but feasible mitigation is available that would reduce the impact to a less-than-significant level.

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2 CEQA Guidelines Section 15126.4 states that “if a mitigation measure would cause one or more significant effects in addition to those that would be caused by the project as proposed, the effects of the mitigation measure shall be discussed but in less detail than the significant effects of the project as proposed.”
• **Significant and Unavoidable with Mitigation (SUM).** This determination applies if the Project would result in an adverse effect that would or could meet or exceed the significance criteria and there is feasible mitigation available to lessen the severity of the impact, but either the residual effect after implementation of the measure would remain significant or there is some uncertainty as to the effectiveness of the mitigation measure (e.g., implementation of the measures relies on an agreement with a third party).

• **Significant and Unavoidable (SU).** This determination applies if the Project would result in an adverse effect that would or could meet or exceed the significance criteria and for which there is no feasible mitigation available.

3.1.3 Approach to Cumulative Impacts Analysis and Cumulative Projects

3.1.3.1 CEQA Provisions Regarding Cumulative Impacts

Cumulative impacts, as defined in Section 15355 of the CEQA Guidelines, refer to two or more individual effects that, when taken together, are “considerable” or that compound or increase other environmental impacts. A cumulative impact from several projects is the change in the environment that would result from the incremental impact of each project when added to those of other closely related past, present, or probable future projects. Section 15130 of the CEQA Guidelines provides the following pertinent guidance for cumulative impact analysis:

• An EIR shall discuss cumulative impacts of a project when the project’s incremental effect is “cumulatively considerable” (i.e., the incremental effects of an individual project are considerable when viewed in connection with the effects of past, current, and probable future projects, including those outside the control of the agency, if necessary).

• An EIR should not discuss impacts that do not result in part from the project evaluated in the EIR.

• A project’s contribution is less than cumulatively considerable, and thus not significant, if the project is required to implement or fund its fair share of a mitigation measure or measures designed to alleviate the cumulative impact.

• The discussion of impact severity and likelihood of occurrence need not be as detailed as for effects attributable to the project alone.

• The focus of analysis should be on the cumulative impact to which the identified other projects contribute, rather than on attributes of the other projects that do not contribute to the cumulative impact.

CEQA Guidelines Section 15130(b)(1) provides two approaches to a cumulative impact analysis. The analysis can be based (a) on a list of past, present, and probable future projects producing related or cumulative impacts; and/or (b) a summary of projections contained in a general plan or related planning document. Both approaches are used in this EIR.
3.1.3.2 Approach to Cumulative Impact Analysis in this EIR

The cumulative impact analysis considers the effects of the Project together with those of other past, present, or probable future projects proposed by PV Water or others. In Sections 3.2 through 3.13 of this chapter, the cumulative impact analysis for each resource topic follows the analysis of the project-specific impacts. Additional mitigation measures are identified if the cumulative impact analysis determines that a significant cumulative impact could occur and the Project’s contribution to a significant cumulative impact would be considerable, even with project-level mitigation. As permitted in CEQA Guidelines Section 15130(b)(1), the analysis in this EIR employs the list-based approach for defining projects to be considered in the cumulative impact analysis — that is, the analysis is based on a list of past, present, and probable future projects that could result in related or cumulative impacts. A probable future project is defined as one that is “reasonably foreseeable,” which is generally a project for which an application has been filed with the approving agency or that has approved funding. The probable future projects are subject to independent environmental review and consideration by approving agencies. Consequently, it is possible that some of the projects will not be approved or will be modified prior to approval (e.g., as a result of the CEQA process). Projects that are relevant to the cumulative analyses include those that could contribute incremental effects on the same environmental resources and would have similar environmental impacts as those identified for the Project in this EIR.

The cumulative analyses presented in Sections 3.2 through 3.13 first consider whether there is an impact of the Project that could result in adverse physical effects on the environment. If so, the cumulative analysis considers whether any of the relevant projects would result in related impacts or affect the same environmental resources as the Project, resulting in a cumulative impact. If the cumulative impact is considered significant based on the identified significance criteria, the analysis considers whether the Project’s contribution would be cumulatively considerable (significant) or not cumulatively considerable (less than significant). If the Project’s contribution would be cumulatively considerable, mitigation measures are identified to reduce the Project’s contribution to a less-than-cumulatively-considerable level (less than significant with mitigation). If there is no feasible mitigation to reduce the Project’s contribution to a less-than-significant level, the Project’s contribution to the cumulative impact is considered significant and unavoidable.

Table 3.1-1 describes the past, present, and probable future projects that are considered in the cumulative analyses (based on the factors described above), and their locations are shown on Figure 3.1-1. The list includes projects that have overlapping construction schedules with the Project (or would be completed prior to or following Project construction) and that could be constructed in the general vicinity of the Project, with the potential to result in cumulative impacts during construction. The list also includes projects that could be in operation concurrently with the Project and that could have similar environmental impacts as the Project’s operations, with the potential to result in cumulative operational impacts.

As discussed in Section 2.5.2 of Chapter 2, Project Description, the Board of Directors has adopted mitigation measures for all of the projects evaluated in the 2014 BMP Update PEIR. The cumulative impact analysis assumes that, like the Project, the other BMP Update projects would implement adopted mitigation measures.
<table>
<thead>
<tr>
<th>Project No. on Map</th>
<th>Project Name (Project Sponsor or Jurisdiction)</th>
<th>Project Description</th>
<th>Construction Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Harkins Slough Recharge Facilities Upgrades(^a) (PV Water)</td>
<td>This project is included in PV Water’s BMP Update. This project includes installation of new shallow extraction wells at the existing Harkins Slough recharge basin, upgrading the pump station and filters at the slough diversion to improve system operation and recharge infiltration rates, and construction of new recharge basins.</td>
<td>2020-2025</td>
</tr>
<tr>
<td>2</td>
<td>Watsonville Slough with Recharge Basins(^a) (PV Water)</td>
<td>This project is included in PV Water’s BMP Update. This project would divert Watsonville Slough water during high flows from December to May. The water would be stored in a surficial groundwater aquifer via a recharge basin. The project includes a new diversion point in the slough system. A pump station at the diversion point would divert the water to the existing Harkins Slough infiltration facility via a new pipeline. Recovery wells constructed around the recharge basin would extract water during the irrigation season. Horizontal wells will also be considered. As planned, this project would require construction of an intake structure, inlet pump station, intake pipeline, expansion of the existing infiltration facility at Harkins Slough, booster pump station, recharge basins(s), and recovery wells.</td>
<td>2022-2023</td>
</tr>
<tr>
<td>3</td>
<td>Murphy Crossing with Recharge Basins(^a) (PV Water)</td>
<td>This project is included in PV Water’s BMP Update. This project would divert water from the Pajaro River between December and May, when the Pajaro River water quality is within an acceptable range and stream flows are above the required minimum necessary to maintain steelhead habitat. The project includes the construction of an infiltration gallery, pump station, monitoring wells, recharge basins, and a connector pipeline from pump station to recharge basins. An infiltration gallery located upstream of the Murphy Crossing bridge would capture water and transport it to four recharge basins. The recharge basins would be located just north of the intersection of State Route 129 and Murphy Road.</td>
<td>After 2025</td>
</tr>
<tr>
<td>4</td>
<td>Main Street Improvement Project (City of Watsonville)(^b)</td>
<td>The modified Main Street Improvement Project includes sidewalk widening extensions and medians at First Street and at Peck Street, intersection improvements at Second and Maple, and upgraded curb ramps. The future phase of this project will include additional beautification elements, planter boxes, lighting upgrades, enhanced signage, and additional medians and sidewalk enhancements.</td>
<td>2019-2020</td>
</tr>
<tr>
<td>5</td>
<td>Lincoln Street Safety Project (City of Watsonville)(^c)</td>
<td>The City of Watsonville, in partnership with Pajaro Valley Unified School District, is implementing the Lincoln Street Safety Improvement Project. The project includes new pedestrian crosswalks, sidewalks and lighting between East Beach Street and Riverside Drive near Watsonville High School; bicycle racks, pavement markings and signage; and education programs that improve bicycle and pedestrian safety.</td>
<td>Summer 2020</td>
</tr>
<tr>
<td>6</td>
<td>Pajaro Valley Recharge Net Metering Pilot Program (PV Water, Resource Conservation District of Santa Cruz County, University of California at Santa Cruz)(^d)</td>
<td>The Resource Conservation District of Santa Cruz County proposes to construct a one-acre sediment basin (base elevation of 44.5-feet) and an adjacent four-acre groundwater recharge basin (base elevation of 30-feet and berm elevation of 53-feet) on parcel number 051-241-34. The project involves up to 80,000 cubic yards of grading. The goal of this managed aquifer recharge project is to collect and infiltrate an estimated 350 acre-feet per year of runoff into the Pajaro Valley Groundwater Basin.</td>
<td>Undetermined</td>
</tr>
<tr>
<td>7</td>
<td>Pajaro River Flood Risk Management Study (U.S. Army Corps of Engineers)(^e)</td>
<td>The project, located in Santa Cruz and Monterey Counties, consists of levees and channel improvements on the Pajaro River and Corralitos and Salsipuedes Creeks to increase the level of flood protection afforded by existing flood protection infrastructure. The Tentatively Selected Plan includes measures to improve existing levees, measures to construct new levees, and measures to construct flood walls on Salsipuedes Creek, Corralitos Creek, and Pajaro River. Specific components include constructing new setback levees and rebuilding an existing levee on Reach 2 (on Pajaro River), rebuilding existing levees and floodwalls on Reach 3 (on Pajaro River), constructing a new setback levee along the southern bank of Reach 4 (on Pajaro River), constructing a new setback levee and floodwalls and rebuilding an existing levee along Reach 5 (on Lower Salsipuedes Creek), and constructing new setback levees along Reach 6 (on Corralitos Creek). The Tentatively Selected Plan features are intended to provide 1 percent annual chance of exceedance level of protection for the City of Watsonville (including adjacent agricultural areas) and 4 percent annual chance of exceedance level of protection for the Orchard Park and Interlaken neighborhoods (including adjacent agricultural areas).</td>
<td>2021-2025</td>
</tr>
</tbody>
</table>

### Table 3.1-1

**PROJECTS CONSIDERED IN CUMULATIVE IMPACT ANALYSIS**

<table>
<thead>
<tr>
<th>Project No. on Map</th>
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<td>2019-2020</td>
</tr>
<tr>
<td>5</td>
<td>Lincoln Street Safety Project (City of Watsonville)(^c)</td>
<td>The City of Watsonville, in partnership with Pajaro Valley Unified School District, is implementing the Lincoln Street Safety Improvement Project. The project includes new pedestrian crosswalks, sidewalks and lighting between East Beach Street and Riverside Drive near Watsonville High School; bicycle racks, pavement markings and signage; and education programs that improve bicycle and pedestrian safety.</td>
<td>Summer 2020</td>
</tr>
<tr>
<td>6</td>
<td>Pajaro Valley Recharge Net Metering Pilot Program (PV Water, Resource Conservation District of Santa Cruz County, University of California at Santa Cruz)(^d)</td>
<td>The Resource Conservation District of Santa Cruz County proposes to construct a one-acre sediment basin (base elevation of 44.5-feet) and an adjacent four-acre groundwater recharge basin (base elevation of 30-feet and berm elevation of 53-feet) on parcel number 051-241-34. The project involves up to 80,000 cubic yards of grading. The goal of this managed aquifer recharge project is to collect and infiltrate an estimated 350 acre-feet per year of runoff into the Pajaro Valley Groundwater Basin.</td>
<td>Undetermined</td>
</tr>
<tr>
<td>7</td>
<td>Pajaro River Flood Risk Management Study (U.S. Army Corps of Engineers)(^e)</td>
<td>The project, located in Santa Cruz and Monterey Counties, consists of levees and channel improvements on the Pajaro River and Corralitos and Salsipuedes Creeks to increase the level of flood protection afforded by existing flood protection infrastructure. The Tentatively Selected Plan includes measures to improve existing levees, measures to construct new levees, and measures to construct flood walls on Salsipuedes Creek, Corralitos Creek, and Pajaro River. Specific components include constructing new setback levees and rebuilding an existing levee on Reach 2 (on Pajaro River), rebuilding existing levees and floodwalls on Reach 3 (on Pajaro River), constructing a new setback levee along the southern bank of Reach 4 (on Pajaro River), constructing a new setback levee and floodwalls and rebuilding an existing levee along Reach 5 (on Lower Salsipuedes Creek), and constructing new setback levees along Reach 6 (on Corralitos Creek). The Tentatively Selected Plan features are intended to provide 1 percent annual chance of exceedance level of protection for the City of Watsonville (including adjacent agricultural areas) and 4 percent annual chance of exceedance level of protection for the Orchard Park and Interlaken neighborhoods (including adjacent agricultural areas).</td>
<td>2021-2025</td>
</tr>
</tbody>
</table>
3. Environmental Setting, Impact, and Mitigation Measures

3.1 Overview

### TABLE 3.1-1 (CONTINUED)

#### PROJECTS CONSIDERED IN CUMULATIVE IMPACT ANALYSIS

<table>
<thead>
<tr>
<th>Project No. on Map</th>
<th>Project Name (Project Sponsor or Jurisdiction)</th>
<th>Project Description</th>
<th>Construction Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Lee Road Trail Connector (City of Watsonville)</td>
<td>The California Coastal Conservancy has recommended that the City of Watsonville prepare plans, designs, environmental analyses, and permit applications for the Lee Road Connector Trail, a 1.4-mile bicycle and pedestrian trail planned for the west side of the City of Watsonville. The Lee Road Connector Trail would be part of the Watsonville Area Scenic Trails Network, a trail system that currently offers approximately 10 miles of bicycle and pedestrian trails that follow the Watsonville Sloughs. The southern terminus of the Lee Road Connector Trail would connect to a planned trail along the Santa Cruz Branch Line railroad tracks, known as the Rail Trail, which, in this area, would run northwest to a junction with the Monterey Bay National Sanctuary Scenic Trail, at which point the Rail Trail would head north along the coast and form part of the Monterey Bay National Sanctuary Scenic Trail. The trail would also include a bridge across Struve Slough.</td>
<td>2020</td>
</tr>
<tr>
<td>9</td>
<td>Sunshine Vista Phased Development Project</td>
<td>This project includes the clean-up of a project site in Watsonville, including removal of all junk vehicles, trash, debris, and structures; soil-remediation; export of approximately 49,552 cubic yards of soil; temporary stormwater drainage measures; and regrading. The project also includes development of the project site with 150 housing units, associated parking, utilities, stormwater management, and a public-access nature trail. The project would be implemented in phases, with the site clean-up and remediation activities comprising phase one, and remediation activities and residential development comprising phase two.</td>
<td>Phase 1 construction late 2018 to early 2019; Phase 2 construction 2019 to 2021</td>
</tr>
<tr>
<td>10</td>
<td>Pajaro Valley High School Athletic Field Project</td>
<td>This project would update the existing athletic facilities at Pajaro Valley High School by replacing the existing grass turf with synthetic turf and adding a regulation track, bleachers, a ticket booth, an announcer’s booth, a scorekeeper’s booth, a concessions building, and restrooms. The athletic fields would consist of two softball fields and football field.</td>
<td>1 year</td>
</tr>
<tr>
<td>11</td>
<td>Corralitos Creek ADA Compliance (Caltrans)</td>
<td>This project involves construction of an accessible pathway in Santa Cruz County, north of Watsonville. The project would extend 0.1 mile from the intersection of Holohan Road/College Road to Beverly Drive. The project would include installation of a new ADA curb ramp, non-motorized overcrossing/undercrossing for accessibility, and a Class II bike lane.</td>
<td>2021-2022</td>
</tr>
<tr>
<td>12</td>
<td>State Route 152 Improvements (Caltrans)</td>
<td>This project includes drainage improvements and transportation systems elements at various locations of State Route 152 in Santa Cruz County. The project extends from the State Route 152/Main Street intersection to the State Route 152/Bella Vista Lane intersection.</td>
<td>2024-2025</td>
</tr>
<tr>
<td>13</td>
<td>State Route 152/Holohan Road/College Road Intersection Improvements (Santa Cruz County)</td>
<td>This project consists of operational and geometric improvements (widening) at the intersection of State Route 152/Holohan Road/College Road. Two lanes are proposed to be added to the Holohan Road approach to result in a left turn lane, a left and through lane, a bicycle lane, and a right turn lane. An acceleration/merge lane on northbound State Route 152 north of the intersection is also proposed. The project is partially funded and Santa Cruz County continues to seek grants to complete the funding.</td>
<td>2021-2022</td>
</tr>
<tr>
<td>14</td>
<td>Rail Trail - Pedestrian Trail (City of Watsonville)</td>
<td>This project would install a 4000-foot-long by 12-foot wide pedestrian trail within the railroad corridor between Lee Road and Watsonville Slough Trail as part of the Rail Trail.</td>
<td>2019-2020</td>
</tr>
<tr>
<td>15</td>
<td>Rail Trail - Walker Street (City of Watsonville)</td>
<td>This project would install a 2200-foot-long by 12-foot-wide pedestrian trail within the railroad corridor between Watsonville Slough Trail and Walker Street as part of the Rail Trail.</td>
<td>2019-2020</td>
</tr>
<tr>
<td>16</td>
<td>Elm St. Improvements (City of Watsonville)</td>
<td>This project includes reconstructing roadway, providing drainage improvements, and replacing curbs, gutters and sidewalks on Elm Street between Marchant Street and Lincoln Street in Watsonville.</td>
<td>2019-2020</td>
</tr>
<tr>
<td>17</td>
<td>Ohlone Parkway Improvements Phase 2 (City of Watsonville)</td>
<td>This project includes repaving roadway; providing bike lanes; repairing, replacing, and installing curbs, gutters, sidewalks, and curb ramps; and replacing and upgrading signage and striping from the Union Pacific Railroad to West Beach Street in Watsonville.</td>
<td>2021-2022</td>
</tr>
<tr>
<td>18</td>
<td>West Struve Slough Habitat Enhancement and Climate Change Adaptation Pilot Project (Watsonville Wetlands Watch)</td>
<td>This purpose of this project is to enhance native habitat along West Struve Slough and pilot climate change adaptation methods for habitat restoration. This would support further integration of climate change related planning and adaptive management in the Watsonville Slough System. This project is located at Watsonville Sloughs Ecological Reserve. Watsonville Wetlands Watch is partnering with the California Department of Fish and Wildlife.</td>
<td>2017-2022</td>
</tr>
</tbody>
</table>
### TABLE 3.1-1 (CONTINUED)
**PROJECTS CONSIDERED IN CUMULATIVE IMPACT ANALYSIS**

<table>
<thead>
<tr>
<th>Project No. on Map</th>
<th>Project Name (Project Sponsor or Jurisdiction)</th>
<th>Project Description</th>
<th>Construction Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>19</td>
<td>Upper Struve Slough Habitat Enhancement Project (Watsonville Wetlands Watch)¹</td>
<td>This is a 20-acre urban greening project along upper West Struve Slough that is removing invasive species and enhancing wildlife habitat and the Upper West Struve Slough Trail. The project is located at Upper Struve Slough Trail between Main Street and Pennsylvania Drive. Watsonville Wetlands Watch is partnering with the City of Watsonville.</td>
<td>2016-2018</td>
</tr>
<tr>
<td>20</td>
<td>Middle Watsonville Slough Upland Enhancement Project (Watsonville Wetlands Watch)¹</td>
<td>This project is a 7-acre native grassland habitat restoration project adjacent to Watsonville Slough on the Land Trust of Santa Cruz County’s land. Watsonville Wetlands Watch is partnering with the Land Trust of Santa Cruz County, Resource Conservation District of Santa Cruz County, and US Fish and Wildlife Service.</td>
<td>2013-2019</td>
</tr>
<tr>
<td>21</td>
<td>Lower Harkins Slough Habitat Restoration Project (Watsonville Wetlands Watch)¹</td>
<td>This project is a 22-acre wetland habitat restoration project adjacent to Harkins and Watsonville Slough between Lee Road and San Andreas Road. Watsonville Wetlands Watch is partnering with the Natural Resources Conservation Service.</td>
<td>2016-2020</td>
</tr>
<tr>
<td>22</td>
<td>Bryant Habert Ecological Restoration Project (Watsonville Wetlands Watch)¹</td>
<td>This project is a 20-acre wetland restoration and native habitat restoration project along Watsonville Slough on the Land Trust of Santa Cruz County’s land.</td>
<td>Phase I complete in 2016, Phase II unfunded</td>
</tr>
</tbody>
</table>

**SOURCES:**


¹⁰ Personal communications between S. Wiesner, County of Santa Cruz, and A. Maudru, Environmental Science Associates, regarding cumulative projects, May 9, 2018.


CUMULATIVE PROJECTS
1  Harkins Slough Recharge Facilities Upgrade*
2  Watsonville Slough with Recharge Basins**
3  Murphy Crossing with Recharge Basins
4  Main Street Improvement Project
5  Lincoln Street Safety Project
6  Pajaro Valley Recharge Net Metering Pilot Program
7  Pajaro River Flood Risk Management Study
8  Lee Road Trail Connector
9  Sunshine Vista Phased Development Project
10  Pajaro Valley High School Athletic Field Project
11  Corralitos Creek ADA Compliance
12  State Route 152 Improvements
13  State Route 152/Holohan Road/College Road
14  Rail Trail - Pedestrian Trail
15  Rail Trail - Walker Sheet
16  Elm St. Improvements
17  Ohlone Parkway Improvements Phase 2
18  West Struve Slough Habitat Enhancement and Climate Change Adaptation Pilot Project
19  Upper Struve Slough Habitat Enhancement Project
20  Middle Watsonville Slough Upland Enhancement Project
21  Lower Harkins Slough Habitat Restoration Project
22  Bryant Habert Ecological Restoration Project

* Recharge basins would be west of the existing Harkins Slough filter plant.
** Project also includes pipeline to existing Harkins Slough Filtration Facility. Water from project would also be sent to proposed recharge basins, west of proposed diversion site.

SOURCE: ESRI World Imagery, 2018; ESA data developed for the College Lake Project

College Lake Integrated Resources Management Project

Figure 3.1-1
Cumulative Projects
3.2 Land Use and Agricultural Resources

This section presents an analysis of potential impacts related to land use and agricultural that would result from implementation of the proposed College Lake Integrated Resources Management Project (Project). The analysis includes both site options (preferred and optional) for the water treatment plant (WTP) as well as preferred and optional pipeline alignments for the College Lake pipeline. Information from the 2014 Basin Management Plan Update Program Environmental Impact Report that remains relevant and accurate for the purposes of describing the physical or regulatory setting of land use and agricultural resources has been incorporated as appropriate.

3.2.1 Setting

3.2.1.1 Existing Land Use in Project Vicinity

Regional

College Lake and the proposed locations for the weir structure, intake pump station, and WTP sites are located in unincorporated Santa Cruz County; the College Lake pipeline would extend through unincorporated areas of the county as well as through the City of Watsonville (refer to Figure 2-1 in Chapter 2, Project Description). As shown on Figure 3.2-1, agriculture is the predominant land use in the Project area outside of the City of Watsonville. A variety of crops are grown in the Pajaro Valley, including strawberries, raspberries and blackberries, apples, flowers, lettuces, artichokes, and other fruits and vegetables. While residences are scattered throughout the Pajaro Valley, residential areas within the Project area are primarily located near urban centers, including the City of Watsonville and the neighboring community of Freedom. Rural residential development is also present in inland foothill areas. Commercial uses, schools, and parks are also concentrated in the City of Watsonville.

College Lake

Appendix PD-1 lists by Assessor Parcel Number (APN) the properties located within the College Lake storage area, as well as those associated with the weir structure and intake pump station, WTP site options, and the College Lake pipeline.

Appendix AG presents maps depicting land uses (based on observations for years 2014 through 2018) within the lake basin below 64 feet North American Vertical Datum of 1988 (NAVD88) elevation, the study area in this EIR for effects on agricultural uses associated with water storage operations; Table 3.2-1 summarizes this information in terms of acreage. On average, natural areas comprise about 61 percent of land use during this 2014 to 2018 observation period, while about 37 percent of the land has been cultivated at least once during this period. The remaining 2 percent of land not identified in annual surveys as natural or cultivated areas, shown in Table 3.2-1 as “Other,” generally includes drainage channels and farm roads traversing the lake.

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1 Land use data presented in Appendix AG and in Table 3.2-1 was compiled from annual surveys conducted by the Pajaro Valley Water Management Agency (PV Water) typically in June and July, wildlife surveys conducted by Gary Kittleson typically in the fall, and reviews of aerial imagery from Google Earth (dates vary).
Figure 3.2-1
Land Use in the Project Area (2018)
basin, some land associated with the Santa Cruz County Fairgrounds, and other smaller-scale features. The total area cultivated within the basin during a given year depends on lake elevations, precipitation patterns, and lease agreements, among other factors.

### TABLE 3.2-1

<table>
<thead>
<tr>
<th>Land Use</th>
<th>Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2014</td>
</tr>
<tr>
<td>Natural</td>
<td>200.6</td>
</tr>
<tr>
<td>Deciduous (Apple Orchards)</td>
<td>0.5</td>
</tr>
<tr>
<td>Nurseries/Flowers/Tropical Plants</td>
<td>0.1</td>
</tr>
<tr>
<td>Raspberries, Blackberries, Strawberries</td>
<td>2.6</td>
</tr>
<tr>
<td>Vegetable Row Crop</td>
<td>101.1</td>
</tr>
<tr>
<td>Fallow</td>
<td>0.0</td>
</tr>
<tr>
<td><strong>Total Agriculture</strong></td>
<td><strong>104.2</strong></td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td>9.3</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>314.0</strong></td>
</tr>
</tbody>
</table>

**NOTES:**
- "Other" includes agricultural drainage channels, farm roads, a portion of the Santa Cruz County Fairground lands, and other small scale features. The Pajaro Valley Water Management Agency (PV Water) Annual Land Use Surveys are conducted at the parcel level to indicate the dominant land uses. Often the digitized polygons overlap internal farm roads and other small-scale features on properties that are not classified as natural or agricultural.
- Numbers may not total due to rounding.
- **SOURCE:** PV Water Annual Land Use Surveys 2014-2018; Google Earth aerial imagery; and Kittleson, Gary, Wildlife Surveys 2014 through 2018.

### Farming Practices

As described in Section 2.1.4 in Chapter 2, *Project Description*, Reclamation District 2049 (RD 2049) currently pumps water out of College Lake each spring to accommodate summer farming. RD 2049 pumps water over its existing weir and into Salsipuedes Creek in the spring, usually beginning in mid-March depending on spring rain patterns. Tile drains installed in portions of the lake basin remove excess water and direct it toward the agricultural drainage ditches that run through the basin. Once the land is dry enough to accommodate heavy machinery (typically around May 30), tractors turn the soil; it then takes about one month to prepare the land for planting. Most of the crops in College Lake require 60 to 90 days to reach maturity, so crops planted on July 7 would be harvested between September 7 and October 7. Growers aim to complete harvesting and other agricultural operations in the lake basin before the winter rains, generally by the end of October, although farming can and has occurred later in the year.²

As shown in Table 3.2-1, vegetable row crops (including varieties of kale, lettuces, and onions) comprised the largest area under cultivation from 2014 to 2018. Other crops (e.g., apples, raspberries and blackberries) comprising about 3 acres in total, are grown at higher elevations and

extend just below 64 feet NAVD88. The rooting depths for the vegetable row crops grown in College Lake vary; while the root structures can extend as much as 24 inches below ground, the main root systems are in the top 6 to 12 inches of soil.3,4

**Weir Structure and Intake Pump Station**

The proposed weir structure would occupy an approximately 5,500 square foot site spanning the Salsipuedes Creek channel approximately 25 feet downstream of the existing weir. The intake pump station would occupy an approximately 1,300 square-foot site west of the weir structure that is part of the farm road system for the adjacent farmed areas.

The proposed alignment for the 30-inch influent pipeline between the intake pump station and the preferred WTP site, shown on Figure 2-14 in Chapter 2, *Project Description*, follows existing farm roads. The optional WTP site would be adjacent to the intake pump station so the proposed alignment of the influent pipeline is within the optional WTP site.

**Preferred and Optional Water Treatment Plant Sites**

An apple orchard occupies the five-acre preferred WTP site adjacent to Holohan Road. The six-acre optional WTP site is currently planted with raspberries. The optional WTP site occupies a larger footprint in order to raise the WTP out of the flood hazard area.

**College Lake Pipeline**

The proposed College Lake pipeline route generally follows existing road rights-of-way and agricultural fields. Table 3.2-2 identifies land uses within and adjacent to the preferred and optional pipeline alignments.

### 3.2.2 Regulatory Framework

#### 3.2.2.1 Federal and State

**Farmland Protection and Policy Act**

The Farmland Protection and Policy Act requires an evaluation of the relative value of farmland that could be affected by decisions sponsored in whole or part by the federal government.5 High value farmland categories defined in the Farmland Protection and Policy Act include the following:

- **Prime Farmland** is land that has the best combination of physical and chemical characteristics for long-term production of food, feed, forage, fiber, oilseed, and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, and labor, and without intolerable erosion. It has the soil quality, growing season, and moisture supply needed to

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### TABLE 3.2-2

**LAND USES WITHIN AND ADJACENT TO THE COLLEGE LAKE PIPELINE ALIGNMENT**

<table>
<thead>
<tr>
<th>Segment</th>
<th>General Location of Alignment</th>
<th>From</th>
<th>To</th>
<th>Length (feet)</th>
<th>Land Uses Within Alignment</th>
<th>Land Uses Adjacent to Alignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Unincorporated Santa Cruz County</td>
<td>Water Treatment Plant</td>
<td>Wagner Avenue &amp; Mohovy Street</td>
<td>5,665</td>
<td>Agriculture, public street, natural (Corralitos Creek)</td>
<td>Agriculture, urban/built up</td>
</tr>
<tr>
<td>B</td>
<td>City of Watsonville</td>
<td>Wagner Avenue &amp; Mohovy Street</td>
<td>East Beach Street &amp; Lincoln Street</td>
<td>7,040</td>
<td>Agriculture, public streets</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>City of Watsonville</td>
<td>East Beach Street &amp; Lincoln Street</td>
<td>Pine Street &amp; West Beach Street</td>
<td>5,520</td>
<td>Public streets</td>
<td>Urban/built up, industrial</td>
</tr>
<tr>
<td>D</td>
<td>City of Watsonville, Unincorporated Santa Cruz County</td>
<td>Preferred: Pine Street &amp; West Beach Street</td>
<td>West Beach Street &amp; Lee Road</td>
<td>5,715</td>
<td>Public streets</td>
<td>Agriculture, industrial, urban/built up</td>
</tr>
<tr>
<td></td>
<td>Optional: West Beach Street &amp; Harvest Drive</td>
<td></td>
<td>State Route 1</td>
<td>6,340</td>
<td>Public streets, agriculture, urban/built up</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>Unincorporated Santa Cruz County</td>
<td>Preferred: West Beach Street &amp; Lee Road</td>
<td>Watsonville Wastewater Treatment Facility</td>
<td>4,500</td>
<td>Public streets</td>
<td>Agriculture, urban built up</td>
</tr>
<tr>
<td></td>
<td>Optional: State Route 1</td>
<td>Watsonville Wastewater Treatment Facility</td>
<td>3,500</td>
<td>Agriculture, other (State Route 1)</td>
<td>Agriculture</td>
<td></td>
</tr>
</tbody>
</table>

**NOTES:**

a. Please refer to Figure 3.2-1 for segment locations.

**SOURCE:** California Department of Conservation, GIS data, 2015.
sustain high crop yields when appropriately treated and managed. Prime farmland may be
cropland, pastureland, rangeland, forestland, or other land, but not urban built-up land or
water storage. In addition, the land must have been used for irrigated agricultural production
during the four years prior to the mapping date to qualify under this category.

- **Unique Farmland** is land that does not meet the criteria for Prime Farmland but has been
  used for the production of specific high-value food and fiber crops. It has the special
  combination of soil quality, location, growing season, and moisture supply needed to
economically produce sustained high quality or high yields of specific crops when treated and
managed according to acceptable farming methods. This land is usually irrigated, but may
include the types of non-irrigated orchards or vineyards that are found in some climatic zones
of California. Unique Farmland must have been in agricultural production at some time
during the four years prior to the mapping date.

- **Farmland of Statewide Importance** is land, in addition to Prime and Unique Farmlands, that
  is of statewide importance for the production of food, feed, fiber, forage, and oil seed crops.
  This land is similar to Prime Farmland, but with minor shortcomings such as greater slopes
  and less ability to store moisture. Land must have been used for irrigated agricultural
  production at some time during the four years prior to the mapping date.

- **Farmland of Local Importance** applies to land of importance to the local agricultural
  economy as determined by appropriate unit of local government agency or agencies. This
  land is either currently producing crops or has the capability of production, but does not meet
  the criteria of the preceding categories.

Several activities are not subject to the Farmland Protection Policy Act, including projects on
land already in urban development or used for water storage.6

**State Designated Farmland**

The California Department of Conservation, Division of Land Resource Protection maps
important farmlands throughout California. Important farmlands include Prime Farmland,
Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance
(consistent with the definitions identified above), as well as Grazing Land. The first three types of
important farmland have been incorporated into Appendix G of the California Environmental
Quality Act (CEQA) Guidelines (refer to Section 3.2.3.1). For ease of reference, Prime Farmland,
Farmland of Statewide Importance, and Unique Farmland, are collectively referred to in this
environmental impact report (EIR) as “Important Farmland.”7 Figures 3.2-2a and 3.2-2b depict
Important Farmland at and in the vicinity of the Project sites.

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6 NRCS, Farmland Protection Policy Act, No date. Available online at
7 There is no land designated by the California Department of Conservation as “Farmland of Local Importance”
within the College Lake basin or along the College Lake pipeline alignment.
Figure 3.2-2a
Important Farmland
Figure 3.2-2b
Important Farmland
Coastal Zone Management Act and California Coastal Act

The California Coastal Commission administers the federal Coastal Zone Management Act along California’s coastline by regulating the use of land and water within the coastal zone. Santa Cruz County has authority to approve coastal development permits within its jurisdiction pursuant to the provisions of its Local Coastal Program certified by the California Coastal Commission. The County’s approved Local Coastal Program is integrated into the General Plan. The westernmost segment of the College Lake pipeline (west of State Route [SR] 1), shown on Figure 2-3e in Chapter 2, is within the Coastal Zone as defined in the California Coastal Commission’s Coastal Zone Boundary maps. As indicated in Table 2-10 in Chapter 2, construction of the College Lake pipeline within the Coastal Zone would require a coastal development permit.

California Land Conservation Act of 1965

The California Land Conservation Act of 1965 (commonly referred to as the Williamson Act) is the state’s primary program for the conservation of private land for agricultural and open space uses. The Williamson Act provides a mechanism through which private landowners can contract with counties and cities to voluntarily restrict their land to agricultural and compatible open space uses. In return, Williamson Act contracts offer tax incentives by ensuring that land is assessed for its agricultural productivity rather than its highest and best use. Contracts typically restrict land use for a minimum of 10 years. Contracts are automatically renewed unless the landowner or local government files for non-renewal or petitions for cancellation.

The California Department of Conservation prepares countywide maps of lands enrolled in Williamson Act contracts. One parcel (APN 051-101-10) located within the College Lake water storage area is enrolled in a Williamson Act Contract and designated as Mixed Enrollment Agricultural Land, defined by the California Department of Conservation as enrolled lands containing a combination of Prime, Non-Prime, Open Space Easement, or other contracted or enrolled lands not yet delineated by the County. The parcel is located in the northern portion of the lake basin west of the riparian forest. The initial term of the Williamson Act contract for this parcel was for 10 years commencing in 1983 and automatically renewing thereafter for an additional year. During the term of the agreement, the property is to be "used for commercial production of agricultural commodities and/or those compatible uses allowed in the CA (Commercial Agricultural) and P (Agricultural Preserve) Combining District of the County Zoning Ordinance.” Section 5 of the agreement indicates that if the parcel is acquired for a public improvement, the agreement becomes null and void.

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8 Santa Cruz County, 1994 General Plan and Local Coastal Program for the County of Santa Cruz, California, 1994.
9 Under the non-renewal process, the remaining contract term is allowed to lapse, with the contract null and void at the end of the term. During the nonrenewal process, the annual tax assessment continually increases each year until it is equivalent to current tax rates at the end of the nonrenewal period. Under limited circumstances, cancellation of Williamson Act contracts is allowed, but the landowner is required to pay a cancellation fee and the process can take up to ten years to complete as contract cancellation involves a comprehensive review and approval process.
10 California Department of Conservation, Division of Land Resources Protection, Santa Cruz County Williamson Act FY 2015/2016, 2015.
3.2.2.2 Local

General plan and zoning designations for Project component locations as well as relevant general plan policies are described below. California Government Code Section 53091 exempts agencies like Pajaro Valley Water Management Agency (PV Water) from complying with local building and zoning ordinances when locating or constructing facilities for the production, generation, storage, treatment, or transmission of water. California Government Code Section 65402(c) requires that PV Water notify cities and counties of its plans to construct projects or to acquire or dispose of property. The planning agency then has 40 days to determine project consistency with its general plan. If the planning agency disapproves (i.e., determines that the project is inconsistent with its general plan), the disapproval may be overruled by PV Water. In some cases, local policies are used in this EIR as criteria to determine the significance of physical effects on the environment (e.g., Impact NOI-1 in Section 3.8, Noise and Vibration).

General Plan and Zoning Designations

Figure 3.2-3 shows land use designations in the Project vicinity for the Santa Cruz County 1994 General Plan/Local Coastal Program. The parcels on which the weir structure, intake pump station, and WTP (both the preferred and optional sites) would be constructed are designated as “Agricultural” in the Santa Cruz County General Plan and “CA- Commercial Agricultural” in the Santa Cruz County Zoning Ordinance. The principal permitted land uses within the “CA-Commercial Agricultural” zone are agricultural pursuits for the commercial cultivation of plant crops and the commercial raising of animals. In addition, dams, canals, and aqueducts of any public water project are principal permitted uses.12 Parcels within the College Lake basin below 64 feet NAVD88 are designated as “Agricultural” in the Santa Cruz County General Plan and “CA-Commercial Agricultural” in the Santa Cruz County Ordinance; one parcel is zoned “Commercial Agricultural – Preserve,” indicating that the owner has executed an Agricultural Preserve or Farmland Security contract with the County to maintain the land in its natural state for 10 years.13 The College Lake pipeline alignments (both the preferred and optional alignments) are located in public roadways and in parcels designated as “Agricultural” in the Santa Cruz County General Plan and “CA- Commercial Agricultural” in the Santa Cruz County Zoning Ordinance. General plan and zoning designations for land uses in the City of Watsonville adjacent to the College Lake pipeline alignment vary. Table 3.2-3 presents pertinent local plans and policies regarding land use and agricultural resources to support County and City consideration of Project consistency with general plan policies.

12 section 13.10.312 (b) of the Santa Cruz County Code.
13 This parcel (APN 051-101-10) is enrolled in a Williamson Act contract.
Figure 3.2-3
Santa Cruz County 1994 General Plan/Local Coastal Program Land Use Designations

SOURCE: Santa Cruz County, Geographic Information Services, 2018; ESA, 2018.
TABLE 3.2-3
LOCAL PLANS AND POLICIES RELEVANT TO THE PROJECT

CITY OF WATSONVILLE PLANS AND POLICIES

Watsonville 2005 General Plan

Goal 3.3 Agricultural Land Use. Foster the continuation of agriculture in the Pajaro Valley.

Policy 3.F Agricultural Land Conservation. The City shall plan for the preservation and enhancement of important agricultural soils by encouraging the County and LAFCO to prohibit continued urbanization of lands beyond the Urban Limit Line and by encouraging the retention of land beyond the Urban Limit Line for long term agricultural purposes.

Implementation measure 9.E.2 Soil Stockpiling - The City shall require that topsoil disturbed during project grading be stockpiled at the site and reapplied after construction to promote vegetative growth, unless that soil is to be transferred to another site for agricultural use.

SANTA CRUZ COUNTY PLANS AND POLICIES

Santa Cruz County General Plan/Local Coastal Program

Objective 5.5a: Watershed Protection. To protect and manage the watersheds of existing and future surface water supplies to preserve the quality and quantity of water produced and stored in these areas to meet the needs of County residents, local industry, agriculture, and the natural environment.

Objective 5.8b, Overdrafted Groundwater Basins: To act directly and coordinate and work with relevant water purveyors and agencies to eliminate long-term groundwater overdraft in all water basins where overdraft has been documented.

Program c) ([Local Coastal Program] LCP). Work with water purveyors and water management agencies to augment natural groundwater recharge where it is environmentally and fiscally acceptable. (Responsibility: Flood Control, Water Purveyors, PV Water)

Program h) (LCP). Continue to work with [PV Water] to eliminate overdraft and salt water intrusion through implementation of their Basin Management Plan.

Objective 5.13 Commercial Agricultural Land. a) To maintain for exclusive agricultural use those lands identified on the County Agricultural Resources Map as best suited to the commercial production of food, fiber and ornamental crops and livestock and to prevent conversion of commercial agricultural land to non-agricultural uses. To recognize that agriculture is a priority land use and to resolve policy conflicts in favor of preserving and promoting agriculture on designated commercial agricultural lands.

Policy 5.13.1 Designation of Commercial Agriculture Land. Designate on the General Plan and LCP Resources and Constraints Maps as Agricultural Resource all land which meets the criteria (as defined in the General Plan Glossary) for commercial agricultural land.

Policy 5.13.2 Types of Agriculture Land. Maintain by County ordinance specific agricultural land type designations for parcels identified as commercial agricultural land based on the criteria set forth in the General Plan and LCP Land Use Plan and maintain Agricultural Resources Maps, by County ordinance to identify the distribution of the following types of Commercial Agricultural Land in the County: Type IA - Viable Agricultural Land. Type IA agricultural lands comprise areas of known high productivity which are not located in any utility assessment district for which bonded indebtedness has been incurred. These lands essentially meet the U.S. Department of Agriculture Soil Conservation Service and the California Department of Food and Agriculture criteria for “prime” and “unique” farmland and “prime” rangeland. Type IB - Viable Agricultural Land in Utility Assessment Districts. This type includes viable agricultural lands, as defined above, which are within a utility assessment district for which bonded indebtedness has been incurred, except Agricultural Preserves. Type 2C – Limited Agricultural Land in Utility Assessment Districts. This type includes agricultural lands with limiting factors which are in a utility assessment district, as of 1979, which has incurred bonded indebtedness. Type 3 - Viable Agricultural Land within the Coastal Zone. This category includes all of the following lands outside the Urban Services Line and the Urban Rural Boundary, and within the Coastal Zone in Santa Cruz County:

- Land which meets the U.S. Department of Agriculture Soil Conservation or California Department of Food and Agricultural Service criteria for prime farmland or rangeland soils and which is physically available for agricultural use.
- Land which meets the California Department of Food and Agriculture criteria for unique farmland of statewide importance and which is physically available for agricultural use.

General Agricultural Policies Program F. Ensure a continued sustainable supply of water for agricultural use through conservation, protection and development of surface and groundwater, utilization of excess domestic water, utilization of recycled wastewater, or importation of water from outside the County.

3.2.2.3 Agricultural Conservation Easements

Some parcels in the Pajaro Valley have agricultural conservation easements. An agricultural conservation easement is a legal agreement between a landowner and a conservation organization or government agency that permanently protects land from development while keeping land in productive use.¹⁴ Three agencies involved in the issuance of agricultural easements in Santa Cruz County and their respective roles include the following:

- The National Resources Conservation Service (NRCS) provides financial and technical assistance to help conserve agricultural lands and their related benefits.¹⁵
- The Land Trust of Santa Cruz County (Santa Cruz Land Trust) administers the agricultural conservation easement program within the Pajaro Valley.¹⁶
- The Resource Conservation District of Santa Cruz County partners with the NRCS and Santa Cruz Land Trust to provide technical assistance, site assessments, and conservation planning for landowners.¹⁷

None of the parcels directly affected by the Project is known to have an agricultural conservation easement.

3.2.3 Impacts and Mitigation Measures

3.2.3.1 Significance Criteria

In accordance with the CEQA, State CEQA Guidelines (including Appendix G), relevant plans, policies, and/or guidelines, and agency standards, the Project could have a significant impact if it were to:

- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (referred to herein as Important Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use;
- Conflict with existing zoning for agricultural use, or a Williamson Act contract;
- Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g));
- Result in the loss of forest land or conversion of forest land to non-forest use;

• Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use;

• Physically divide an established community; and/or

• Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.

The following topics are not analyzed further in this section for the reasons described below:

• **Conflict with existing zoning for agricultural use.** As indicated in Section 3.2.2.2, California Government Code Section 53091 exempts PV Water from complying with local zoning ordinances for the Project (i.e., a project used for the production, generation, storage, treatment, or transmission of water). The potential for the Project to conflict with state laws intended to protect agricultural land are addressed below under Impacts LU-1 (conversion of farmland designated by the State of California as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance) and LU-2 (conflict with a Williamson Act contract).

• **Conflict with existing zoning for forest land, loss of forest land, or conversion of forest land to non-forest use.** 18 Statewide mapping prepared by CAL FIRE classifies land cover in the Project area as Urban and Agriculture. There is no forest land on the Project sites, so implementation of the Project would not conflict with zoning regulations for forest land, result in the loss of forest land, or result in the conversion of forest land to non-forest use. Therefore, these criteria are not applicable to the Project.

• **Physically divide an established community.** College Lake is an existing feature surrounded by predominantly agricultural uses; implementation of the Project would alter the use of College Lake but would not physically divide an established community. The College Lake pipeline would extend through the City of Watsonville, but the pipeline would be underground, and would not divide any established communities. Therefore, this criterion is not applicable to the Project.

### 3.2.3.2 Methodology

As described in Section 3.1, Overview, this EIR provides an independent analysis of the Project’s potential environmental impacts. Potential impacts are evaluated in the following section. If warranted, mitigation measures are included. The analyses below assess whether and how Project construction and operation might alter existing land uses in such a way that it would trigger one or more of the environmental impacts identified in Section 3.2.3.1.

Consistent with CEQA, this analysis focuses on significant impacts on the physical environment. Economic effects, such as loss of revenue due to disruption of farming, are not evaluated as significant impacts under CEQA, unless such effects would result in a significant impact on the physical environment. For information on acquisition of property, easements, and rights-of-way proposed as part of the Project, refer to Section 2.8 in Chapter 2, *Project Description*.

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18 Section 12220(g) of the California Public Resources Code defines forest land as “land that can support 10 percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources (e.g., timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits).”
Additional information on methodology is provided below under each impact statement.

### 3.2.3.3 Impacts and Mitigation Measures

**Impact LU-1:** The Project would convert Important Farmland to non-agricultural use and could involve changes in the existing environment which, due to their location or nature, could result in conversion of Important Farmland to non-agricultural use. *(Significant and Unavoidable with Mitigation)*

This impact combines the first and fifth bullets listed in Section 3.2.3.1, Significance Criteria: conversion of Important Farmland (i.e., farmland designated by the State as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance), and changes to the existing environment that could result in the conversion of farmland to non-agricultural use.  

Project components are located wholly or partially on Important Farmland (see Figures 3.2-2a and 3.2-2b). As shown in Appendix AG, some land currently considered Important Farmland within the lake basin has not been farmed within the past five years and may be reclassified when state mapping is updated, pursuant to the definitions summarized in Section 3.2.2.1, above. The Project has the potential to adversely affect Important Farmland in several ways:

- **Direct permanent conversion of Important Farmland.** For example, construction of the WTP at either site would result in the permanent conversion of Important Farmland.

- **Other changes that could result in conversion of Important Farmland.** For example, the Project would cause water to be stored longer in College Lake, which would impair farming, potentially resulting in the conversion of farmland.

- **Temporary disruption of agricultural use during Project construction.** For example, open trenching for pipeline construction would disrupt farming within the pipeline construction corridor.

These issues are addressed for the College Lake water storage area, weir structure and intake pump station, WTP, and College Lake pipeline below. **Table 3.2-4** summarizes direct impacts and other changes that could result in the permanent conversion of Important Farmland.

The purpose of the Project is to help balance the Pajaro Valley Groundwater Basin, prevent further seawater intrusion, and meet water supply needs in PV Water’s service area by replacing groundwater supplies with surface water supplies for agricultural irrigation. Consequently, while the Project would adversely affect Important Farmland in and around College Lake, it would also promote the long-term preservation of such farmland within the Pajaro Valley into the future by substituting surface water for groundwater resources in the areas shown on Figure 2-4 in Chapter 2.

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19 As noted in Section 3.2.2.1, there is no land designated by the California Department of Conservation as “Farmland of Local Importance” within the College Lake basin or along the College Lake pipeline alignment.
### TABLE 3.2-4
**ANTICIPATED CONVERSION OF IMPORTANT FARMLAND**

<table>
<thead>
<tr>
<th>Project Component</th>
<th>Area (Acres)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>Important Farmland</td>
<td>Important Farmland Anticipated to be Converted</td>
</tr>
<tr>
<td>College Lake Basin Below approximately 59 feet NAVD88</td>
<td>167.2</td>
<td>136.4</td>
<td>136.4</td>
</tr>
<tr>
<td>Between approximately 59 and 63 feet NAVD88</td>
<td>50.7</td>
<td>40.8</td>
<td>9.2</td>
</tr>
<tr>
<td>Water Treatment Plantc</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preferred</td>
<td>5.0</td>
<td>5.0</td>
<td>5.0 – 6.0</td>
</tr>
<tr>
<td>Optional</td>
<td>6.0</td>
<td>6.0</td>
<td></td>
</tr>
<tr>
<td>Weir Structure and Intake Pump Station</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>150.8 – 151.8</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total accounting for potential division or fragmentation of parcels</strong></td>
<td><strong>193.7 – 198.5</strong>d</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NOTES:**

a Important Farmland refers to Prime Farmland, Farmland of Statewide Importance, and Unique Farmland as mapped by the California Department of Conservation, Farmland Mapping and Monitoring Program.

b As indicated in Section 3.2.1.1, the lake basin below 64 feet NAVD88 is the study area for effects on agricultural uses associated with water storage operations. As described under Impact LU-1, modeling results for Project operations indicate that the effects of water management on agricultural uses would be limited to land at and below 63 feet NAVD88.

c Acreage numbers are rounded based on the current level of CAD design.

d Refer to discussions under the headings College Lake Water Storage Area and Preferred and Optional Water Treatment Plant Sites regarding the potential for the division or fragmentation of parcels to increase conversion of Important Farmland. The higher end of the range in acreage is associated with development of the optional WTP site.

**SOURCE:** California Department of Conservation GIS data; cbec, inc. eco engineering, College Lake Integrated Resources Management Project Hydrologic and Hydraulic Modeling Technical Memorandum, November 2018.

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### College Lake Water Storage Area

**Direct Permanent Conversion of Important Farmland**

There would be no direct permanent conversion of Important Farmland within the College Lake water storage area because no structures would be built in this area.

**Other Changes that Could Result in Conversion of Important Farmland: Water Management Operations**

The evaluation of the potential for water management operations to convert Important Farmland included consideration of existing farming practices within the lake basin, future with-Project water surface elevations (WSEs) and groundwater conditions, and proposed land maintenance activities.

**Farming Practices in the Lake Basin.** Existing farming practices at College Lake are described in Section 3.2.1.1. Based on a review of existing farming practices, it was determined that for current farming practices to continue, land would need to be sufficiently dry, based on WSEs and groundwater conditions, to accommodate farm machinery (tractors) on or about June 1 to provide enough time for harvesting one vegetable row crop. This may be a conservative assumption: surveys indicate that some land within the lake basin that was not cultivated in late June/early July was under cultivation in the fall of the same year.
3. Environmental Impacts, Setting, and Mitigation Measures

3.2 Land Use and Agricultural Resources

Water Surface Elevations. cbec, inc. eco engineering conducted hydrologic and hydraulic modeling to simulate with-Project WSEs for College Lake (described in Section 3.3, Surface Water, Groundwater, and Water Quality, and in Appendix HYD). Of particular interest for the evaluation of impacts on farmland are WSEs on or about June 1, which is when land would need to be sufficiently dry to accommodate farming machinery. Figures 3.3-7a through 3.3-7d in Section 3.3 show (among other things) WSEs around June 1. Until May 31, areas within the College Lake basin at or below approximately 59 feet NAVD88 would generally be inundated during all modeled water years.

Groundwater Elevations. PV Water conducted an analysis of shallow groundwater conditions to develop an understanding of potential adverse impacts on farming outside of the storage area where, based on topography, shallow groundwater conditions could constrain farming operations. The analysis included installing piezometers around College Lake (shown on Figure 3.3-9 in Section 3.3) and reviewing groundwater data collected at either 15- or 30-minutes intervals. Based on review of piezometer data collected from spring 2017 through fall 2018, the Project could result in shallow groundwater elevations remaining elevated for a longer period of time than under current conditions along the southwestern side of College Lake during the summer and fall. Shallow groundwater could remain within 1 foot of the ground surface until June 1 in this area with the Project, which is up to 1 foot shallower than measured groundwater elevations in this area on June 1, 2018 (refer to Table 3.3-6 in Section 3.3).

Proposed Land Maintenance. Given projected water surface and groundwater elevations under with-Project conditions, PV Water has proposed the following maintenance activities within the College Lake basin, described in Chapter 2:

• **59 feet NAVD88 and below.** Areas below approximately 59 feet NAVD88 would be inundated on June 1 during all modeled water years (see Figures 3.3-7a through 3.3-7d, Section 3.3). During the dry season, PV Water proposes to conduct annual vegetation management (disking and mowing) and removal of flow-constricting vegetation in the areas shown in blue on Figure 2-18 in Chapter 2.

• **59 feet to 63 feet NAVD88.** Assuming that groundwater needs to be 2 feet below ground surface as of June 1, farming may be impaired up to ground elevation 63 feet NAVD88 under with-Project conditions. The extent of impairment of farming operations between approximately 59 feet and 63 feet NAVD88 would vary by year depending on precipitation patterns. When the lake bed is dry, PV Water proposes to conduct (through agreements with landowners or lessees) farming or routine vegetation maintenance (disking and mowing) in the areas shown in green on Figure 2-18 in Chapter 2.

Conversion of Important Farmland from Water Management. Based on the factors described above, water management activities for water supply and fish passage (i.e., maintaining minimum WSEs of approximately 59 feet NAVD88 until May 31) would preclude farming below

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20 Some piezometers collected data every 15 minutes, while others collected data every 30 minutes.
21 To clarify, the study area for effects on agricultural uses associated with water storage operations was below 64 feet NAVD88. The evaluation indicated that farming may be impaired up to ground elevation 63 feet NAVD88 under future with-Project conditions.
22 As shown in Figures 3.3-7a through 3.3-7d (in Section 3.3), modeled lake levels around June 1 for proposed operations vary between about 59 feet and 61 feet NAVD88.
approximately 59 feet NAVD88 during all modeled water years. Consequently, over several years, the cessation of farming caused by water management activities would likely result in the conversion of approximately 136 acres of Prime Farmland, Farmland of Statewide Importance, and Unique Farmland in this area, although College Lake would be used for purposes of agricultural irrigation. Implementation of Mitigation Measures LU-1a and LU-1b would help reduce the magnitude of this impact.

While proposed land management activities are anticipated to help preserve farming between approximately 59 and 63 feet NAVD88, additional conversion of Important Farmland in this elevation range is anticipated. **Figure 3.2-4** depicts anticipated impacts on Important Farmland below 59 feet NAVD88 and between 59 feet and 63 feet NAVD88. Much of the land between 59 feet and 63 feet NAVD88 is located in the southwestern and north-central areas (the areas depicted with red hatching in Figure 3.2-4). Records indicate that land in the southwest has been cultivated every year from 2014 to 2018, while most of the land in the north-central area has been cultivated four out of the past five years. The remaining areas of Important Farmland within this elevation band are fragmented, are not contiguous with land at higher elevations that is regularly cultivated, and/or have not been cultivated (or were infrequently cultivated) during the past five years, lessening the likelihood that such areas would be successfully farmed under future with-Project conditions. In addition, growers may experience a reduction in production relative to existing conditions (e.g., resulting from one crop rotation instead of two crop rotations in some cases), which could result in a loss of revenue. Pursuant to CEQA,²³ economic effects may not be treated as a significant effect, unless they result in a substantial or potentially substantial adverse change in the physical environment. Changes to the physical environment caused by a project’s economic effects are indirect effects that must be analyzed in an EIR if they are reasonably foreseeable and significant. With respect to Important Farmland between approximately 59 and 63 feet NAVD88, for reasons stated above it is reasonable to expect that land in the southwestern and north-central areas of the lake basin would be farmed and disked at sufficient intervals to preclude conversion. However, it is reasonable to expect that the fragmented areas of Important Farmland in this elevation band, estimated at approximately 9.2 acres, could convert to another land cover designation.

**Division or Fragmentation of Parcels.** Additional conversion of Important Farmland could also occur through the division or fragmentation of parcels: where the Project requires use of a portion of a parcel, the remaining “non-project” area of the parcel may be isolated or of insufficient size for viable farming operations to persist. As a result, a greater proportion or in some cases the entirety of such parcels could undergo conversion. **Figure 3.2-5** depicts parcels affected by the Project that include Important Farmland. As shown in Table 3.2-4, taking into account the potential division or fragmentation of parcels, the total area of Important Farmland that could convert is estimated at 198.5 acres. Mitigation Measures LU-1a and LU-1b would help reduce the magnitude of this impact.

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²³ Public Resources Code Sections 21100 and 21151; and CEQA Guidelines Sections 15064(d) and 15064(e), 15382, and 15131(a).
Figure 3.2-4
Impacts to Important Farmland

Notes:
1. Numbers are rounded to the nearest acre.
2. NAVD88 = North American Vertical Datum of 1988
Figure 3.2-5
Parcels Containing Important Farmland Affected by Fragmentation

SOURCE: California Department of Conservation, 2016
To the extent that growers are able to prepare the land after June 1 and successfully plant and harvest crops, or otherwise productively use land for agricultural purposes (e.g., access for farm machinery or ancillary agricultural uses), this analysis may overestimate the amount of Important Farmland that could permanently be converted.

Water management activities are not expected to result in the conversion of Important Farmland above 63 feet NAVD88 based on projected WSEs and groundwater characteristics compared to existing conditions during the growing season. Current farming activities at elevations above 63 feet NAVD88 could still experience some disruption due to water management activities. For example, growers regularly access berry farms on either side of the “arm” in the southeastern portion of College Lake by driving across it. That access likely would no longer be feasible with implementation of Project.

Temporary Disruption of Agricultural Use During Project Construction
As indicated in Section 2.7 in Chapter 2, Project Description, PV Water proposes that existing water management and farming practices would continue during construction of the proposed weir structure, intake pump station, and WTP. Consequently, no disruption of existing farming within the lake basin due to water management activities is anticipated during construction.

Weir Structure and Intake Pump Station
Direct Permanent Conversion of Important Farmland
As shown in Table 3.2-4, the weir structure and intake pump station would permanently remove approximately 0.2 acres of Important Farmland from cultivation, resulting in the permanent conversion of Important Farmland to another use.

Temporary Disruption of Agricultural Use During Project Construction
Construction staging for the proposed weir structure and intake pump station would occur within the selected WTP site. As described in Table 2-9 in Chapter 2, Project Description, the anticipated ground disturbance for construction of the proposed weir structure and intake pump station is approximately 0.6 acre spanning the creek channel, a portion of which is considered Important Farmland. Based on a review of aerial imagery, the hillside directly east of the weir structure has not been farmed within the last decade, but land directly west of the proposed weir structure has been used for raspberry and blackberry cultivation and for farm access roads from 2014 to 2018. Construction of the weir structure and intake pump station would temporarily disrupt agricultural uses. In addition, general construction activities (e.g., trucks traveling on farm roads to the optional WTP site, noise, and dust) could disrupt farming practices on neighboring properties. Disruption of farming due to construction would not constitute a significant impact on Important Farmland because it would not result in the conversion of Important Farmland. Refer to Table 3.5-5 in Section 3.5, Air Quality and Greenhouse Gases, for measures adopted by PV Water to control dust from construction.

Construction of the 30-inch pipeline from the intake pump station to the preferred WTP site would disrupt Important Farmland between the intake pump station and WTP site. While the alignment follows a farm road, the alignment is constrained by the Pinto Creek drainage ditch.
While the construction corridor can be narrowed from the proposed 40-foot width in this area, some loss of crops, as well as trees within an apple orchard, due to construction would be unavoidable along this alignment. Following cessation of pipeline construction activities, farming could resume within the construction corridor; however, trees with roots extending more than three feet deep would be prohibited above the pipeline. Roots deeper than three feet could damage the pipeline and its cover. Following construction, if top soil is not replaced, long-term impacts on the productivity of the land could occur. Implementation of Mitigation Measures LU-1c would prevent a long-term adverse effect on Important Farmland resulting from pipeline construction.

**Preferred and Optional Water Treatment Plant Sites**

**Permanent Conversion of Important Farmland**

As shown in Table 3.2-4, both WTP sites occupy Important Farmland. Development of the WTP on either site would permanently remove Important Farmland from cultivation, resulting in its conversion to another use, as follows:

- **Preferred WTP Site.** Construction of the WTP at the preferred site would result in the conversion of five acres of Important Farmland. The parcel of land on which the preferred WTP site would be constructed is 26.2 acres and consists entirely of Important Farmland. The orchard within which the preferred WTP site is situated is approximately nine acres (see Figure 3.2-5). The northern border of this orchard is a farm road that separates the orchard from the rest of the parcel. Because the preferred WTP site would take over half of the orchard out of production and could potentially damage infrastructure, it is reasonably foreseeable that the entire nine-acre orchard could undergo conversion. Refer also to the discussion under Impact AES-1 in Section 3.13, Aesthetics, and mitigation measures related to retaining orchard trees along Holohan Road.

- **Optional WTP Site.** Construction of the WTP at the optional site would result in the conversion of six acres of Important Farmland. Approximately 21.2 acres of this 22.8-acre parcel is Important Farmland, of which approximately 7.4 acres is below 63 feet NAVD88. Because the optional WTP site would occupy six acres of the parcel and an additional 7.4 acres is below 63 feet NAVD88, it is reasonably foreseeable that all of the Important Farmland within this parcel could convert if the optional WTP site were selected.

**Temporary Disruption of Agricultural Use During Project Construction**

As stated in Chapter 2, *Project Description*, construction staging and laydown for the proposed WTP would consist of the WTP site (either preferred or optional); a construction disturbance area (e.g., to accommodate heavy equipment movement for site grading) would also occur within up to 30 feet from the WTP site boundary, although Salsipuedes Creek, the Pinto Creek drainage ditch, and Holohan Road would be avoided. Up to approximately 6.5 acres of land could be disturbed for construction activities at the Preferred WTP site and up to 6.9 acres could be disturbed at the Optional WTP Site. During the construction period, construction activities (e.g., trucks traveling on farm roads to the optional WTP site, noise, and dust) could disrupt farming on adjacent properties, but would be temporary in nature. Development of the WTP at either site could also result in the destruction of irrigation systems and would necessitate rerouting irrigation lines following completion of either WTP, should the parcel continue to be farmed.
College Lake Pipeline

Permanent Conversion of Important Farmland

As shown on Figures 3.2-2a and 3.2-2b, segments of the College Lake pipeline alignment pass through Important Farmland. While there would be temporary disruption of farming operations during construction and PV Water would occasionally access the pipeline for maintenance purposes which could also temporarily disrupt farming operations, there would be no permanent conversion of Important Farmland associated with the College Lake pipeline.

Temporary Disruption of Agricultural Use During Project Construction

Pipeline construction through agricultural fields would result in a temporary loss of crop production. Pipeline construction is expected to last 13 months from 2022 to 2023, and construction through agricultural fields would require up to a 40-foot-wide construction corridor to facilitate construction and movement of equipment. Staging and laydown for pipeline construction would occur primarily within the width of the construction corridor and along the pipeline route. In agricultural fields, pipeline installation is estimated to occur at rates of up to 250 linear feet per day. Following cessation of pipeline construction activities, farming could resume within the construction corridor; however, trees with roots extending more than three feet deep would be prohibited above the pipeline because deep roots could damage the pipeline and its cover.

During pipeline construction in farm fields, excavated material would likely be side-cast adjacent to pipeline trenches. If top soil is not replaced following construction, long-term impacts on the productivity of Important Farmland could occur. Implementation of Mitigation Measure LU-1c would prevent a long-term adverse effect on Important Farmland resulting from pipeline construction.

Impact Summary

Although implementation of the Project would result in the permanent conversion of Important Farmland through direct and indirect changes in the environment, and pipeline construction could result in long-term adverse impacts on Important Farmland, these impacts would be partially mitigated by the Project’s contribution to the long-term preservation of such farmland within the Pajaro Valley by substituting surface water for groundwater resources in the areas shown on Figure 2-4 in Chapter 2, which are otherwise threatened by long term conversion to non-agricultural use due to seawater intrusion. While implementation of Mitigation Measures LU-1a, LU-1b, and LU-1c could reduce these impacts, the loss of Important Farmland remains Significant and Unavoidable for the following reasons. First, implementation of Mitigation Measure LU-1b potentially relies on agreements with third parties (Santa Cruz Land Trust or similar entity), causing uncertainty as to whether PV Water can successfully implement this measure. In addition, the implementation of agricultural easements under Mitigation Measure LU-1b can diminish the value of a parcel because it restricts future land uses; consequently, land owners may be unwilling to put agricultural easements on their property. In addition, the cost to PV Water of implementing Mitigation Measure LU-1b is not known and cannot be known with certainty at this time; consequently, this measure may be infeasible. Lastly, while acquiring agricultural easements would ensure that the parcels over which they are acquired are preserved
for agricultural uses, the Project would not reduce the number of acres lost to agricultural production. A conservation easement would not ‘replace or provide a substitute resource’ (CEQA Guidelines § 153701(e)) for the permanent loss of farmland acreage. While the Project would adversely affect Important Farmland in and around College Lake, its implementation would nevertheless in and of itself mitigate this impact to some extent, by also promoting the long-term preservation of such farmland within the Pajaro Valley into the future by substituting surface water for groundwater resources within a critically overdrafted groundwater basin.24

**Mitigation Measure LU-1a: Promote Farming.**

To reduce the amount of Farmland of Statewide Importance and Unique Farmland converted to other uses and in coordination with affected landowners, PV Water shall adopt practices to promote farming within the areas depicted with red hatching on Figure 3.2-4 of the College Lake Integrated Resources Management Project EIR. Such practices may include, but are not limited to, the following:

- Maintain, improve and potentially expand tile drain systems.
- If controlling land by easement, establish terms that require land owners to cultivate crops or otherwise productively use the land for agricultural purposes at least once every five years, hydrologic conditions permitting.
- If acquiring land outright, enter into lease arrangements for the land to be cultivated or otherwise productively used for agricultural purposes at least once every five years, hydrologic conditions permitting.

**Mitigation Measure LU-1b: Compensate for Conversion of Important Farmland.**

**Track Conversion of Important Farmland.** PV Water shall review California Department of Conservation’s Farmland Mapping and Monitoring Program farmland designations for College Lake annually beginning with the first year of construction and continuing for five years of Project operation. PV Water shall identify Prime Farmland, Farmland of Statewide Importance, and Unique Farmland referred to herein as Important Farmland that is within the College Lake basin below elevation 63 feet NAVD88 that converts due to water management operations.

**Establish Memorandum of Understand for Agricultural Easement Fund.** PV Water shall enter into a Memorandum of Understanding with the Santa Cruz Land Trust or similar entity. The Memorandum of Understanding shall include details regarding an Agricultural Easement Fund to be paid by PV Water and the timing of acquisition of agricultural easements for the purpose of offsetting impacts on Important Farmland caused by the Project. Acceptance of this fee by the Santa Cruz Land Trust or similar entity shall serve as an acknowledgment and commitment to: (1) secure agricultural easements to offset the conversion of Important Farmland caused by the Project; and (2) provide documentation to PV Water describing the project(s) funded by the mitigation fee. If there is any remaining unspent portion of the Agricultural Easement Fund following implementation, PV Water shall be entitled to a refund in that amount. To qualify under this mitigation measure, the specific agricultural easement acquisition projects must preserve acreage of farmland of an equal or greater Farmland Mapping and

Monitoring Program designation value within the PV Water service area to offset the permanent conversion of Important Farmland by the Project.

**Contribute to Agricultural Easement Fund.** PV Water shall initially designate funds to secure easements for up to 6 acres of Prime Farmland to offset impacts associated with the water treatment plant. In addition, for Prime Farmland, Farmland of Statewide Importance, or Unique Farmland within the lake basin that the Department of Conservation converts to non-agricultural designations after the Project has operated for a period of one year, PV Water shall designate for the Agricultural Easement Fund an amount to cover the costs associated with acquisition of agricultural easements of equivalent value.

**Directly Fund Agricultural Easements.** As an alternative approach to establishing a memorandum of understanding for, and contributing to an agricultural easement fund, PV Water could elect to directly fund the purchase of agricultural easements for Important Farmland in the Pajaro Valley.

**Mitigation Measure LU-1c: Replacement of Topsoil.**

In agricultural areas, PV Water shall require contractors to stockpile topsoil at Project sites during Project grading and reapply it in situ after construction to promote vegetative growth. In agricultural areas temporarily disturbed by construction and where excavation occurs, the following measures shall apply:

- Strip 18 inches of topsoil from the area excavated unless otherwise stipulated by landowner. The topsoil shall be stored separately from subsoil and other construction materials.

- Clearly mark topsoil signs, and store topsoil separately from other excavated and imported materials in such a manner that the topsoil is not damaged, mixed, or covered by subsoil or surface rocks, and so that it is not continually disturbed.

- Stockpile topsoil on the same property from which it was stripped and return topsoil to same property from which it was stripped.

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**Impact LU-2. The Project could conflict with a Williamson Act contract, or conflict with an applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project adopted for the purpose of avoiding or mitigating an environmental effect. (Less than Significant)**

As indicated in Section 3.2.2.1, there is one parcel under Williamson Act contract that would be affected by the Project. In addition, the Local Coastal Plan applies to the portion of the College Lake pipeline alignment that extends into the Coastal Zone (i.e., west of SR 1).

**Williamson Act**

As indicated in Section 3.2.2.1, Assessor Parcel No. 051-101-10 within the College Lake storage area is enrolled in a Williamson Act Contract. In the event that the parcel is acquired for a public
improvement, the Williamson Act contract becomes null and void. As part of the Project, PV Water proposes to acquire or otherwise control use of this parcel. Implementation of the Project would cause the parcel to be regularly inundated such that farming could not continue. Because the College Lake Project would be a public improvement, acquisition of this parcel would render the Williamson Act contract null and void, thus eliminating any conflict. Consequently, there would be no impact related to cancellation of a Williamson Act contract.

**Coastal Development Plan**

As described in Section 3.2.2, Santa Cruz County has authority to approve coastal development permits for the portion of the state-designated Coastal Zone within its jurisdiction. The portion of the College Lake pipeline west of SR 1 is within the Coastal Zone. Chapter 13.20 of the Santa Cruz County Code establishes the Coastal Zone review and permit processes for the purpose of implementing the California Coastal Act. Pursuant to Section 13.20.050 of the Santa Cruz County Code, PV Water would need to obtain a coastal development permit.

Table 3.2-3 presents objectives and policies from the Santa Cruz County General Plan/Local Coastal Program. The County would make a formal determination of consistency with the Local Coastal Plan through issuance of the Coastal Development Permit. A review of Santa Cruz County General Plan/Local Coastal Program policies conducted for this EIR did not identify any apparent inconsistencies associated with the Project. Installation of the proposed College Lake pipeline would not preclude farming, and would help preserve agricultural lands in the Coastal Zone over the long term by reducing pumping and overdraft which has led to sea water intrusion in the Pajaro Valley. Implementation of the Project would be consistent with several General Plan/Local Coastal Programs goals and policies including those related to fostering the continuation of agriculture in the Pajaro Valley, protecting and managing watersheds and surface water supplies, eliminating long-term groundwater overdraft, and ensuring a continued sustainable supply of water for agricultural use through protection and development of surface and groundwater, and the impact would be less than significant.

**Mitigation** None required.

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**Cumulative Impacts**

**Impact C-LU-1:** The Project, in combination with past, present, and probable future projects in the Project area, would have a cumulatively considerable impact on the conversion of Important Farmland to non-agricultural use. (Significant and Unavoidable with Mitigation)

The geographic scope for cumulative impacts on land use and agriculture is the Pajaro Valley. The focus of the analysis of cumulative impacts on land use and agricultural resources is the permanent conversion of Important Farmland. This analysis uses a list-based approach. The

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projects described in Table 3.1-1 in Section 3.1, Overview, were reviewed to determine whether any could result in the permanent conversion of Important Farmland. Based on available information, the following projects could result in the conversion of Important Farmland:

- **Harkins Slough Recharge Facilities Upgrades.** Components of this project, specifically the recharge basins, could result in the conversion of up to approximately 29.4 acres of Important Farmland.

- **Watsonville Slough with Recharge Basins.** Components of this project, specifically the recharge basins, could result in the conversion of up to 3.9 acres of Important Farmland.

- **Murphy Crossing with Recharge Basins.** The recharge basins associated with the Murphy Crossing project would result in the permanent conversion of 21 acres of Important Farmland.

- **Pajaro Valley Groundwater Recharge Net Metering.** Components of this project, specifically the recharge basins, could result in the conversion of up to five acres of Important Farmland.

- **Pajaro River Flood Risk Management Study.** This project involves implementing flood protection measures and would result in the loss of up to 130.6 acres of Important Farmland adjacent to the Pajaro River.

- **Bryant Habert Ecological Restoration Project.** This project involved the restoration of 20 acres of wetland and upland habitat subject to extended inundation and seasonally high groundwater. Completed in 2016, this project resulted in the conversion of approximately 20 acres of Important Farmland.

The projects listed above, in addition to the College Lake Project, could account for the conversion of up to approximately 408.4 acres of Important Farmland to non-agricultural use. This would be a significant impact, and the project’s contribution to this impact would be cumulatively considerable. Implementation of Mitigation Measures LU-1a through LU-1c could reduce the project’s contribution to this cumulative impact to less-than-cumulatively considerable. However, for reasons stated under Impact LU-1, this impact is still considered significant and unavoidable and thus its contribution to this cumulative impact is considered cumulatively considerable. Those cumulative projects proposed by PV Water will be subject to project-specific CEQA, at which point PV Water will evaluate impacts on Important Farmland.
based on (then) current design information and will, in accordance with CEQA, adopt measures to mitigate impacts on Important Farmland.

Mitigation Measure LU-1a: Promote Farming (refer to Impact LU-1)

Mitigation Measure LU-1b: Compensate for Conversion of Important Farmland (refer to Impact LU-1)
3.3 Surface Water, Groundwater, and Water Quality

This section presents an analysis of potential impacts related to surface water, groundwater, and water quality that would result from implementation of the proposed College Lake Integrated Resources Management Project (Project). The analysis includes both site options (preferred and optional) for the water treatment plant (WTP) as well as preferred and optional pipeline alignments for the College Lake pipeline. Information from the 2014 Basin Management Plan Update Program Environmental Impact Report (2014 BMP Update PEIR) that remains relevant and accurate for the purposes of describing the physical or regulatory setting of surface water, groundwater, and water quality has been incorporated as appropriate. The Project includes mitigation measures adopted by the Board of Directors to reduce the severity and magnitude of potential environmental effects.

3.3.1 Setting

The 2014 BMP Update PEIR Section 3.9.1 describes existing hydrology and water quality conditions in the Project region. Regional environmental setting information from the 2014 BMP Update PEIR is summarized here. This section also describes hydrologic and water quality information specific to the Project area.

3.3.1.1 Regional Physiography, Climate, Hydrology, and Geomorphology

The Project is located in the Pajaro River watershed, an approximately 1,300-square-mile drainage unit constituting most of San Benito County and portions of Santa Clara, Santa Cruz, and Monterey counties. The Pajaro River watershed is part of the Central Coast Hydrologic Region that extends from southern San Mateo County to southern Santa Barbara County. Topographic features along the central coast are dominated by the rugged sea coast and west- to northwest-trending mountain ranges; long valleys run parallel to the mountains. The Pajaro Valley is located in the lower Pajaro River watershed, and it is bounded by the Santa Cruz Mountains to the north and east, the Los Carneros Hills to the south, and Monterey Bay (the Pacific Ocean) to the west. The northwest-trending San Andreas and the Zayante-Vergeles fault zones cross the eastern side of the basin. The basin is filled with alluvial, aeolian, and marine sediments that together are over 3,500 feet thick in the deepest parts of the Pajaro Valley. Section 3.6, Geology and Soils, further discusses Pajaro Valley geology.

The Pajaro Valley is in a Mediterranean climate typical of central coastal California. This climate zone is characterized by cool, wet winters and warm, dry summers. Over 90 percent of annual precipitation falls from November through April, and coastal fog is common in the summer and fall months. The mean annual temperature is 57 degrees Fahrenheit; the mean monthly maximum temperature is 74 degrees Fahrenheit in September; and the mean monthly minimum temperature is 39 degrees Fahrenheit in January. The long-term mean annual rainfall at Watsonville is 21.8

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1 RWQCB, Central Coast Regional, Water Quality Control Plan for the Central Coastal Basin, September 2017.
3. Environmental Setting, Impacts, and Mitigation Measures
3.3 Surface Water, Groundwater, and Water Quality

inches, averaged for the period of record from water years 1908 to 2017, while the 30-year average (1988 to 2017) is 21.9 inches. The mean precipitation for the Pajaro Valley ranges from 16 inches near the coast to more than 40 inches in the foothills of the Santa Cruz Mountains.\(^2\)

Annual precipitation is highly variable, ranging from less than 40 percent to more than 200 percent of the mean of data collected for over 100 years.\(^3\) The long-term precipitation and streamflow records suggest that most of the variation in precipitation and streamflow occurs due to longer climate cycles.\(^4\)

Precipitation that falls in Pajaro Valley and that does not reenter the atmosphere via evapotranspiration may infiltrate into the ground and percolate into the groundwater system or run off into streams and eventually flow into the Pacific Ocean. In some areas of the Pajaro Valley, particularly in the foothill areas north and east of the Pajaro River, water from the streams at times infiltrates into the groundwater system. Much of the streamflow in the Pajaro Valley originates as runoff from outside the Pajaro Valley (to the east, in San Benito County) and enters through the Pajaro River. Changes in natural streamflow within the Pajaro Valley include the construction and operation of water diversion structures for urban and agricultural supplies and for artificial recharge.\(^5\) Under developed conditions, decades of groundwater withdrawals in excess of recharge have led to groundwater storage depletion, which has lowered groundwater levels and altered the movement of groundwater, causing onshore migration of seawater and the formation of regional cones of depression in the center of the Pajaro Valley.\(^6\)

Regional topography, geology, climate, and hydrology influence patterns of erosion and sedimentation in the basin.\(^7\) The terrain in the Santa Cruz Mountains consists of shallow, erodible soils overlying highly fractured sedimentary rock. Intense precipitation combined with erodible material results in high erosion rates of the mountain slopes. The relief between the Santa Cruz Mountains and the Pajaro Valley drives sediment deposition in the Pajaro Valley, as available stream power declines in areas of reduced channel gradient. Streams in these areas form incised channels cut into extensive alluvial deposits. Prior to agriculture becoming the dominant land use, little runoff occurred from land adjacent to these lowland stream channels; instead, these stream channels conveyed water from the mountainous reaches to the ocean.\(^8\) Under increasingly developed conditions, erosion and sedimentation patterns have been influenced by land uses that

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\(^3\) Hanson, Geohydrologic Framework of Recharge and Seawater Intrusion in the Pajaro Valley, Santa Cruz and Monterey Counties, California. USGS Water-Resources Investigations Report 03-4096, 2003.


\(^5\) Ibid.

\(^6\) Ibid.

\(^7\) Information in this description derived from Fall Creek Engineering, Lower Pajaro River Enhancement Plan for Green Valley, Casserly, Hughes, Tynan, Coward and Thompson Creeks, Santa Cruz County, California, December 2002.

\(^8\) Fall Creek Engineering, Lower Pajaro River Enhancement Plan for Green Valley, Casserly, Hughes, Tynan, Coward and Thompson Creeks, Santa Cruz County, California, December 2002.
increase impervious area in the watershed. When impervious areas reduce infiltration and cause
precipitation to flow into stream channels, the increased flow in channels causes new patterns of
channel incision and bank erosion.9 Studies of sediment transport within the Pajaro River
watershed have indicated that the lower Pajaro River, downstream of the Chittenden stream flow
gage,10 is degrading (eroding). Ongoing channel adjustments resulting from land use changes
appear to be in progress, and they affect current and projected future drainage patterns in the
watershed.

3.3.1.2 Surface Water Hydrology of College Lake and Salsipuedes Creek

College Lake

College Lake is a seasonal lake in Pajaro Valley that forms in a topographic depression along the
Zayante-Vergeles Fault zone surrounded by locally elevated terraces (discussed in greater detail
in Section 3.6, Geology and Soils). The College Lake watershed, partially shown on Figure 3.3-1,
consists of approximately 11,000 acres of range, rural residential, and crop lands.11 The majority
of the water in College Lake enters from the north side of the lake through Casserly Creek,
though other small unnamed drainages also contribute flow to the lake.12 During wet weather,
flow direction in the reach of Salsipuedes Creek between College Lake and Corralitos Creek
reverses due to high flows in Corralitos Creek, and surface water enters the lake as backflow from
Salsipuedes Creek. During other periods, outflow from College Lake drains into Salsipuedes Creek,
which is tributary to the Pajaro River. Reclamation District (RD) 2049 pumps College Lake dry in the spring to accommodate summer farming of the lakebed.13 Pumping usually begins
in mid-March, depending on the amount of spring rain.13 An existing weir with crest at elevation
60.1 feet North American Vertical Datum of 1988 (NAVD88) associated with the pumps spans
the Salsipuedes Creek channel and, under certain conditions, controls the water level in College
Lake.14 When the lake water surface elevation (WSE) is at the existing weir crest elevation,
approximately 228 acres of the lake basin is inundated, storing about 1,150 acre-feet of water.15
Subsurface tile drains are present within the College Lake basin; during the summer farming
period, flow from these drains is collected and pumped into a channel at the center of the College
Lake basin. Water in the channel flows to the weir and pumps.

9 Ibid.
10 The Chittenden gage (USGS Gage 11159200) measures stream flow on the Pajaro River. River data has been
collected at this gage since 1956. The gage is located at the crossing of Chittenden Road, upstream of the
confluence with Salsipuedes Creek and approximately 8.8 miles southeast of College Lake.
12 Fall Creek Engineering, Lower Pajaro River Enhancement Plan for Green Valley, Casserly, Hughes, Tynan,
Coward and Thompson Creeks, Santa Cruz County, California, December 2002.
13 RD 2049 was formed in 1920 and was granted express legal authority under State law (California Water Code
Section 50000 et. seq.) to pump water from College Lake to reclaim the land for agricultural production.
14 The primary purpose of the existing weir is to prevent pumped water from flowing from Salsipuedes Creek into
College Lake.
15 Resource Conservation District of Santa Cruz County (RCD-SCC), College Lake Multi-Objective Management
Figure 3.3-1
Hydrology and Watersheds in the Project Vicinity
Sediment contributions to College Lake are principally from Green Valley Creek, although significant erosion has been observed in the unnamed east tributary. Deltaic deposits have been reported at the mouth of Casserly Creek.\footnote{16} Based on 2012 topographic data, the storage capacity of College Lake at WSE 62.5 feet NAVD88 was estimated to be approximately 1,800 acre-feet.

**Figure 3.3-2** shows WSEs in College Lake for water years 2012 through 2017, which cover water year types ranging from very dry to very wet.\footnote{17}

**Salsipuedes Creek**

**Wet Season**

During the wet season (approximately between October and April), the WSE in College Lake varies, but is generally above the elevation of the existing weir, and water flows out of the lake into Salsipuedes Creek approximately 1,900 feet upstream of its confluence with Corralitos Creek. About 80 percent of the time, if the WSE of College Lake has already exceeded the elevation of the existing weir, the WSE of College Lake is above 61 feet NAVD88 (refer to Figure 3.3-2). During wet conditions, surface water from Pinto Lake (a perennial lake located west of College Lake, in a similar topographic depression along the Zayante-Vergeles Fault zone) flows through Pinto Creek, an engineered channel, into the reach of Salsipuedes Creek immediately downstream of College Lake; however, this inflow has only minor effects on flow magnitude and direction in Salsipuedes Creek.\footnote{18}

There are no public stream gages measuring flow in Salsipuedes Creek. The stream gage nearest to the confluence of Salsipuedes Creek and Corralitos Creek is located on Corralitos Creek at the Green Valley Road crossing (U.S. Geological Survey [USGS] Station Number 11159200, Corralitos Creek at Freedom, California), approximately two miles upstream. The peak discharge of Corralitos Creek at this gage between 2012 and 2017 was 3,360 cubic feet per second (cfs). During 2014, the annual peak discharge at this gage was 172 cfs.\footnote{19} During the 50-year record at this gage, only four storms resulted in peak discharge greater than the recent peak of 3,360 cfs. The greatest discharge measured at this gage was 5,610 cfs during the storm of January 4, 1982.

\footnotetext[17]{17} Based upon water year classification developed by 2nd Nature for PV Water.
Notes: The elevation of the existing Reclamation District 2049 weir crest (60.1 feet NAVD88) is indicated by the lower black dashed line. The maximum elevation of the proposed weir crest (62.5 feet NAVD88) is indicated by the upper orange dashed line.

Dry Season

In the spring, RD 2049 pumps water from College Lake into Salsipuedes Creek to drain the lake for farming. Pumping the lake dry generally takes 30 to 40 days, typically resulting in a dry lakebed by May 1st to May 10th.\(^{20}\) Intermittent pumping into Salsipuedes Creek continues after this date as needed to maintain a dry lakebed. The pumping rate (and corresponding discharge to Salsipuedes Creek) has been estimated to range from 10 to 22 cfs based on observed change in lake WSE at the existing pump house in 2012 and 2013.\(^{21}\)

The existing weir generally prevents most water pumped into Salsipuedes Creek from flowing back into College Lake once the water level falls below the weir elevation. As Salsipuedes Creek south of College Lake has aggraded, shown on Figure 3.3-3, the channel bed elevation on the south side of the existing weir has increased to approximately 57 feet NAVD88. On the north side of the existing weir, the elevation of the channel bed is approximately 49 feet NAVD88. At the initiation of pumping, the elevation of the weir is raised by approximately 2 feet with sandbags to prevent water in Salsipuedes Creek from flowing back into College Lake.\(^{22}\)

The sandbags on the existing weir generally are removed by October 31, although on occasion they are left in place beyond that date.\(^{23}\)

### 3.3.1.3 Pajaro Lagoon Hydrology

Seasonally a lagoon forms at the mouth of the Pajaro River where it reaches the Pacific Ocean. The lagoon forms when wave energy causes a sand bar to form across the river mouth, and opens when either the river or waves overtop the sand bar and cause the river to cut a new opening. The lagoon’s status as open or closed affects water quality and local flooding, and is in part influenced by the amount of water passing down the Pajaro River. The lagoon is also mechanically opened by Santa Cruz County Department of Public Works, when appropriate to protect public safety and in accordance with requirements issued by the U.S. Army Corps of Engineers, Central Coast Regional Water Quality Control Board, and California Department of Fish and Wildlife.

Historically there has been at least one year (2015) during which the lagoon closed during the spring, prior to April when RD 2049 pumped College Lake, and when the lake was pumped the lagoon did not open by itself, resulting in flooding at Pajaro Dunes. The County Flood Control District breached the lagoon to release the water pumped from College Lake. The existing breaching patterns may thus be somewhat artificial (disconnected from precipitation and seasonal hydrology).

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\(^{21}\) RCD-SCC, College Lake Multi-Objective Management Report Final Report, prepared by cbec, November 14, 2014. The actual pumping rate is dependent on the number of pumps running and the difference between the water surface elevations upstream and downstream of the existing weir; generally, the pumping rate is higher when the water surface elevations on either side of the weir are similar and drops as the lake level drops.


\(^{23}\) Ibid.
Figure 3.3-3
Channel Elevation Profile: Salsipuedes Creek Between College Lake and Corralitos Creek Confluence

NOTE: This profile is vertically exaggerated.

In the relatively dry water years of 2014 and 2015, during the few winter storm events, the mouth opened for several months before closing due to wave action in early spring. In both years, low base flows were eventually overmatched by beach seepage and evaporative losses, visible as seasonal low points in water levels in early fall. In the wetter water years of 2016 and 2017, winter flows scoured a deeper mouth, causing the lagoon to remain open to tides until fall. Powerful waves during the El Nino winter of 2015-2016 created a beach bar that partially blocked outflows from the lagoon, leading to high water levels in the open lagoon. Although waves in the fall of 2016 were powerful enough to close the mouth, high base flows at the time caused the lagoon to fill rapidly and breach (erode a new mouth after overtopping the beach).

3.3.1.4 Groundwater

Regional Groundwater

As described in the 2014 BMP Update PEIR, the Pajaro Valley is underlain by Tertiary and Quaternary age sediments and sedimentary rocks overlying Cretaceous granitic rocks. The thickness of the sedimentary rocks and sediment ranges from 500 feet to over 3,000 feet.

In 2014, Pajaro Valley Water Management Agency (PV Water) and the USGS developed an integrated hydrologic model of Pajaro Valley, called the Pajaro Valley Hydrologic Model (PVHM), to support groundwater basin management planning. This conceptual model identified inflows and outflows to the Pajaro Valley groundwater system that include movement and use of water from natural and human components. As described in the associated report, a hydrogeologic framework was developed for modeling purposes. The hydrogeologic framework grouped the more than 90 separate mapped layers of geologic units in Pajaro Valley into aquifers and confining units. The hydrogeologic layers are:

- Two layers of alluvial deposits representing an alluvial deposit aquifer layer and basal fine-grained confining unit. These are of variable spatial extent and range in thickness from about 15 to 380 feet (alluvial deposits) and 15 to 55 feet (basal fine-grained confining layer).
- Three layers of Aromas Sand of late Quaternary age representing the upper Aromas aquifer, an upper Aromas basal fine-grained confining unit, and a lower Aromas aquifer unit.

24 ESA, Lagoon Quantified Conceptual Model Memorandum for Pajaro River Lagoon, April 12, 2018. Unless otherwise noted, content describing Pajaro Lagoon is from this source.
25 Beach seepage refers to the draining of Pajaro Lagoon to the ocean through the beach sand.
26 Hanson, Geohydrologic Framework of Recharge and Seawater Intrusion in the Pajaro Valley, Santa Cruz and Monterey Counties, California. USGS Water-Resources Investigations Report 03-4096, 2003.
28 Geologic deposits grouped into this first unit include Older Alluvium, Landslide Deposits, Undivided Terrace Deposits, Marine Terrace Deposits, Watsonville Terrace Deposits, Beach Sands, Basin Deposits, Older Dune Sands, and Alluvial Fan Deposits.
29 The fine-grained basal confining unit may comprise deposits from one or more periods of sea-level high stand during the Pleistocene, or may represent flood deposits.
upper Aromas aquifer constitutes predominantly terrestrial sedimentary deposits (fluvial and aeolian) and ranges in thickness from about 15 to 500 feet. The thickness of the upper Aromas basal fine-grained confining unit ranges from about 15 to 115 feet. The lower Aromas consists predominantly of marine sediments and ranges in thickness from about 15 to 1,000 feet.

- One layer representing a combination of the Purisima Formation and other minor pre-Pliocene bedrock units. These units consist predominantly of marine deposits of Pliocene age (Purisima Formation), continental deposits, and the Butano Sandstone.

The Aromas Sand is considered the primary aquifer (water-bearing) unit of the Pajaro Valley. Under predevelopment conditions, groundwater flowed from the foothills of the Santa Cruz Mountains to the Pacific Ocean. Under developed conditions, decades of withdrawals in excess of recharge has altered the movement of groundwater to onshore flow of seawater and the formation of regional cones of depression in the center of Pajaro Valley.30

The PVHM simulated inflows to and outflows from the Pajaro Valley groundwater system. Groundwater inflows include recharge from infiltration of precipitation, streamflow, and applied water from irrigation. Along with deep percolation of precipitation, streamflow infiltration is the other major source of natural recharge in Pajaro Valley. More than 80 percent of the recharge occurs within the Alluvial aquifer system layer, owing to the distribution of outcrops and confining layers, and significant portions of recharge occur within outcrop areas of the Purisima Formation (10 percent) and the upper Aromas (7 percent). Recharge is driven by climate variations; simulated recharge during wet periods can be more than double the simulated recharge from dry periods. Groundwater flow downwards across geologic layer boundaries is driven by recharge along with pumpage (most pumpage occurs in the upper Aromas aquifer). Flow within the lower Aromas aquifer is downward to the upper Purisima during most years, but can be upward to the Lower Aromas during some wet years.

Overall net recharge to the groundwater system31 ranges from less than 30,000 acre-feet per year during most dry years to more than 40,000 acre-feet during many wet years. The median distribution of net recharge is largely coincident with the alluvial channels of the streamflow network, the regions of tile drains, and the inland and coastal regions representing outcrops of the Aromas, as shown on Figure 3.3-4. Much of the intensive artificial recharge related to irrigation in the central region of the Pajaro Valley is intercepted by tile drains and becomes engineered runoff. The College Lake area has low potential for groundwater recharge, based on multiple regional groundwater recharge mapping efforts.32

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31 Net recharge to groundwater is the portion of irrigation and precipitation not consumptively used by plants reduced by losses to surface-water runoff and evapotranspiration from groundwater.

EXPLANATION

- Pajaro River watershed
- Outside Pajaro River watershed
- Reported tile drain areas (PVWMA, written commun., September, 2012)
- Model grid boundary
- River or streams
- Bathymetry contours

Santa Cruz County primary areas for potential groundwater recharge (from Santa Cruz County (2009))

Median value of Farm-net recharge per model cell, in acre-feet per year (Negative values indicate more evapotranspiration than recharge)

- $< -16,367$ to $0$
- $> 0$ to $300$
- $> 300$ to $600$
- $> 600$ to $1,200$
- $> 1,200$ to $2,400$
- $> 2,400$ to $3,600$
- $> 3,600$ to $4,800$
- $> 4,800$ to $7,200$
- $> 7,200$ to $12,000$
- $> 12,000$ to $33,726$

NOTE: Farm-net recharge is the sum of excess irrigation and precipitation minus the sum of surface-water runoff from precipitation and irrigation and evapotranspiration from groundwater.

The total active modeled area is 543 square miles on a grid consisting of 150 rows, 150 columns, and 6 layers. Each cell is approximately 15.4 acres; the size was chosen to be comparable to the typical land parcel size.

Groundwater outflow includes pumpage from wells and tile drains, base flow or rejected recharge along streams, evapotranspiration, and subsurface underflow to the offshore portions of the aquifer systems and discharge to the ocean along submarine rock outcrops. As noted in Chapter 2, Project Description, groundwater levels in the Pajaro Valley Groundwater Basin have declined as a result of long-term groundwater overdraft, which has resulted in seawater intrusion, groundwater quality degradation, and groundwater storage depletion. Most of the groundwater storage depletion has occurred in the Alluvial aquifer layer, with substantial amounts of storage depletion also occurring in the upper Aromas and Purisima Formation aquifers. Seawater has intruded into the Alluvial layer and the upper Aromas layer through submarine rock outcrops to replace the depleted fresh groundwater. While it has varied annually and with changing climate, overdraft is currently estimated to have averaged about 12,100 acre-feet per year over the past 30 years.

**Shallow Groundwater Near College Lake**

College Lake is a seasonal water body in a natural depression bordered by gentle to moderate slopes along the upper-lying northern edge of the Pajaro Valley plain. The lake bottom is classified as Quaternary Basin deposits (considered part of the alluvial deposit layer), consisting of unconsolidated plastic clay and silty clay with high organic content (refer to Figure 3.6-2, Geologic Units, in Section 3.6, Geology and Soils). Locally, thin-bedded silt and sandy silt deposits are contained within the clays. Subsurface soils encountered during geotechnical borings taken near the existing weir at College Lake consisted of about 3 to 8 feet of fills of unknown engineered characteristics, underlain by interbedded very soft to very stiff clays and loose to very dense sands to the maximum depth explored of about 51.5 feet; within the upper 38 to 44 feet, the clayey soils were generally highly plastic, high to very high in moisture content, and highly compressible.

The thickness of alluvial clays in the Pajaro Valley Groundwater Basin vary; in the vicinities of College Lake, Salsipuedes Creek, and the Pajaro River downstream of the confluence with Salsipuedes Creek, the alluvial clay thickness is generally greater than 16 feet.

The connection between College Lake and groundwater beneath the lake is uncertain. Shallow groundwater at College Lake is very close to the ground surface, generally within 5 feet of the surface during the wet season near Paulsen Road, within 5 to 10 feet of ground surface along the eastern Lake margin, and less than 5 feet along the southwest side of the Lake near Holohan Road. Water levels of irrigation wells monitored around College Lake varied by between 15 to 20 feet over the historical record, and are typically greater than 60 feet below ground surface, suggesting there is a disconnect between the shallow groundwater and deeper groundwater system. Varying acre-feet of recharge to the groundwater system were estimated by the PVHM to occur in the area surrounding College Lake, as shown on Figure 3.3-4.

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34 cbec and PV Water, Piezometer data collected from December 2017 through October 2018.
3.3.1.5 Flooding

The Pajaro River within the Pajaro Valley is a managed floodway. The United States Army Corps of Engineers (USACE) constructed a continuous levee system along the Pajaro River from the mouth to the Murphy Road Crossing and along the lower reach of Salsipuedes Creek in 1949. Salsipuedes Creek is contained on its west bank by an earthen levee built by USACE in 1949; the east bank is a natural channel from the Corralitos confluence to Lakeview Road. Corralitos Creek has not been leveed. Both Salsipuedes and Corralitos Creeks, in the vicinity of the Project, have sinuosity ratios within the range of a generally straight channel.

The Pajaro River and its tributaries have a long history of flooding. The flood of 1955 was the most extensive in recorded history, breaching and overtopping the 1949 levees. Other Pajaro River flooding in the recent past occurred in 1982, 1986, 1995, 1997, and 1998. During these floods, the primary levee failure mode has been overtopping. Flooding on Corralitos and Salsipuedes Creeks has occurred due to a combination of high flows and backwater from the Pajaro River.

**College Lake, Paulsen Road, and Salsipuedes Creek**

The existing one percent annual chance floodplain mapped by the Federal Emergency Management Agency (FEMA) includes College Lake, lowland areas north of Paulsen Road, and areas along either side of Corralitos and Salsipuedes Creeks from College Lake to the Pajaro River, as shown on Figure 3.3-5. Base flood elevations (the WSE during a flood with a one percent annual chance of exceedance) have been defined by FEMA in many locations between College Lake and the Pajaro River, including at Salsipuedes Creek near the Orchard Park neighborhood and the confluence with Corralitos Creek, and for Corralitos Creek upstream of the confluence. Base flood elevation is defined by FEMA as 73 feet NAVD88 north of Paulsen Road, in College Lake, and within Orchard Park, and decreases to approximately 70 feet NAVD88 at the confluence of Corralitos and Salsipuedes Creeks. As described in greater detail in Section 3.3.3.2, Methodology, a combined one-dimensional and two-dimensional hydraulic model has been developed for the College Lake system. The modeled WSE during the existing one percent annual chance flood event are the same as those reported by FEMA. The model was also used to estimate existing WSE during the ten percent annual chance flood event (commonly referred to as the 10-year flood), which are approximately 70 feet NAVD88 near Orchard Park and 68 feet NAVD88 at the confluence with Corralitos Creek. Floodwaters enter Orchard Park from Corralitos Creek, Salsipuedes Creek, and Pinto Creek under existing conditions for this modeled scenario.

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35 Located upstream of the confluence of Pajaro River and Salsipuedes Creek, approximately four miles southeast of the proposed weir location.
36 USACE, Pajaro River Flood Risk Management Study Monterey and Santa Cruz Counties, CA, Draft General Reevaluation and Environmental Assessment, October 2017. Unless otherwise noted, content in Section 3.3.1.6 is derived from this source.
37 These are areas subject to flooding by the flood event with a one percent chance of occurring in any individual year, commonly referred to as the 100-year flood.
38 FEMA, National Flood Hazard Layer, Santa Cruz County, 06087C0403E (effective May 15, 2012) and 06087C0411E (effective May 16, 2012).
39 FEMA, National Flood Hazard Layer, Santa Cruz County, 06087C0411E, effective May 16, 2012.
Figure 3.3-5
Existing Flood Hazard Areas in Project Vicinity

SOURCE: FEMA, 2017

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Corralitos Creek

Progressing upstream for approximately one-half-mile from the confluence with Salsipuedes Creek, the one percent annual chance flood elevation along Corralitos Creek increases from approximately 70 feet to 81 feet NAVD88. The current FEMA one percent annual chance flood hazard area along this stream reach extends to either side of the creek channel from Holohan Road in the north to the Watsonville city limits in the south.

Pajaro River

The one percent annual chance flood hazard area along the Pajaro River downstream of the confluence with Salsipuedes Creek extends on either side of the river; in Watsonville the one percent annual chance flood hazard area extends north to West Beach Street, then connects with Watsonville Slough to the west of Watsonville.

Pajaro Dunes

The Pajaro Dunes community is located along the coastline northwest of Pajaro Lagoon. The southern and western areas of the Pajaro Dunes community are located within the FEMA one percent annual chance flood hazard area; eastern portions of the community are also within the one percent annual chance floodway. The base fluvial flood elevations along the eastern side of the Pajaro Dunes area range from 13 feet NAVD88 nearest the current mouth of the Pajaro River (in the south) to nearly 16 feet NAVD88 in the north. In addition to flooding due to extreme precipitation events, flooding may occur in the Pajaro Dunes area when the lagoon mouth is closed (that is, a berm of beach sand prevents water from draining to the ocean) and pulses of stream flow, from large storms or from RD 2049 College Lake pumping operations, fill the lagoon without breaching the beach berm.

3.3.1.6 Water Quality

Surface Water

College Lake

PV Water has a record of College Lake water quality data from 1994 to present. Samples have been collected monthly to bimonthly on average, measuring 30 different analytes. Historical trends show that in the current mode of operation, College Lake water has met objectives for “delivered water quality” as set by PV Water’s Projects and Facility Operations Committee for these four analytes, with sodium adsorption ratio (SAR), sodium, and chloride remaining well below the objective levels of SAR less than 4, sodium less than 100 milligrams per liter (mg/L),

41 FEMA, National Flood Hazard Layer, Santa Cruz County, 06087C0411E, effective May 16, 2012.
42 These are areas subject to flooding by the 1 percent annual chance flood.
43 FEMA defines a floodway as the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1 percent annual chance flood can be carried without substantial increases in flood heights.
44 Unless otherwise noted, information in this section is derived from Carollo, PV Water, BMP Program Technical Services Technical Memorandum: College Lake Treatment Plant Water Quality Study, November 2, 2017.
45 SAR is a measure of the amount of sodium relative to calcium and magnesium in water or water extracted from soil. Soils with higher SAR (greater presence of sodium) may be characterized by a general degradation of soil structure, reduced hydraulic conductivity, and reduced soil aeration.
and chloride less than 150 mg/L. Summer concentrations of nitrate have also not exceeded the 10 mg/L water quality objective; however, they have been much closer to exceeding objective levels than the other constituents.

Data collected at College Lake document a summer increase in nitrate, which may correspond to irrigation runoff from the farming within the lake storage area. In 2017, PV Water conducted sampling to evaluate the presence of algae within College Lake. Sampling results indicated that while Cyanobacteria are present in College Lake, they were present in very low concentrations (1,130 cells per milliliter during an algal bloom event in September, and were not releasing algal toxins at levels that could be detected by sampling methods; for comparison, concentrations of Cyanobacteria have exceeded 100,000 cells per milliliter in Pinto Lake).

**Pajaro Lagoon**

Like other coastal lagoons in California, water quality in the Pajaro Lagoon system (including parts of Watsonville Slough that experience backwater effects) is likely to be strongly influenced by the presence of trapped saltwater. Saltwater enters the lagoon during incoming ocean tides and during wave overtopping events, as observed previously by Balance Hydrologics.  

Saltwater in the lagoon is denser than freshwater, so it sinks to the bottom. When the mouth of the lagoon is open (i.e., when ocean tides are able to move in and out of the estuary), the strong currents generated by the tidal motions can cause vertical mixing, meaning that the intruding saltwater can create brackish or salty conditions at the top of the water column in some areas. When wave-driven sand blocks the mouth (i.e., preventing ocean tides from entering the lagoon), the lack of tidal motions often means that currents are too weak to cause vertical mixing, and trapped saltwater relaxes, creating a vertically-stratified system with a freshwater layer overtopping a bottom salty layer. This relaxation also encourages trapped saltwater near the mouth to potentially spread upstream in both the Pajaro River and Watsonville Slough. Wherever the saltwater is present, the density difference between the bottom salty and surface fresh layers can be strong enough to prevent vertical mixing.

The following processes have been observed in other California coastal lagoons with lower layers of salt water:

- Over time, the natural breakdown of detritus in the lower layer draws oxygen out of the water column, reducing the dissolved oxygen content of the lower layer.
- The surface fresh layer maintains high dissolved oxygen levels due to interaction with the atmosphere.
- The lack of vertical mixing creates a condition where the upper layer has dissolved oxygen levels appropriate for salmonid survival (greater than 3 mg/L), whereas the lower layer often becomes hypoxic, or anoxic (about 0 mg/L) over time.

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47 Ibid.
Absorption of solar radiation at the interface between the lower and upper layers sometimes causes water to warm in the lower layer. This effect tends to become weaker as freshwater accumulates in the upper layer over time, and more energy is absorbed above the bottom layer. These conditions demonstrate that the amount of trapped saltwater in the lagoon during mouth closure events is an important determinant of water quality conditions, as it effectively controls the extent and amount of low dissolved-oxygen water, and sometimes the extent and amount of warm water in the estuary.49

**Groundwater Quality**

Approximately 95 percent of the water used in the Pajaro Valley is pumped groundwater. In the Pajaro Valley Groundwater Basin, groundwater levels have declined as a result of long-term groundwater overdraft, causing groundwater levels to drop below sea level throughout much of the basin, creating conditions that allow for the inland migration of the freshwater/seawater interface. As discussed in Section 3.3.1.4, most of the groundwater storage depletion has occurred in the Alluvial aquifer layer, with substantial amounts of storage depletion also occurring in the upper Aromas and Purisima Formation layers. Seawater has intruded into the Alluvial layer and the upper Aromas layer through submarine rock outcrops to replace the depleted fresh groundwater. Chloride concentration, specific conductance, and total dissolved solids (TDS), are useful metrics to characterize the extent of seawater intrusion. Based on chloride concentrations in wells in the coastal area of Pajaro Valley Basin, the extent of landward seawater intrusion has increased along the coastal region over the last decades (refer to Figure 2-6 in Chapter 2, *Project Description*).

Seawater intrusion rates accelerate in response to growing cumulative overdraft. The Pajaro Valley Basin 30-year average annual deficit is estimated to be approximately 12,100 acre-feet per year.

Other primary groundwater quality constituents of concern in Pajaro Valley are TDS and nitrate. For purposes of assessing quality of the Pajaro Valley Groundwater Basin, TDS is used as a water quality indicator of the salinity of water and nitrate is used as the proxy for nutrients including nitrogen and phosphorous. The three primary pathways for salts and nutrients to enter groundwater are via surface water infiltration primarily from applied irrigation water, streamflow infiltration, and seawater intrusion. The total salt loading potential to groundwater in the Basin as a result of these pathways is highest along the coast where the seawater intrusion potential is high. Areas of moderate loading potential are also located in the upper Pajaro River above Murphy Crossing where surface water salt concentration and recharge potential is elevated. Nitrogen loading potential in the Pajaro Valley is primarily from agricultural fertilizer and irrigation runoff, streamflow recharge, and sewer and septic systems. Potential loading sites from streamflow nitrate recharge are similar to those with salt loading potential associated with inherited poor water quality from the upper Pajaro River watershed.50

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3.3.2 Regulatory Framework

3.3.2.1 Federal and State

**National Flood Insurance Program**

The National Flood Insurance Program is a voluntary Federal program that enables property owners in participating communities to purchase insurance protection against losses from flooding. Participation in the National Flood Insurance Program is based on an agreement between local communities and the Federal government. If a community adopts and enforces floodplain management regulations to reduce future flood risks to new construction and substantially improved structures in Special Flood Hazard Areas, the Federal government will make flood insurance available within the community as a financial protection against flood losses. Santa Cruz County has adopted floodplain management regulations. As noted in Section 3.3.1 - Setting, some of the Project components are within special flood hazard areas mapped by FEMA. These are denoted as flood insurance rate zones that correspond to certain conditions. “Zone AE” refers to the flood insurance rate zone that corresponds to 1 percent annual chance floodplains where base flood elevations are shown. “Zone AH” refers to areas of the 1 percent chance shallow flooding (usually areas of ponding) where average depths are between 1 and 3 feet. “Zone AO” refers to areas of the 1 percent annual chance shallow flooding (usually sheet flow on sloping terrain) with average inundation depths between 1 and 3 feet. The proposed optional WTP site, weir structure, and portions of the College Lake pipeline would be built in Zone AE; and other segments of the proposed College Lake pipeline would traverse areas mapped as Zones AO and AH. Floodways have not been mapped in the vicinity of Project components.

The community’s floodplain management regulations must meet or exceed criteria established in accordance with Title 44 Code of Federal Regulations Part 60, Section 60.3, *Flood plain management criteria for flood-prone areas*. Minimum standards for communities where the Federal Insurance Administrator has provided a notice of final flood elevations for one or more special flood hazard areas on the community’s flood insurance rate map (FIRM) and, if appropriate, has designated other special flood hazard areas without base flood elevations on the community’s FIRM, but has not identified a regulatory floodway or coastal high hazard area require:

- All new construction and substantial improvements of non-residential structures to elevate the lowest floor to or above the base flood level or, together with attendant utility and sanitary facilities, be designed so that below the base flood level the structure is watertight (with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy).

- A registered professional engineer or architect shall develop and/or review structural design, specifications, and plans for the construction, and certify the design and methods of construction for watertight non-residential structures.

- Development within the flood zone must demonstrate that the cumulative effect of the proposed development, when combined with other existing and anticipated development, will not increase the WSE of the base flood more than one foot.

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- Notwithstanding any other provisions of Title 44 Code of Federal Regulations Part 60, Section 60.3, *Flood plain management criteria for flood-prone areas*, a community may approve certain development in Zones AI-30, AE and AH on the community’s FIRM that increases the base flood elevation by more than one foot in the flood hazard zone after receiving approval of a revised FIRM.

**Sustainable Groundwater Management Act**

As described in Chapter 2, Section 2.1.2.4, the Sustainable Groundwater Management Act (SGMA), establishes a framework for local agencies to develop and implement plans to sustainably manage critically overdrafted, high priority basins like the Pajaro Valley Groundwater Basin by 2040.\(^{52}\) PV Water is the Groundwater Sustainability Agency for the Pajaro Valley Groundwater Basin.\(^{53}\) The BMP Update (and thus, the Project) is a key component of PV Water’s groundwater sustainability plan alternative designed to support PV Water’s goal to achieve sustainable groundwater resources in part by managing groundwater in a manner to reduce, and eventually halt, long-term overdraft of the groundwater basin while ensuring sufficient water supplies for present and anticipated needs, consistent with the purpose of SGMA.

**National Pollutant Discharge Elimination System Construction General Permit**

Because Project construction would disturb more than one acre of land surface, potentially affecting the quality of stormwater discharges, the Project would be subject to the *National Pollution Discharge Elimination System* (NPDES) General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (Order 2009-0009-DWQ, NPDES No. CAS000002; as amended by Orders 2010-0014-DWQ and 2012-006-DWQ) (also referred to as the Construction General Permit). The Construction General Permit (CGP) regulates discharges of pollutants in stormwater associated with construction activity to waters of the U.S. from construction sites that disturb one or more acres of land surface, or that are part of a common plan of development or sale that disturbs more than one acre of land surface. The permit regulates stormwater discharges associated with construction or demolition activities, such as clearing and excavation; construction of buildings; and linear underground/overhead projects, including installation of water pipelines and other utility lines.

The CGP requires that construction sites be assigned a Risk Level of 1 (low), 2 (medium), or 3 (high), based both on the sediment transport risk at the site and the receiving waters risk during periods of soil exposure (e.g., grading and site stabilization). The sediment risk level reflects the relative amount of sediment that could potentially be discharged to receiving water bodies and is based on the nature of the construction activities and the location of the site relative to receiving water bodies. The receiving waters risk level reflects the risk to the receiving waters from the sediment discharge. Depending on the risk level, the construction projects could be subject to the following requirements:

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\(^{53}\) SGMA designated PV Water as the exclusive local agency to manage groundwater within its statutory boundaries, the Board of Directors voted to be the Groundwater Sustainability Agency for the Pajaro Valley Groundwater Basin in August 2015, and PV Water subsequently submitted a Groundwater Sustainability Agency formation notice to the California Department of Water Resources.
1. Effluent standards
2. Good site management “housekeeping”
3. Non-stormwater management
4. Erosion and sediment controls
5. Run-on and runoff controls
6. Inspection, maintenance, and repair
7. Monitoring and reporting requirements

The CGP also requires the development and implementation of a Stormwater Pollution Prevention Plan (SWPPP) that includes specific construction best management practices designed to prevent sediment and pollutants from contacting stormwater from moving offsite into receiving waters. The best management practices fall into several categories, including erosion control, sediment control, waste management, and good housekeeping, and are intended to protect surface water quality by preventing the off-site migration of eroded soil and construction-related pollutants from the construction area. Routine inspection of all best management practices is required under the provisions of the CGP. In addition, the SWPPP is required to contain a visual monitoring program, a chemical monitoring program for non-visible pollutants, and a sediment monitoring plan if the site discharges directly to a water body listed on the 303(d) list for sediment. The Pajaro River was included on the 303(d) list for the pollutant “Sedimentation/Siltation” in 2007.54

The SWPPP must be prepared before the construction begins. The SWPPP must contain a site map(s) that delineates the construction work area, existing and proposed buildings, parcel boundaries, roadways, stormwater collection and discharge points, general topography both before and after construction, and drainage patterns across the Project area. The SWPPP must list best management practices and the placement of those best management practices that the applicant would use to protect stormwater runoff. Additionally, the SWPPP must contain a visual monitoring program; a chemical monitoring program for "non-visible" pollutants to be implemented if there is a failure of best management practices; and a sediment monitoring plan if the site discharges directly to a water body listed on the 303(d) list for sediment.

Examples of typical construction best management practices include scheduling or limiting certain activities to dry periods, installing sediment barriers such as silt fence and fiber rolls, and maintaining equipment and vehicles used for construction. Non-stormwater management measures include installing specific discharge controls during certain activities, such as paving operations, vehicle and equipment washing and fueling. The CGP also sets post-construction standards (i.e., implementation of best management practices to reduce pollutants in stormwater discharges from the site following construction).

In addition to stormwater discharges, the CGP also covers other non-stormwater discharges including irrigation of vegetative erosion control measures, water to control dust, uncontaminated groundwater from dewatering, and other discharges not subject to a separate general NPDES permit adopted by the Regional Water Board. The discharge of non-stormwater is authorized under the following conditions:

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- The discharge does not cause or contribute to a violation of any water quality standard;
- The discharge does not violate any other provision of the CGP;
- The discharge is not prohibited by the applicable Basin Plan;
- The discharger has included and implemented specific best management practices required by the CGP to prevent or reduce the contact of the non-stormwater discharge with construction materials or equipment;
- The discharge does not contain toxic constituents in toxic amounts or (other) significant quantities of pollutants;
- The discharge is monitored and meets the applicable Numeric Action Limits; and
- The discharger reports the sampling information in the Annual Report.

In the Project area, the CGP is implemented and enforced by the Central Coast Regional Water Quality Control Board, which administers the stormwater permitting program. Dischargers are required to electronically submit a notice of intent and permit registration documents in order to obtain coverage under this CGP. Dischargers are responsible for notifying the Regional Water Quality Control Board of violations or incidents of non-compliance, as well as for submitting annual reports identifying deficiencies of the best management practices and how the deficiencies were corrected. The risk assessment and SWPPP must be prepared by a State Qualified SWPPP Developer and implementation of the SWPPP must be overseen by a State Qualified SWPPP Practitioner meeting the requirements set forth in the CGP. A Legally Responsible Person, who is legally authorized to sign and certify permit registration documents, is responsible for obtaining coverage under the CGP.

For linear underground and overhead projects, such as pipelines, the SWPPP must include best management practices that address stabilization of land after ground disturbance is complete. All disturbed areas of the construction site must be stabilized prior to termination of coverage under the CGP (as described in Section C.1 of CGP Attachment A). Final stabilization criteria are identified in CGP Attachment A, and specify that: (a) areas that were vegetated prior to ground disturbance must be re-vegetated at ratios identified in CGP Attachment A Section C.1, (b) areas that were not vegetated must be returned to original line and grade and/or compacted to achieve stabilization, or (c) equivalent stabilization measures must be employed.

**Water Quality Control Plan for the Central Coast Basin**

Since adoption of the 2014 BMP Update PEIR, the Central Coast Regional Water Quality Control Board (RWQCB) has adopted a new *Water Quality Control Plan for the Central Coastal Basin* (2017 Basin Plan).55 The beneficial uses listed for the Pajaro River and Salsipuedes Creek in the 2014 BMP Update PEIR did not change in the 2017 Basin Plan. Surface water bodies within the Central Coast Region that do not have beneficial uses designated for them (including College Lake) are assigned “Municipal and Domestic Water Supply” and “Protection” of both recreation and aquatic life. As discussed in the 2014 BMP Update PEIR, the RWQCB has promulgated, and the

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U.S. Environmental Protection Agency has approved, total maximum daily loads (TMDLs) for select surface waters in the Pajaro Basin. These include TMDLs for Corralitos Creek, Salsipuedes Creek, and the Pajaro River, and are discussed below and listed in Table 3.3-1.

**TMDL for Nitrogen Compounds and Orthophosphate in Streams of the Pajaro River Watershed**

In the Pajaro River watershed, discharges of nitrogen compounds and orthophosphate are occurring in surface waters at levels which are impairing a spectrum of beneficial uses. The pollutants addressed in TMDLs established for streams of the Pajaro River watershed are nitrate, un-ionized ammonia, and orthophosphate. All water bodies are required to attain the 2017 Basin Plan general toxicity objective for un-ionized ammonia in inland surface waters and estuaries. The TMDLs are designed to address impairments in Casserly Creek (nitrate, low dissolved oxygen), Corralitos Creek (nutrients [biostimulatory substances objective]), and Pinto Creek (called the Pinto Lake outflow ditch in the 2017 Basin Plan; nitrate), among other streams. The 2017 Basin Plan contains the following narrative water quality objectives for biostimulatory substances:

> “Waters shall not contain biostimulatory substances in concentrations that promote aquatic growths to the extent that such growths cause nuisance or adversely affect beneficial uses”

To implement this narrative objective, the RWQCB developed numeric targets based on established methodologies and approaches. The 2017 Basin Plan includes an implementation plan for these TMDLs and lists ways the RWQCB assesses progress towards attainment of load allocations.

Discharges of un-ionized ammonia, nitrate, and orthophosphate originating from the sources identified in Table 3.3-1 are contributing loads to receiving waters. Irrigated agriculture is the largest source of controllable water column nutrient loads in the Pajaro River watershed and this source category is not currently meeting its proposed load allocation. Municipal NPDES-permitted stormwater sources are a relatively minor source of nitrogen compounds and orthophosphate, but can be locally significant. Livestock waste sources associated with grazing lands and rural residential areas are currently meeting proposed load allocations, as are sources associated with industrial and construction NPDES-permitted sources and golf courses.

The final allocations of these pollutants, which are equal to the TMDLs for streams in the Pajaro River watershed, should be achieved 25 years after the TMDL effective date of July 12, 2016 (note that pollutant allocations are concentration-based, and so are not additive). Interim load allocations have been set for dates 10 and 15 years after the effective date of the TMDLs. Owners and operators of irrigated agricultural land must comply with the Conditional Waiver of Waste Discharge Requirements for Irrigated Lands (Order R3-2017-0002) or its renewal or replacement, to meet load allocations and achieve the TMDLs.

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56 Unless otherwise noted, information in this section is derived from Central Coast RWQCB, *Water Quality Control Plan for the Central Coastal Basin*, September 2017 Edition.
57 Ibid.
58 Ibid.
59 The 2017 agricultural order is the third agricultural order adopted in the Central Coast Region, and is also referred to as “Ag Order 3.0.”
### Table 3.3-1
**List of 303(d) Water Quality Impairments for Surface Waters Potentially Affected by the Project**

<table>
<thead>
<tr>
<th>Water Body</th>
<th>Pollutant(s)</th>
<th>Potential Source</th>
<th>TMDL Schedule (Category 5 Criteria)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pajaro River watershed streams (Casserly, Pinto, Corralitos Creeks)</td>
<td>Nitrogen compounds and orthophosphate</td>
<td>Irrigated agriculture; stormwater system discharges; Industrial and construction stormwater; livestock waste; golf courses; natural sources</td>
<td>Approved 2016 (5B)</td>
</tr>
<tr>
<td>Corralitos Creek</td>
<td>Turbidity (upstream of confluence with Salsipuedes Creek)</td>
<td>Unknown</td>
<td>Required by 2023 (5A)</td>
</tr>
<tr>
<td></td>
<td>pH</td>
<td>Unknown</td>
<td>Required by 2027 (5A)</td>
</tr>
<tr>
<td></td>
<td>Fecal coliform and Escherichia coli (E coli)</td>
<td>Agriculture-animal; Domestic; Municipal Point Sources; Natural Sources; Septic Tanks; Transient encampments</td>
<td>Approved 2012 (5B)</td>
</tr>
<tr>
<td></td>
<td>E coli</td>
<td>Unknown</td>
<td>Approved 2012 (5B)</td>
</tr>
<tr>
<td></td>
<td>Fecal coliform</td>
<td>Collection System Failure; Domestic Animals/Livestock; Natural Sources; Septic Tanks; Transient encampments; Urban Runoff/Storm Sewers</td>
<td>Approved 2012 (5B)</td>
</tr>
<tr>
<td></td>
<td>Nitrate</td>
<td>Unknown</td>
<td>Required by 2018 (5A)</td>
</tr>
<tr>
<td></td>
<td>Dissolved Oxygen, pH</td>
<td>Unknown</td>
<td>Required by 2027 (5A)</td>
</tr>
<tr>
<td></td>
<td>Toxicity, Turbidity</td>
<td>Unknown</td>
<td>Required by 2023 (5A)</td>
</tr>
<tr>
<td></td>
<td>Boron (below Main Street to the mouth)</td>
<td>Unknown</td>
<td>Required by 2027 (5A)</td>
</tr>
<tr>
<td></td>
<td>Sedimentation/ Siltation</td>
<td>Agriculture; Domestic Animals/Livestock; Grazing-Related Sources; Habitat Modification; road construction; Hydromodification; Land Development; Logging Road Construction/Maintenance; Urban Runoff/Storm Sewers</td>
<td>Approved 2007 (5B)</td>
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<td></td>
<td>Fecal Coliform</td>
<td>Collection System Failure; Domestic Animals/Livestock; Urban Runoff/Storm Sewers</td>
<td>Approved 2010 (5B)</td>
</tr>
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<td></td>
<td>Nitrate</td>
<td>Agriculture; Domestic Animals/Livestock; Natural Sources</td>
<td>Approved 2006 (5B)</td>
</tr>
<tr>
<td></td>
<td>Toxicity</td>
<td>Unknown</td>
<td>Required by 2023 (5A)</td>
</tr>
<tr>
<td></td>
<td>Diazinon</td>
<td>Agriculture</td>
<td>Approved 2013 (5B)</td>
</tr>
<tr>
<td></td>
<td>Dieldrin, Chloride, Chlordane, Sodium, Dissolved Oxygen, E. coli, Chromium, pH, Polychlorinated biphenyls, DDD (Dichlorodiphenyldichloroethane), DDE (Dichlorodiphenyldichloroethylene), DDT (Dichlorodiphenyltrichloroethane)</td>
<td>Unknown</td>
<td>Required by 2027 (5A)</td>
</tr>
<tr>
<td></td>
<td>Chlorpyrifos</td>
<td>Agriculture</td>
<td>Approved 2013 (5B)</td>
</tr>
<tr>
<td></td>
<td>Turbidity</td>
<td>Unknown</td>
<td>Required by 2023 (5A)</td>
</tr>
</tbody>
</table>
### Table 3.3-1 (continued)
**List of 303(d) Water Quality Impairments for Surface Waters Potentially Affected by the Project**

<table>
<thead>
<tr>
<th>Water Body</th>
<th>Pollutant(s)</th>
<th>Potential Source</th>
<th>TMDL Schedule (Category 5 Criteria)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pajaro Lagoon</td>
<td>Diazinon</td>
<td>Agriculture</td>
<td>Approved 2013 (5B)</td>
</tr>
<tr>
<td></td>
<td>Dissolved Oxygen, pH, water temperature,</td>
<td>Unknown</td>
<td>Required (5A)</td>
</tr>
<tr>
<td></td>
<td>Toxicity, Malathion, DDE</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NOTES:**

a Category 5 criteria: A water segment where standards are not met and a TMDL is required, but not yet completed, for at least one of the pollutants being listed for this segment. TMDL requirement status definitions for listed pollutants are: A- TMDL still required, B- being addressed by USEPA approved TMDL, C- being addressed by action other than a TMDL.

Water Quality Objectives for Agricultural Supply

The RWQCB has promulgated water quality objectives for agricultural supply in the 2017 Basin Plan. These include:

- **pH.** The pH value shall neither be depressed below 6.5 nor raised above 8.3.

- **Dissolved Oxygen.** Dissolved oxygen concentration shall not be reduced below 2.0 mg/L at any time.

- **Chemical Constituents.** Waters shall not contain concentrations of chemical constituents in amounts which adversely affect the agricultural beneficial use. Interpretation of adverse effect shall be as derived from the University of California Agricultural Extension Service guidelines provided in Table 3-1 of the 2017 Basin Plan. Chemical constituents for which water quality guidelines are listed in Table 3-1 of the 2017 Basin Plan include total dissolved solids or salinity, sodium, chloride, boron, ammonia, nitrate, bicarbonate, and pH. The Table notes that the “guidelines are flexible and should be modified when warranted by local experience or special conditions of crop, soil, and method of irrigation.”

In addition, waters used for irrigation and livestock watering shall not exceed concentrations for those chemicals listed in Table 3-2 of the 2017 Basin Plan, which identifies maximum concentrations for 21 elements. Salt concentrations for irrigation waters shall be controlled through implementation of the anti-degradation policy to the effect that mineral constituents of currently or potentially usable waters shall not be increased. It is emphasized that no controllable water quality factor shall degrade the quality of any groundwater resource or adversely affect long-term soil productivity.

NPDES General Permit for Discharges with Low Threat to Water Quality

The RWQCB adopted Order No. R3-2017-0042, *Waste Discharge Requirements National Pollutant Discharge Elimination System General Permit for Discharges with Low Threat to Water Quality* (NPDES No. CAG993001) on December 7, 2017. This region-wide Low-Threat General Permit authorizes the discharge of wastes meeting the criteria specified in finding two of this general permit to waters of the U.S. by any discharger. Low-threat discharges are discharges that contain minimal amounts of pollutants and pose little or no threat to water quality and the environment, such as uncontaminated dewatered groundwater that is released to land. Discharges covered by this permit may be treated and discharged on either continuous or batch bases. A complete list of discharges eligible for coverage under this permit is not provided by the RWQCB; however, a list of discharges not covered includes: discharges covered by other statewide permits; discharges from domestic wastewater treatment facilities; and discharges from secondary containment structures such as brine ponds. The Low-Threat General Permit includes limitations for pH, temperature, color, turbidity, dissolved oxygen, biostimulatory substances, taste and odor, oil and grease, settable and floating materials, toxicity, and radionuclides. To be covered by this Low-Threat General Permit, discharges must meet the following criteria:

- Pollutant concentrations in the discharge do not (a) cause, (b) have a reasonable potential to cause, or (c) contribute to an excursion above any applicable water quality objectives, including prohibitions of discharge;

- The discharge does not include water added for the purpose of diluting pollutant concentrations;
Pollutant concentrations in the discharge will not cause or contribute to degradation of water quality or impair beneficial uses of receiving waters;

Pollutant concentrations in the discharge shall not exceed the limits set in the order unless the executive officer determines that the applicable water quality control plan does not require effluent limits;

The discharge shall not cause acute or chronic toxicity in receiving waters; and

The discharger shall demonstrate the ability to comply with the requirements of this Low-Threat general permit.

### 3.3.2.2 Local

Table 2-10 in Chapter 2, *Project Description*, identifies the permits and approvals from Santa Cruz County and/or the City of Watsonville required for the Project. Table 3.3-2 presents pertinent local plans and policies regarding hydrology and water quality to support County and City consideration of Project consistency with general policies. In some cases, local policies are used in this EIR as criteria to determine the significance of physical effects on the environment (e.g., Impact NOI-1 in Section 3.8, Noise and Vibration).

### 3.3.3 Impacts and Mitigation Measures

#### 3.3.3.1 Significance Criteria

In accordance with the California Environmental Quality Act (CEQA), State CEQA Guidelines (including Appendix G), relevant plans, policies, and/or guidelines, and agency standards, a Project impact would be considered potentially significant if the Project would:

- Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality;
- Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin;
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: (i) result in substantial erosion or siltation on- or off-site; (ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite; (iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or (iv) impede or redirect flood flows;

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60 California Government Code Section 53091 exempts agencies like PV Water from complying with local building and zoning ordinances when locating or constructing facilities for the production, generation, storage, treatment, or transmission of water. California Government Code Section 65402(c) requires that PV Water notify cities and counties of its plans to construct projects or to acquire or dispose of property. The planning agency then has 40 days to determine project consistency with its general plan. If the planning agency disapproves, the disapproval may be overruled by PV Water.
In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation;61

Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

**TABLE 3.3-2**

**LOCAL PLANS AND POLICIES RELEVANT TO THE PROJECT**

**CITY OF WATSONVILLE PLANS AND POLICIES**

<table>
<thead>
<tr>
<th>Watsonville General Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goal 9.5 Water Quality</td>
</tr>
<tr>
<td>Policy 9.D Water Quality</td>
</tr>
<tr>
<td>Implementation Measure 9.D.2</td>
</tr>
<tr>
<td>Goal 12.3 Flood Hazard Reduction</td>
</tr>
<tr>
<td>Policy 12.D Flood Hazard Reduction</td>
</tr>
</tbody>
</table>

**SANTA CRUZ COUNTY PLANS AND POLICIES**

<table>
<thead>
<tr>
<th>Santa Cruz County General Plan/Local Coastal Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective 6.4 Local Flood Hazards</td>
</tr>
<tr>
<td>Policy 6.4.1 Geologic Hazards Assessment Required in Flood Hazard Areas</td>
</tr>
<tr>
<td>Policy 6.4.2 Development Proposals Protected from Flood Hazard</td>
</tr>
<tr>
<td>Policy 6.4.9 Septic Systems, Leach fields, and Fill Placement</td>
</tr>
</tbody>
</table>


The following topics are not analyzed further in this section for the reasons described below:

- **Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.**
  
  The proposed WTP would create new impervious area that could generate new runoff. The WTP would be designed such that stormwater is collected onsite and diverted to the beginning of the water treatment process; the Project would not generate new polluted runoff or exceed the capacity of existing or planned stormwater drainage systems. There would be no impact with respect to this criterion resulting from construction or operation of the Project. Effects of

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61 Tsunamis (seismic sea waves) are long-period waves that are typically caused by underwater seismic disturbances, volcanic eruptions, or submerged landslides. A seiche is caused by the oscillation of the surface of an enclosed body of water such as San Francisco Bay due to an earthquake or large wind event.
Project construction and operations on water quality are discussed in Impacts HYD-1 and HYD-2.

- **Risk release of pollutants due to inundation by seiche or tsunami.** The Project site is not located within a potential tsunami hazard inundation zone nor an area subject to seiches. Therefore, there would be no impact related to these topics resulting from construction or operation of the Project. Risk of release of pollutants due to project inundation from flooding is discussed below in Impact HYD-2.

### 3.3.3.2 Methodology

As described in Section 3.1, Overview, this EIR provides an independent analysis of the Project’s potential environmental impacts. The impact analyses discuss impacts associated with both potential WTP sites (preferred and optional). **Table 3.3-3** presents mitigation measures from the 2014 BMP Update PEIR adopted by the Board of Directors for the purpose of reducing impacts related to surface water, groundwater, and water quality. These adopted mitigation measures are considered part of the Project and thus are considered prior to any significance determinations. Potential impacts are evaluated in the following section. If warranted, additional mitigation is included and takes the form of (1) modifications to update the mitigation measures presented in Table 3.3-3 to reflect current conditions and site-specific impacts; or (2) new mitigation measures to replace or augment an adopted mitigation measure.

CEQA does not require lead agencies to consider how existing hazards or conditions might impact a project’s users or residents, except where the project would significantly exacerbate an existing environmental hazard. Accordingly, hazards resulting from a project that places development in an existing or future flood hazard area are not considered impacts under CEQA unless the project would significantly exacerbate the flood hazard. Thus, the analysis below evaluates whether the Project would exacerbate an existing or future flood hazard in the Project area, resulting in a substantial risk of loss, injury, or death. The impact is considered significant if the Project would exacerbate flood hazards by increasing the frequency or severity (in terms of flood water elevation) of flooding or causing flooding to occur in an area that would not be subject to flooding without the Project.

Construction effects on water quality are direct or indirect impacts that could occur during construction, including groundwater dewatering. The impact analysis considers whether compliance with regulatory requirements for these activities would ensure that these water quality-related impacts are less than significant during construction. The analysis below also evaluates the Project’s potential to directly or indirectly increase inputs or mobilization of sediments or pollutants to the streams in the watershed during the operational phase of the Project.

Depletion of groundwater resources is considered significant if the project would interfere with groundwater recharge, or substantially reduce groundwater supplies, such that sustainable groundwater management of the basin is impeded. Sustainable groundwater management means the management and use of groundwater in a manner that can be maintained during the planning and implementation horizon without causing undesirable results. Undesirable results in this context are one or more of the following:

- Chronic lowering of groundwater levels;
TABLE 3.3-3
2014 BMP UPDATE PEIR MITIGATION MEASURES – SURFACE WATER, GROUNDWATER, AND WATER QUALITY

HWQ-1: [PV Water] shall require contractors to apply for all applicable NPDES permits, including dewatering permits, develop a SWPPP for construction of proposed facilities, and comply with conditions of the permit(s), as required by the [Central Coast Regional Water Quality Control Board]. The objectives of the SWPPP are to identify pollutant sources that may affect the quality of stormwater discharge and to implement [best management practices] to reduce pollutants in stormwater discharges. The SWPPP for this proposed action would include the implementation, at a minimum, of the following elements:

1. Source identification
2. Preparation of a site map
3. Description of construction materials, practices, and equipment storage and maintenance
4. List of pollutants likely to contact stormwater
5. Estimate of the construction site area and percent impervious area
6. Erosion and sedimentation control practices, including soils stabilization, revegetation, and runoff control to limit increases in sediment in stormwater runoff, such as detention basins, straw bales, silt fences, check dams, geofabrics, drainage swales, and sandbag dikes
7. Proposed construction dewatering plans
8. Provisions to eliminate or reduce discharge of materials to stormwater
9. Description of waste management practices
10. Maintenance and training practices

HWQ-2: Rapid, imposed water-level fluctuations shall be avoided within the sloughs, Salsipuedes Creek, and the Pajaro River to minimize erosion and failure of exposed (or unvegetated), susceptible banks. This can be accomplished by operating the pumps at an appropriate flow rate, in conjunction with commencing operation of the pumps only when suitable water levels or flow rates are measured in the water body. Criteria for minimizing fluctuations and/or protecting banks from related erosion will need to be developed, as some banks presently are stable and others are not. Control is important, as the mobilized sediment also impairs in-slough habitat values, and potentially exacerbates bacterial levels in the slough system. It may be that water-level fluctuations may be controlled as well to minimize other impacts, such as desiccation of amphibian eggs or waterlogging of agricultural soils adjacent to the sloughs.

HWQ-3: If pumping rates in existing wells fall below levels that can support existing or planned land uses, and the reduction in pumping can be attributed to one or many of the project components, then one of several measures may be undertaken to mitigate the loss of pumping. These mitigation measures may include:

1. Improving irrigation efficiency
2. Modifying irrigation and agricultural operations
3. Lowering the pump in the irrigation well
4. Lowering and changing the pump in the irrigation well
5. Adding storage capacity for irrigation supply
6. Replacing the irrigation well
7. Replacing the irrigation water source to determine if well production loss can be attributed to one of the project components, PV Water will allow well owners to enroll in a monitoring and mitigation program. PV Water will collect baseline data necessary for establishing significant impacts only from wells that are enrolled in the MMP. If a well is not enrolled in the MMP, to claim a significant impact the well owner will need to provide adequate and reliable baseline data. To claim a significant impact for each well enrolled in the MMP, PV Water will first establish baseline irrigation well extraction rates, drawdowns, and water quality near planned components. Pumping rate reductions and changes in water quality values from these baseline values will be analyzed to assess whether or not they are caused by the project. A pumping rate reduction or adverse change in water quality is assumed to be caused by the Project if: 1) it occurs at the same time as the onset of operations of BMP Update component(s); 2) it occurs in an area reasonably predicted to be affected by the BMP Update component(s); 3) static groundwater levels have dropped; 4) pumping groundwater levels have not dropped more than static groundwater levels; and 5) no other obvious reason exists for the drop in production capacity. For PV Water or others to identify another reason for loss of production it must be based on the written professional opinion of a qualified hydrogeologist that will be submitted to the PV Water staff or their designee, for review and concurrence.

HWQ-4: Facilities shall be designated to comply with FEMA and County of Santa Cruz requirements to floodproof the facilities and shall not exacerbate upstream or downstream flood hazards on other properties. The FEMA process will require identification of the FEMA floodway zone and may require no increase water elevations for a one percent chance annual flood. The FEMA process will require identification of the FEMA zone type and may require no increase water elevations for a one percent chance annual flood. To meet the specific FEMA requirements for the component, substantial modifications to the facility design and additional mitigation may be required.
3. Environmental Setting, Impacts, and Mitigation Measures

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- Significant and unreasonable reduction of groundwater storage;
- Significant and unreasonable seawater intrusion;
- Significant and unreasonable degraded water quality, including the migration of contaminant plumes that impair water supplies;
- Significant and unreasonable land subsidence that substantially interferes with surface land uses; and/or
- Depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of the surface water.

Impacts associated with changes in surface water hydrology are evaluated by assessing the extent to which the Project would change the locations, seasonality, or magnitude of surface water discharge and sediment load in the watershed. The hydrology in the Project vicinity varies annually due to variations in precipitation; for this reason, the Project’s potential impacts vary depending on annual precipitation. Using historic data, “water year types” can be defined to describe the relative wetness of a given year compared to precipitation during a normal year. As indicated on Figure 3.3-6, the water years 2014 through 2017 cover a wide range of water year types (i.e., from critically dry to extremely wet); consequently, PV Water selected these years for hydrologic and hydraulic modeling of existing and with-Project conditions (discussed below). The impact analyses in this section present results for these water years, as appropriate.

![Figure 3.3-6](image.png)

**Figure 3.3-6**
Water Years 2014-2017: Rainfall Characterization
Hydrologic and Hydraulic Modeling

College Lake, Salsipuedes Creek, Corralitos Creek, Pajaro River

Several numerical models were used in combination to simulate College Lake inflows and outflows for the assessment of potential water management alternatives, and to evaluate potential flood impacts related to the Project. An existing Precipitation Runoff Modeling System hydrologic model was updated and recalibrated using recent precipitation data to calculate inflows to College Lake from its tributaries and direct precipitation to the lake basin. Two sets of hydraulic models were also developed for various analyses. An existing one-dimensional (1-D) Hydrologic Engineering Center's River Analysis System model from prior work within the College Lake system was adapted for a range of applications, including:

- calculate flow over the weir;
- determine fish bypass flow requirements, assess drainage time of College Lake;
- assess changes in the relative contributions of College Lake outflows to total Pajaro River discharge; and
- generate flood inundation maps and profiles.

Further, a coupled one-dimensional/two-dimensional (1-D/2-D) Hydrologic Engineering Center's River Analysis System model was subsequently developed based on a recently acquired USACE model of the Pajaro River and College Lake area, which allowed for better characterization of floodplain dynamics and inundation mapping.

Finally, a custom water budget model was created that relied upon data from the hydrologic and hydraulic models, fish passage flow requirements, water demand, and other parameters to simulate outflow and the WSE in College Lake throughout selected water years of interest. Model information is summarized below; refer to Appendix HYD for additional discussion of model development.

A reliable hydraulic model is one that can produce field-measured water levels and flow within an acceptable range of error. Error exists because information on the real world system is always incomplete, and the field information that is available has associated errors (for example, measurement error). WSE results from the hydraulic models are reported to the nearest 0.1 foot, corresponding to the industry standard due to accuracies of available data.

62 Unless otherwise noted, content throughout the description of hydrologic and hydraulic modeling is derived from cbec, College Lake Integrated Resources Management Project Hydrologic and Hydraulic Modeling Technical Memorandum, November 8, 2018.

63 Previous work is documented in RCD-SCC, College Lake Multi-Objective Management Report Final Report, prepared by cbec, November 14, 2014.

64 The quality of available topographic data and the certainty to which resolve Manning’s roughness values in spatially heterogeneous stream reaches that also experience geomorphic changes on short timescales render computing water surface elevations to a greater level of precision difficult.
For existing conditions, the existing weir geometry was used, while for proposed and cumulative effects conditions, the proposed weir structure was modeled.

Flow Contribution Analysis: College Lake Outflows to Pajaro River

To assess the annual contribution of College Lake outflows to the Pajaro River over the four water years (2014 to 2017) studied, several flows were calculated from gaged and simulated records. The flow in the Pajaro River at Chittenden Road was known, due to the presence of a USGS gage at that location. However, the flow in the Pajaro River upstream of the Salsipuedes Creek confluence was not known, and varied in more complex ways than could be estimated by applying a simple lag time to the hydrograph at Chittenden Road due to tributary inflows and losses to groundwater between these two locations. Instead, a relationship was identified between simulated flows at Chittenden Road and above the Salsipuedes Creek confluence using the Integrated Hydrologic Model of Pajaro Valley, and this relationship was then applied to compute the discharges above the confluence from known Chittenden Road flows.

As measured outflows from College Lake are not available, “existing” flow contributions reported in this document are modeled flows and not actual flows. The College Lake water budget model was modified to calculate College Lake outflows that occurred under existing conditions, from both pumping and uncontrolled flow over the weir, which were ultimately combined with daily USGS gaged flows on Corralitos Creek to provide daily flow rates for Lower Salsipuedes Creek, upstream of the Pajaro River confluence, assuming no gains or losses occur within Lower Salsipuedes Creek. The hydrographs for Lower Salsipuedes Creek and the Pajaro River upstream of the confluence were then summed to determine the Pajaro River flows downstream of the confluence, and the percent contributions of College Lake outflows to the total Pajaro River flows were calculated for each day.

The total outflow from College Lake under proposed conditions was computed as the sum of fish bypass flows and weir flow. Given the variability of discharge under existing conditions, a statistical analysis of the modeled flows at three locations (College Lake outflow, Salsipuedes Creek, and Pajaro River downstream of the Salsipuedes Creek confluence) was conducted to assess the statistical significance of changes between mean monthly discharge under existing and Project conditions. The absolute value of the average monthly flow rate for modeled conditions was compared to the standard deviation of monthly flow rates for existing conditions. If the change in modeled mean monthly flow was within two standard deviations of the existing

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66  Ibid.
68  The Precipitation Runoff Modeling System hydrologic model, which was used to calculate College Lake inflows, generally over-predicted accumulated lake inflow volume. The pumping rates applied in the Water Budget Model to reconcile simulated and observed lake stages (and thus to estimate outflow from College Lake under existing conditions) were consequently similarly over-predicted, which led to an artificially high contribution of College Lake flows to the Pajaro River under existing conditions in certain cases.
3. Environmental Setting, Impacts, and Mitigation Measures

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monthly average (i.e., if the magnitude of the change in mean monthly flow was within the range of approximately 95 percent of the existing monthly flow rates), then the change was not considered statistically significant. A change in flow of a magnitude greater than two standard deviations was considered statistically significant.

Existing Conditions Model
The existing conditions hydraulic model was developed by updating the USACE’s existing conditions hydraulic model, which included the Pajaro River, Salsipuedes Creek, Corralitos Creek, College Lake, and adjacent floodplain areas. The USACE model was refined and expanded to provide more accurate hydraulic information for the areas of interest to the Project, and extended upstream of Paulsen Road to include 2018 channel topographic survey data and overbank flow areas for Casserly Creek. For College Lake itself, the stage-discharge relationship for the 1-D storage area representing the lake was updated to incorporate more accurate topographic data collected by cbec, inc. eco engineering (cbec) and the boundary of the storage area was re-delineated. USACE cross-section, bridge, and College Lake weir data for Salsipuedes Creek upstream of the confluence with Corralitos Creek were replaced with geometric data from the 1-D model, including cbec’s 2017 topographic survey. Likewise, cross-section data from Northwest Hydraulic Consultants’ 2015 1-D channel capacity model for Corralitos and Salsipuedes Creeks were used in place of USACE topography. The Pajaro River portion of the USACE model was not changed.

Significant updates were also made to the 2-D flow areas from the USACE model, which were used to simulate flow within the floodplain areas, including the City of Watsonville. Manning’s n values were re-assigned based on land cover classes from the National Land Cover Dataset. Additionally, significant grid refinement occurred to locally reduce the USACE model’s 200-foot grid cells to 50-foot grid cells in areas of interest and in areas with complex hydraulics.

Proposed Conditions Model
The proposed conditions 2-D model was constructed from the existing conditions 2-D model by incorporating elements of the Project. These included the proposed weir structure, channel modifications in the vicinity of the weir, and the presence of the WTP within the floodplain adjacent to the weir structure at the optional WTP site.

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69 While statistically significant, these changes do not always indicate a significant impact for purposes of CEQA, as explained in Impact HYD-4.

70 Manning’s n values are used in hydraulic modeling to account for the resistance to flow exerted by the ground surface or other surface (e.g., vegetation) that the flowing water is exposed to. A greater n value indicates greater surface roughness and resistance to flow.

71 While two locations are under consideration for the location of the WTP, the optional WTP site was used in the hydraulic analysis because, as indicated on Figure 3.3-5, it is located within the 100-year floodplain. Including the optional WTP site allowed PV Water to evaluate its effects on flood water surface elevations. The preferred WTP site is outside of the 100-year floodplain and was therefore not included in the model.
Cumulative Conditions Model

The cumulative conditions 2-D model was built from the proposed conditions 2-D model by incorporating the aspects of the USACE Pajaro River Flood Risk Management Study (USACE project) in the region that would alter flooding along Salsipuedes and Corralitos Creeks.

The USACE project consists of levee and channel improvements on the Pajaro River and Corralitos and Salsipuedes Creeks to increase the level of flood protection afforded by existing flood protection infrastructure. The USACE project’s Tentatively Selected Plan includes measures to improve existing levees, construct new levees, and construct flood walls on Salsipuedes Creek, Corralitos Creek, and Pajaro River. Specific components include constructing new setback levees and rebuilding an existing levee on Reach 2 (on Pajaro River), rebuilding existing levees and floodwalls on Reach 3 (on Pajaro River), constructing a new setback levee along the southern bank of Reach 4 (on Pajaro River), constructing a new setback levee and floodwalls and rebuilding an existing levee along Reach 5 (on Salsipuedes Creek near Corralitos Creek), and constructing new setback levees along Reach 6 (on Corralitos Creek). The Tentatively Selected Plan features provide one percent annual chance of exceedance level of protection for the City of Watsonville (including adjacent agricultural areas) and four percent annual chance of exceedance level of protection for the Orchard Park and Interlaken neighborhoods (including adjacent agricultural areas).

Updating the 2-D model to include the USACE project primarily included incorporating higher levees along all model reaches, as well as incorporating levee setbacks along portions of the Pajaro River and Lower Salsipuedes Creek.

To understand the comparative flood impacts of the Project, with and without the USACE project in place, the cumulative 2-D model was used to simulate existing, proposed, and cumulative effects conditions for the ten percent annual chance (10-year) and one percent annual chance (100-year) flood events. While the discussion of flood hazards often focuses on the 100-year flood event, a more frequent (10-year) event was also evaluated for potential Project impacts because flooding is known to occur south of College Lake during more frequent flood events. Past modeling indicated that the initial College Lake WSE during a flood event strongly influenced the severity of flooding modeled. Therefore, the first step for running these simulations was to determine the level that College Lake is typically at or above during the wet season with the existing weir crest at 60.1 feet NAVD88. An exceedance probability analysis of observed stage data for water years (WYs) 2012-2017 was conducted in which the distribution was calculated from a subset of the data that corresponded to periods when the lake was above the weir crest elevation, and pumping to drain the lake was not occurring. The 80 percent exceedance probability lake level was chosen, corresponding to a College Lake stage of approximately 61.0 feet NAVD88. This lake level was considered the baseline College Lake WSE for purposes of impact analysis.

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72 USACE, Pajaro River Flood Risk Management Study Monterey and Santa Cruz Counties, CA, Draft General Reevaluation and Environmental Assessment, October. Refer to Table 3.1-1 and Figure 3.1-1 in Section 3.1, Overview, for a description of the USACE project.
Pajaro Lagoon

To provide an understanding of how Pajaro Lagoon would respond to future with-Project and cumulative conditions, Environmental Science Associates developed a quantified conceptual model (QCM), which predicts lagoon mouth morphology and the resulting water levels of the lagoon. A QCM is a simplified time-series model which implements a lagoon water balance alongside a parametric model of the lagoon mouth and beach. Detailed discussion of QCM development, calibration, and assumptions is provided in Appendix HYD.

The QCM approach is centered on a water budget for the lagoon, which is coupled with a sediment budget for the lagoon mouth. The model is based on two core concepts:

- All water flows entering and leaving the lagoon should balance.
- The net erosion/sedimentation of the inlet channel results from a balance of erosive (fluvial and tidal) and constructive/deconstructive (wave) processes.

The model uses time series of nearshore waves and tides, watershed runoff, and evapotranspiration data as boundary conditions. Using these as forcing conditions with information about the lagoon’s topography, the model dynamically simulates time series of lagoon water levels, along with inlet, beach, and lagoon state. With each time step, the net inflows or outflows to the system are estimated, along with the net sedimentation or erosion in the mouth. The flow terms vary depending on whether the mouth of the lagoon is open or closed. During closed conditions, inflows are based on watershed runoff and wave overwash into the lagoon, while outflows are based on beach berm seepage and evapotranspiration.

Boundary conditions used in the model include:

- Combined fluvial inflows from the Pajaro River (below the confluence with Corralitos Creek) and Watsonville Slough;
- Ocean tides;
- Nearshore wave conditions; and
- Evapotranspiration.

The Pajaro River and Watsonville Slough are treated as separate basins (i.e., interconnected water balances). For the purposes of this study, the “lagoon” is assumed to include both water bodies, since both experience tides during open-mouth lagoon conditions and water levels inundate both areas when the beach blocks the mouth.

Since water levels were only collected on Watsonville Slough, they are presumed to be representative of lagoon conditions for mid- to high tides in the lagoon and typical closed-lagoon water levels (when water ponds behind the beach and inundates both the slough and river), but do not show low water levels that may occur in the lagoon at low tide. This is because the bed of Watsonville Slough is higher than the bed of the Pajaro River, and thus it truncates low tides during open-mouth lagoon conditions.
3.3.3.3 Impacts and Mitigation Measures

Modeled Changes in College Lake, Salsipuedes Creek, Pajaro River, and Pajaro Lagoon Hydrology

The Project would change the hydrology of College Lake, Salsipuedes Creek, and the Pajaro River and Lagoon. Using the modeling methodology discussed in Section 3.3.3.2, changes in surface water hydrology with the Project were modeled for the four water year types. Areas of focus of the modeling effort included:

- WSE of College Lake throughout each water year type, including during flood events;
- WSE of nearby hydraulically connected water bodies during flood events;
- Discharge from College Lake into Salsipuedes Creek;
- Proportion of flow in Pajaro River supplied by outflow from College Lake (presuming no transmission gains or losses within lower Salsipuedes Creek); and
- Changes in the Pajaro Lagoon (e.g., effects on lagoon opening/closure).

This section summarizes the modeled results for the Project. Impact evaluations follow this general discussion, and rely on its contents, while in some cases providing more specific model output.

During the wet season prior to the last predicted major precipitation event of the year, the proposed weir would remain at 60.1 feet NAVD88, which is the same elevation as the existing weir. The proposed weir would not be raised to 62.5 feet NAVD88 until after the last anticipated major precipitation event of the season, such that the College Lake stage (i.e., WSE) would not exceed approximately 62.5 feet NAVD88 after that point in the season.

Under future with-Project conditions during the wet season, the weir would be in the low position at the same elevation as the crest of the existing weir. The principal difference between existing and Project conditions with respect to potential flood impacts is the possible presence of more water in College Lake at the start of a flood event, reducing the volume of storage available to retain flood waters, if the weir crest is at its higher elevation.

Changes to College Lake Water Surface Elevation and Extent

As shown on Figures 3.3-7a through 3.3-7d, under all with-Project water year scenarios, if sufficient precipitation and/or inflows are present, water would remain in College Lake between April 1 and May 31 (mimicking a natural lake), and, depending on the WSE of College Lake, water would be released into Salsipuedes Creek to support fish passage. After May 31, fish passage flow releases would cease, and water remaining in the lake could be diverted to meet water demands. The Project would thus lengthen the amount of time water remains in College Lake, relative to existing conditions. Because the weir would not be raised until after the last anticipated major precipitation event of the season, the WSE of College Lake during the wet season would not change as a result of the Project, with the exception that, during a one percent annual chance flood event, a small area of new inundation located at the southwestern edge of the lake, and areas in the vicinity of the weir and WTP (both discussed in greater detail in Impact HYD-5) could be affected. Once the weir is raised, the lake would remain at a higher elevation than under existing conditions (up to 0.5 feet higher than existing conditions during April-May).
Notes: Weir raised as early as possible after last major storm event to ensure that lake did not surpass 62.5 ft. Vertical dashed-dotted black lines indicate fish bypass season dates.
Notes: Weir raised as early as possible after last major storm event to ensure that lake did not surpass 62.5 ft. Vertical dashed-dotted black lines indicate fish bypass season dates.
Notes: Weir raised as early as possible after last major storm event to ensure that lake did not surpass 62.5 ft. Vertical dashed-dotted black lines indicate fish bypass season dates.

SOURCE: cbec, 2018

Figure 3.3-7c
Modeled Water Surface Elevations in College Lake with Project, Modeled Water Year 2016
Notes: Weir raised as early as possible after last major storm event to ensure that lake did not surpass 62.5 ft. Vertical dashed-dotted black lines indicate fish bypass season dates.

SOURCE: cbec, 2018

Figure 3.3-7d
Modeled Water Surface Elevations in College Lake with Project, Modeled Water Year 2017

College Lake Integrated Resources Management Project
Contributions to Discharge in Salsipuedes Creek and Pajaro River

The Project would generally reduce the flows from College Lake into Salsipuedes Creek and the Pajaro River throughout the year, due to the elimination of pumping over the weir by RD 2049; weir operations toward the end of the wet season; and the proposed water diversions from College Lake, as shown in Table 3.3-4. Contributions to flow in Salsipuedes Creek and the Pajaro River would occur at times when higher flows are occurring naturally throughout the watershed. Compared with existing conditions, discharge over the weir would be reduced starting after the peak of the last major storm event for each water year and for subsequent minor flow events. Instead of intermittent artificial high flows from College Lake during the late spring and summer months (when, under existing conditions, water is pumped out of the lake), a lower volume of water would steadily leave the lake during April through May (the smolt season), after which no additional water would generally flow from College Lake into Salsipuedes Creek during the dry season. Once College Lake WSE has reached the “natural level for passage,” the proposed rate of discharge (to be confirmed through consultation with federal and state wildlife agencies) into Salsipuedes Creek would be equivalent to the rate of inflow into College Lake up to a maximum flow of 21 cfs between December 15 and March 31, and up to a maximum flow of 1.5 cfs between April 1 and May 31.73 Inflows in excess of these rates could be diverted for water supply. Figures A2 through A5 in Appendix HYD illustrate the anticipated changes in streamflow in Lower Salsipuedes Creek and the Pajaro River with the Project for conditions ranging from critically dry to excessively wet years.

Pajaro Lagoon

As shown on Figure 3.3-8, modeling indicates that the Project could increase the chance of the lagoon mouth being closed during spring, but otherwise would not alter the likelihood of the lagoon being breached. The increase in expected closure days in April and May is a result of the earlier closure in the spring of 2015. Given the small sample size, it is unclear how relevant this result is. While the predicted change is within the expected uncertainty of model predictions for number of closure days per month (10 to 20 percent), it may be possible that during especially dry years, lower inflows to the lagoon could allow wave action to close the mouth sooner in the year than would occur under the existing conditions of artificial pumping to drain College Lake.

Modeled lower water levels in the lagoon result from reducing modeled inflows to the lagoon in spring, which makes it easier for seepage through the berm and evapotanspiration to remove water from the lagoon. These results also have an expected degree of uncertainty given the small sample size of years, and the assumption that groundwater contributions to surface flows are small (estimated to be 2 cfs; refer to Appendix HYD). It is possible that a reduction in surface water levels would increase groundwater flows to the lagoon (due to a higher head gradient between the local groundwater table and surface water in the lagoon at the channel edges).

73 The “natural level for passage” would vary during seasons. Between December 15 and March 31, College Lake WSE would reach 59.5 feet NAVD88 prior to discharge into Salsipuedes Creek; between April 1 and May 31 this level would be 59.3 feet NAVD88. There would be no requirement during other seasons.
### Table 3.3-4
**Comparison of Existing and Proposed Modeled Average Monthly Discharge**

<table>
<thead>
<tr>
<th>Modeled Year</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
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<td>Existing</td>
<td>With Project</td>
<td>Statistically Significant Difference?</td>
<td>Existing</td>
</tr>
<tr>
<td><strong>Average College Lake Outflow (cfs)</strong></td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>October</td>
<td>1.0</td>
<td>0.0</td>
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<td>1.5</td>
</tr>
<tr>
<td>November</td>
<td>0.9</td>
<td>0.0</td>
<td>No</td>
<td>6.4</td>
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<tr>
<td>December</td>
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<td>0.0</td>
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<td>72.5</td>
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<td>0.0</td>
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<td>0.0</td>
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<td>Yes</td>
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<td>Yes</td>
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<td>1.2</td>
</tr>
<tr>
<td>September</td>
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<td>No</td>
<td>0.8</td>
</tr>
<tr>
<td><strong>Average Salsipuedes Creek Flow (cfs)</strong></td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>October</td>
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<td>0.0</td>
<td>Yes</td>
<td>1.5</td>
</tr>
<tr>
<td>November</td>
<td>0.9</td>
<td>0.0</td>
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<td>6.5</td>
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<tr>
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<tr>
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<td>No</td>
<td>5.8</td>
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<td>June</td>
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### TABLE 3.3-4 (CONTINUED)
**COMPARISON OF EXISTING AND PROPOSED MODELED AVERAGE MONTHLY DISCHARGE**

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<tr>
<th>Modeled Year</th>
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<th>With Project</th>
<th>Statistically Significant Difference?</th>
<th>Existing</th>
<th>With Project</th>
<th>Statistically Significant Difference?</th>
<th>Existing</th>
<th>With Project</th>
<th>Statistically Significant Difference?</th>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>July</td>
<td>1.2</td>
<td>0.0</td>
<td>Yes</td>
<td>1.3</td>
<td>0.0</td>
<td>Yes</td>
<td>1.5</td>
<td>0.2</td>
<td>Yes</td>
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<tr>
<td>August</td>
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<td>0.0</td>
<td>Yes</td>
<td>1.3</td>
<td>0.1</td>
<td>Yes</td>
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<tr>
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<td>No</td>
<td>0.9</td>
<td>0.0</td>
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<tr>
<td><strong>Average Pajaro River Flow (below Salsipuedes Creek confluence; cfs)</strong></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
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<td>0.00</td>
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<td>1.5</td>
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<td>933.03</td>
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<td>8.25</td>
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<td>1.3</td>
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<td>0.68</td>
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<td>0.00</td>
<td>Yes</td>
<td>1.3</td>
<td>0.05</td>
<td>Yes</td>
</tr>
<tr>
<td>September</td>
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<td>0.8</td>
<td>0.00</td>
<td>No</td>
<td>0.9</td>
<td>0.00</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**NOTES:**

a. Does not account for any transmission losses or gains.

b. Statistical significance of the difference between modeled existing and modeled with-Project mean discharge assessed by comparing the magnitude of change with two standard deviations of the existing monthly average. If the magnitude of the change in mean monthly discharge is within the range of approximately 95 percent of the existing monthly flow rates, the change is not considered statistically significant. Entries in this column “N/A” if the mean monthly discharge is zero in both existing and proposed conditions. Grey highlights indicate months during which the with-Project scenario results in a statistically significant change in stream discharge.

Predicted Closure Days Per Month

Water Level Exceedance

NOTE: Artificial breaching was assumed whenever lagoon water levels reached 8 feet NAVD88.

Figure 3.3-8
The modeled Project did not result in delays in the seasonal breach events, since inflows during the first major rainfall event of each year were sufficient to fill and breach the lagoon regardless of prior College Lake releases. Although some of the late dry-season flow releases that occurred under existing conditions in 2014 and 2015 raised water levels in the lagoon, full breaching of the lagoon mouth did not occur until later, when the first major rainfall event of each of those years occurred. Although the modeled Project scenario left lower water levels in the lagoon at the time that these storms arrived, the ensuing runoff was more than sufficient to raise water levels to the height of the beach (and thus induce breaching).

**Impact HYD-1: Project construction could violate water quality standards and/or waste discharge requirements, or otherwise substantially degrade surface or groundwater quality. (Less than Significant with Mitigation)**

**Construction Site Stormwater Runoff**

The Project would demolish existing facilities and construct new facilities within College Lake and Salsipuedes Creek, as well as construct new facilities in areas that drain to Pinto Creek, Salsipuedes Creek, Corralitos Creek, and Pajaro River. Associated activities would include earthmoving such as excavation, grading, and soil stockpiling, which could result in soil erosion and subsequent discharge of sediments to nearby surface waters or drainages. Construction staging areas could also disturb soils in these areas. One section of the proposed new pipeline would be installed across Corralitos Creek. At this location, the pipeline would not be installed by cutting a trench, but instead would be installed using trenchless pipeline installation techniques (either horizontal directional drilling or jack and bore). Demolition of the existing weir structure would occur during the dry weather season (April 15 to October 15). Construction of the proposed weir structure and intake pump station, which would be within the channel of Salsipuedes Creek, would also occur only during the dry season.

Discharge of sediments could degrade water quality by increasing turbidity, affecting channel stability, and affecting aquatic and riparian habitats. Sediment also transports other pollutants such as nutrients, metals, and oils and greases. Hazardous materials associated with construction equipment and practices, such as fuels, oils, antifreeze, coolants, and other substances, could also adversely affect water quality if released to surface waters. Construction activities can impact a construction site’s runoff sediment supply and transport characteristics both during and after the construction phase. Excess sediment could be mobilized anywhere earthwork occurs. Salsipuedes Creek and the Pajaro River are listed on the 303(d) list for turbidity, and the Pajaro River is listed for sedimentation/siltation. Because of the sensitivity of these water bodies and the proximity of construction to the creeks, impacts related to degradation of water quality as a result of erosion and sedimentation or release of other water quality pollutants during construction would be potentially significant. If weir construction work proceeds during periods when water is present in Salsipuedes Creek, construction activities could adversely affect water quality by increasing turbidity and potentially releasing fuels and other chemicals associated with construction equipment, a potentially significant impact. **Mitigation Measure HYD-1**, below, would address this impact.

In areas where water is not present, this potential impact would be addressed by implementation of adopted Mitigation Measure HWQ-1 and requirements of the CGP. PV Water would require all
contractors to apply for and obtain all NPDES permits and comply with conditions of the permit(s) as required by the Central Coast RWQCB, pursuant to adopted Mitigation Measure HWQ-1. Compliance with the CGP would mandate the development and implementation of a SWPPP, and would be required because the Project would disturb more than one acre of ground.

The CGP characterizes construction activities by the level of risk to water quality. This is determined using a combination of the sediment risk of the Project and the receiving water quality risk. Projects can be characterized as Risk Level 1, Risk Level 2, or Risk Level 3, with Risk Level 1 representing the lowest risk to receiving water quality. The minimum best management practices and monitoring that must be implemented during construction are based on the risk level. For Risk Level 1 sites, the CGP specifies minimum best management practices to be implemented that address good housekeeping practices (including those for managing hazardous materials used during construction); non-stormwater management, erosion, and sediment control; and run-on and runoff control. For construction activities characterized as higher risk levels, the minimum requirements identified for Risk Level 1 apply, as do other more stringent requirements. For example, a Rain Event Action Plan would be required for higher risk areas to ensure that active construction sites have adequate erosion and sediment controls in place prior to the onset of a storm event, even if construction is planned only during the dry season. The best management practices are designed to prevent pollutants from coming into contact with stormwater and to keep eroded and/or stormwater pollutants from moving off-site into receiving waters. Pursuant to the CGP, a SWPPP would be prepared for the Project. The SWPPP would be prepared by a Qualified SWPPP Developer and submitted to the Central Coast RWQCB prior to Project implementation, and would specify established best management practices to be used to control stormwater run-on/runoff and sediment (such as use of check dams and fiber rolls for reducing erosion on slopes and retaining sediment in stormwater) that would be implemented during construction. These best management practices would avoid or minimize stormwater and water quality effects caused by construction site runoff.

Construction Dewatering

Construction dewatering at the Project sites would likely be required to create dry work areas for excavations (groundwater dewatering) and for work within the creek channel (areas separated from the surrounding creek by a cofferdam). Dewatering of groundwater from excavations typically would involve pumping water out of the excavated area into settlement tanks and, following appropriate on-site treatment, discharging the water over land or into municipal separate sewer systems and/or creek. Water pumped from within the cofferdam could be redirected to the creek channel downstream of the work area.

Sediment or other water pollutants originating from construction equipment, existing contaminated groundwater, or surrounding disturbed land could be released with discharges from dewatering, degrading surface water quality. The removed water could be contaminated with chemicals released from construction equipment, sediments from excavation, or, although unlikely (refer to Section 3.7, Hazards and Hazardous Materials), from contaminated groundwater from offsite sources. Waters isolated within cofferdam areas would likely contain high concentrations of sediment as a result of the amount of ground disturbance within the isolated
work area. These discharges could violate water quality standards or substantially degrade water quality, resulting in a potentially significant water quality impact.

This impact would also be addressed by implementation of adopted Mitigation Measure HWQ-1. Under the Clean Water Act, Section 402, discharging pollutants to receiving waters of the United States is prohibited unless the discharge is in compliance with an NPDES permit. Thus, discharge of non-stormwater from a trench or excavation that contains sediments or other pollutants to sanitary sewer, storm drain systems, or receiving waters is prohibited without first securing appropriate NPDES permit authorization. The State Water Resources Control Board recognizes within the CGP that certain non-stormwater discharges may be necessary for the completion of construction projects. Authorized non-stormwater discharges may include uncontaminated groundwater dewatering, and other discharges not subject to a separate general NPDES permit adopted by a RWQCB. The CGP authorizes such discharges provided they meet the following conditions:

- The discharge does not cause or contribute to a violation of any water quality standard;
- The discharge does not violate any other provision of the CGP;
- The discharge is not prohibited by the applicable 2017 Basin Plan;
- The discharger has included and implemented specific best management practices required by the CGP to prevent or reduce the contact of the non-stormwater discharge with construction materials or equipment;
- The discharge does not contain toxic constituents in toxic amounts or (other) significant quantities of pollutants;
- The discharge is monitored and meets the applicable Numeric Action Limits; and
- The discharger reports the sampling information in the Annual Report.

If discharges from construction dewatering are found to be contaminated they would be collected, handled, and treated on-site and discharged in compliance with CGP requirements. California Water Code Section 13269 authorizes the RWQCB to waive Waste Discharge Requirements for specific discharges or specific types of discharges to land where such a waiver is consistent with any applicable state or regional water quality control plan. Therefore, disposal of dewatering discharge would be required to comply with State permit conditions, either an NPDES Permit or a waiver (exemption) from the RWQCB.

**College Lake Pipeline and Pipeline Cleaning Discharges**

College Lake pipeline crossings of several surface features, including Corralitos Creek, would require trenchless pipeline construction techniques (horizontal directional drilling or jack and bore). Although not anticipated, there is potential for frac-outs to occur using horizontal directional drilling.\(^74\) Corralitos Creek is listed by the RWQCB as impaired due to turbidity; however, a TMDL has not been developed to address this impairment. If a frac-out occurs,

\(^74\) A frac-out is the condition where drilling mud or fluid is inadvertently released through fractured bedrock into the surrounding substrate and travels toward the surface where it could impact sensitive aquatic habitat and degrade water quality (i.e., elevated turbidity, suspended sediment, and deposition of drilling material into the water body).
bentonite slurry could be released into Corralitos Creek, which could degrade water quality, a significant impact. Mitigation Measure BR-1b, included in Section 3.4, Biological Resources, would reduce this impact to less than significant by requiring preparation of a Frac-out Contingency Plan and implementation of measures to contain and clean-up any frac-outs in waterways.

The Project would install the College Lake pipeline across Pinto Creek using open trench installation techniques. If open trench work proceeds during periods when water is present in Pinto Creek, construction activities could adversely affect water quality by increasing turbidity and potentially releasing fuels and other chemicals associated with construction equipment, a potentially significant impact. Mitigation Measure HYD-1, below, would address this impact.

Discharges of water after cleaning the newly installed pipelines before the ends are connected to other facilities would be required. Cleaning activity would include routing treated chlorinated water through the pipeline to disinfect and to rinse dust and other materials from the interior of the pipeline prior to use. The water at the outlet end of the pipeline would be collected, transported to and treated at the Watsonville Wastewater Treatment Facility, which operates in compliance with Central Coast RWQCB Order No. R3-2014-0006 (NPDES No. CA0048216). Pipeline cleaning discharges would therefore have a less-than-significant impact on water quality.

**Impact Conclusion**

Compliance with the CGP in accordance with adopted Mitigation Measure HWQ-1, including preparation and implementation of the SWPPP and associated best management practices as well as inspection and reporting, and implementation of Mitigation Measures BR-1b and HYD-1, would effectively reduce degradation of surface water and groundwater quality to a less-than-significant level. Adherence to these requirements would also effectively reduce potential impacts associated with spills or leaks of hazardous materials and other releases to surface water during construction and thus impacts would be less than significant with mitigation.

**Mitigation Measure BR-1b: Frac-out Contingency Plan** (refer to Section 3.4, Biological Resources)

**Mitigation Measure HYD-1: Implement Dewatering Best Management Practices for In-Water Construction**

For in-water construction during pipeline installation activities, PV Water shall require its contractor(s) to prepare a Dewatering Plan. The Dewatering Plan shall identify best management practices that ensure construction activities at Salsipuedes and Pinto Creeks meet water quality objectives. This work shall be timed to take place as flows are receding and only after instream measures to reduce downstream turbidity are in place. In addition, PV Water shall require its contractors to implement the measures below, and water quality protection measures required by the RWQCB.

1. All work performed in-water shall be completed in a manner that meets the water quality objectives to ensure the protection of beneficial uses as specified in the 2017 Basin Plan.
2. All dewatering and diversion methods shall be installed such that natural flow is maintained upstream and downstream of the Project area.

3. Any temporary dams or diversion shall be installed such that the diversion does not cause sedimentation, siltation, or erosion upstream or downstream of the Project area.

4. Screened pumps shall be used in accordance with CDFW’s fish screening criteria and in accordance with the NMFS Fish Screening Criteria for Anadromous Salmonids and the Addendum for Juvenile Fish Screen Criteria for Pump Intakes.

5. Cofferdams shall remain in place and functional throughout the in-stream construction.

6. Disturbance of protected riparian vegetation shall be limited or avoided entirely.

Impact HYD-2: Project operations could adversely affect surface water quality. *(Less than Significant with Mitigation)*

The Project would result in multiple operational changes that could affect surface water quality in the Pajaro River watershed. The proposed weir between College Lake and Salsipuedes Creek would be less permeable than the existing weir, reducing the flow of water between College Lake and Salsipuedes Creek during periods when WSE is lower than the weir crest. College Lake would retain water for a longer time than as present. PV Water may also occasionally pump water out of College Lake and into Salsipuedes Creek in summer and fall via a 30-inch bypass pipeline from the pump station to the south side of the proposed weir structure.

The proposed WTP would be designed to capture incident stormwater and route it to the beginning of the treatment process train; no new stormwater runoff would be generated by the WTP. Once installed, the College Lake pipeline would not substantially alter the extent of impervious surfaces or otherwise provide substantial additional polluted runoff because it would not result in more impervious surface than currently exists.

**Changes to College Lake Water Quality**

*Reduced Permeability of Weir Structure*

The proposed weir would be constructed north of the confluence of Pinto and Salsipuedes Creeks, and would replace the existing leaky weir with a less permeable structure. PV Water monitors water quality in many locations around College Lake, and collected water quality data for Pinto Creek, Casserly Creek, and College Lake during 2017, shown in Table 3.3-5. Nitrate as Nitrogen concentrations were consistently higher in Pinto Creek than in College Lake or Casserly Creek during this period. Turbidity of both streams was similar, and turbidity in College Lake was higher than the value in both streams. Phosphate concentrations (orthophosphate as P) were

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75 Unless otherwise noted, historical water quality data in this section is derived from Carollo, PV Water, BMP Program Technical Services Technical Memorandum: College Lake Treatment Plant Water Quality Study, November 2, 2017.
higher in Casserly Creek than in Pinto Creek or College Lake. With reduced inflow from Pinto Creek due to reduced permeability of the proposed weir, during Project operations the water quality in College Lake would more closely resemble water quality of Casserly Creek.

Longer Inundation Period of College Lake

The effects of a longer inundation period of College Lake are assessed in two ways for this analysis: by reviewing existing College Lake water quality data and by reviewing water quality concerns at nearby lakes. The Project’s indirect effects on water quality due to changes in land use are also considered.

### Table 3.3-5
**WATER QUALITY DATA 2017**

<table>
<thead>
<tr>
<th>Constituent</th>
<th>College Lake</th>
<th>Pinto Creek</th>
<th>Casserly Creek</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrate as N (mg/L)</td>
<td>5.7 (average)</td>
<td>17.1 (average)</td>
<td>7.4 (average)</td>
</tr>
<tr>
<td></td>
<td>14.1 (maximum)</td>
<td>29.9 (maximum)</td>
<td>10.9 (maximum)</td>
</tr>
<tr>
<td>o-Phosphate-P (mg/L)</td>
<td>0.1 (average)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.04 (average)</td>
<td>0.4 (average)</td>
</tr>
<tr>
<td></td>
<td>0.1 (maximum)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.05 (maximum)</td>
<td>0.52 (maximum)</td>
</tr>
<tr>
<td>Turbidity (NTU)</td>
<td>52.5 (average)</td>
<td>21 (average)</td>
<td>21.7 (average)</td>
</tr>
<tr>
<td></td>
<td>190 (maximum)</td>
<td>85 (maximum)</td>
<td>100 (maximum)</td>
</tr>
</tbody>
</table>

**NOTES:**

<sup>a</sup> Not detected (minimum detection level 0.1 mg/L) in four of five sampling events.

**SOURCE:** PV Water

Multiple lakes that retain water year-round and drain from similar land uses are present near College Lake, including Kelly Lake and Pinto Lake. Pinto Lake lasts year-round and provides a local example of how the water chemistry could change when College Lake retains water in the warmer summer months.

Pinto Lake typically develops heavy Cyanobacteria blooms in the late summer, which produce high levels of algal toxins that exceed the safe recreational exposure limit established by the State of California. During the spring and early summer, a thermocline develops in Pinto Lake, preventing lake water from mixing vertically. Water at the bottom of the lake is not in contact with the atmosphere and becomes relatively depleted of oxygen; the low dissolved oxygen water then increases the release of sediment-bound phosphorus from the lake sediments into the lake water. Monitoring of Pinto Lake and its contributing streams indicated that release from lake sediments was the primary cause of nutrient loading in Pinto Lake. The summer thermocline in Pinto Lake in 2011 occurred starting at a depth of 2 meters below the lake water surface.

<sup>76</sup> Pinto Lake underwent alum treatment for removal of phosphorous during 2017, which resulted in average lake-wide reduction of total phosphorous by 91 percent (City of Watsonville, *Pinto Lake Restoration Project Final Report*, May 31, 2018). In 2016, prior to alum treatment, average orthophosphate-P was 0.25 mg/L in Pinto Creek.

<sup>77</sup> City of Watsonville, Resource Conservation District of Santa Cruz County, and Chapman Science Academic Center, *Pinto Lake Total Maximum Daily Load (TMDL) Planning and Assessment*, April 2013.
While unlikely due to anticipated lake operations, Cyanobacteria blooms could occur in College Lake later in the summer if water of sufficient depth is present, given that the land uses in areas draining to College Lake are similar to those draining to Pinto Lake (although laboratory analysis of water quality samples show Cyanobacteria levels in College Lake during a bloom event in September 2017 were about one percent of the Cyanobacteria levels observed in Pinto Lake). Presuming historic land uses draining to College Lake are similar to those draining to Pinto Lake (a mix of primarily agricultural land use with smaller percentages of urban, grazing, and wooded lands), College Lake water of lower dissolved oxygen concentrations could be in contact with nutrient-containing sediments for a longer period than under existing conditions, potentially increasing the phosphorous loading in College Lake water.

The Project would eliminate farming in portions of the lake bed (i.e., below 59 feet NAVD88), but otherwise would not change land use in areas draining to College Lake. As noted in Section 3.3.1.4, it is possible the existing summer increase in nitrate in College Lake corresponds to irrigation runoff from the farming within the lake basin which, under with-Project conditions would be eliminated below 59 feet NAVD88.

While the Project would maintain water in the lake longer than currently occurs, it would also reduce the size of the irrigated agricultural area within the lake storage area and reduce inputs from Pinto Creek, reducing nutrient contributions to the lake. Refer to Section 3.2, Land Use and Agriculture, for additional information. However, if a thermocline develops in College Lake, Cyanobacteria blooms in College Lake water could occur, a potentially significant impact.

As described in Chapter 2, Project Description, the bypass pipeline could be used to pump water from the lake around the weir (e.g., for equipment maintenance or repair, to ensure the lake bottom is able to dry out for purposes of predator control, or to prevent water quality issues such as low dissolved oxygen, algal blooms, or other unforeseen issues). This operation is expected to occur infrequently, and would comply with applicable federal and state water quality regulations, such as the federal Clean Water Act and the state Porter-Cologne Water Quality Control Act, which establish beneficial uses of surface and ground waters, and water quality standards and objectives for waters of the state that are protective of water quality. With implementation of Mitigation Measure HYD-2a, which would require management of College Lake to limit development of a thermocline during the summer, the Project’s impact on College Lake water quality would be less than significant with mitigation.

Pinto Creek

The College Lake pipeline would be installed across Pinto Creek. If not buried at sufficient depth, the pipeline could result in additional scour of Pinto Creek and a subsequent increase in turbidity in Pinto Creek and other downstream water bodies, a potentially significant impact. Implementation of Mitigation Measure HYD-2b would address this impact by requiring final pipeline design to be based upon more detailed project information and a scour analysis, and the impact would be less than significant with mitigation.

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3. Environmental Setting, Impacts, and Mitigation Measures

3.3 Surface Water, Groundwater, and Water Quality

Salsipuedes Creek and Pajaro River

Both WTP Sites

The Project would generally reduce the discharge from College Lake into Salsipuedes Creek and the Pajaro River during the spring and summer. Instead of intermittent, artificial flows from College Lake during these months (when, under existing conditions, water is pumped out of the lake), a reduced amount of water would steadily leave the lake during April through May (the smolt season), after which little or no additional water would generally flow from College Lake into Salsipuedes Creek during the dry season.

As noted previously, existing agricultural practices in the College Lake basin likely contribute biostimulatory substances and nitrates, which impair Salsipuedes Creek and Pajaro River water quality; the Project would replace a portion of these land uses with submerged (unfarmable) area, reducing the potential sources of biostimulatory substances and nitrate entering Salsipuedes Creek. The Project would not build housing or result in more potential sources of fecal coliform. Land use changes resulting from the Project may therefore reduce biostimulatory substances and nitrate loading to Salsipuedes Creek and Pajaro River.

Reject water generated during operation of the proposed WTP (such as backwash from filters or decant water from solids drying beds) would generally be routed to the beginning of the WTP treatment train. A portion of reject water from the WTP could be routed to the existing wastewater collection system that drains to the City of Watsonville Wastewater Treatment Facility. The reject water routed to the collection system would meet influent quality requirements set by the Salsipuedes Sanitary District and the City of Watsonville. The Wastewater Treatment Facility discharges wastewater to Monterey Bay in compliance with Central Coast RWQCB Order No. R3-2014-0006 (NPDES No. CA0048216). Reject water would therefore have less-than-significant effects on surface water quality during Project operations.

As noted previously, PV Water may occasionally pump water out of College Lake and into Salsipuedes Creek in summer and fall through a 30-inch bypass pipeline from the pump station to the south side of the proposed weir structure. The bypass pipeline could be used to drain the lake to ensure the lake bottom is able to dry out for purposes of maintenance, predator control, or to prevent water quality issues such as low dissolved oxygen and algal blooms from developing. As also described previously, the Project could result in additional release of nutrients from the lake sediments, which could result in cyanobacteria blooms. While water quality effects in Salsipuedes Creek would be temporary, without additional information about the quality of College Lake water at the time of pumping, the potential impact on Salsipuedes Creek could be significant. Implementation of Mitigation Measure HYD-2a would reduce the potential for pumped water to adversely affect Salsipuedes Creek water quality. In addition, this operation is expected to occur infrequently and would comply with applicable federal and state water quality regulations, such as the federal Clean Water Act and the state Porter-Cologne Water Quality Control Act, which establish beneficial uses of surface and ground waters, and water quality standards and objectives for waters of the state that are protective of water quality. Through compliance with applicable regulatory permit requirements and Mitigation Measure HYD-2a, pumped flows from College
Lake into Salsipuedes Creek would not degrade water quality, and impacts would be less than significant with mitigation.

Optional WTP Site
Unlike the preferred WTP site, the optional WTP site would be within the 100-year special flood hazard zone (illustrated on Figure 3.3-5). Potential water pollutants including treatment chemicals and diesel fuel would be stored at the WTP, and if not properly controlled could be inadvertently released during a flood event. The optional WTP site would be built on an elevated fill pad above the 100-year flood elevation, which would result in protection of operational and storage areas from flood flows, resulting in less-than-significant impacts.

Pajaro Lagoon
As shown on Figure 3.3-8, the Project could increase the chance of the lagoon mouth being closed during spring, but otherwise would not alter the likelihood of breaching the lagoon. The amount of trapped saltwater in the lagoon during mouth closure events is an important determinant of water quality conditions, as it effectively controls the extent and amount of low dissolved-oxygen water, and sometimes the extent and amount of warm water in the estuary. The lagoon hydraulic model (discussed in Section 3.3.3.2, Methodology) was used to determine approximate amounts of trapped saltwater in the lagoon under existing conditions, and for conditions with the Project and other projects enacted in the future. The amount of trapped saltwater was estimated by comparing predicted overtopping rates during closure events against predicted export rates from seepage through the beach. Overall, this analysis showed that:

- As a result of reducing inflows to the lagoon, the projects (College Lake Project plus cumulative projects discussed under Impact C-HYD-1) allowed waves to close the lagoon mouth slightly earlier in dry years.
- The earlier closure events actually led to a slightly lower amount of trapped saltwater in the lagoon. This occurred because the earlier closure allowed waves to build a higher beach berm by summer, meaning that fewer wave overwash events were able to introduce saltwater to the lagoon during dry conditions, when lagoon water levels are lower and resulting seepage losses through the beach are weaker.

Given the lack of salinity measurements in the Pajaro Lagoon during the period of the model simulations, a high level of uncertainty should be attributed to these results. Conceptually, it is unclear whether reduced inflows to the lagoon would necessarily increase or decrease the amount of trapped saltwater, and thus the resulting amount of low-dissolved oxygen water. Project conditions would result in a more normative hydrologic regime in the lagoon in the absence of artificial pumping at College Lake. The Project would also alter land use in a manner that would reduce the release of biostimulatory substances into surface waters that drain to the lagoon by reducing the area of irrigated agriculture draining to the lagoon. For these reasons, impacts on Pajaro Lagoon water quality resulting from operation of the Project would be less than significant.

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79 ESA, Lagoon Quantified Conceptual Model Memorandum for Pajaro River Lagoon, April 12, 2018.
Treated Water Use

As discussed in Section 3.3.1.6, PV Water analyzed historic College Lake water quality data to inform WTP design. Seasonal trends were analyzed to view how water quality has historically changed over the course of the year, and to evaluate how it may change under proposed operations. PV Water currently has water quality objectives for four analytes: SAR, chloride, sodium, and nitrate. Historical trends show that in the current mode of operation, College Lake water has met objectives for “delivered water quality” as set by PV Water’s Projects and Facility Operations Committee for these four analytes, with SAR, sodium, and chloride remaining well below the objective levels of SAR less than 4, sodium less than 100 mg/L, and chloride less than 150 mg/L. Summer concentrations of nitrate have also not exceeded the 10 mg/L water quality objective although they have been much closer to exceeding objective levels than the other analytes. Data collected also indicated that TDS levels in College Lake are suitable for irrigation pursuant to the Central Coast RWQCB 2017 Basin Plan guidelines, as well as the water quality objectives set by the PV Water Project and Facility Operations Committee. Under Project conditions, these constituents would likely increase in May and June, peaking in July and August, which may correspond to the draining of College Lake for water supply. These operational conditions are not anticipated to be an issue in the future for SAR, sodium, or chloride since they are well within PV Water’s delivered water quality objectives for those analytes.

The proposed WTP would be designed to produce water that meets the Food and Drug Administration Food Safety Modernization Act standards for water for agricultural irrigation. Operations of the proposed WTP would include routine water quality monitoring to ensure the effluent water is compliant with water quality standards.

Impact Conclusion

Project operations could alter College Lake water quality by reducing Pinto Creek inflow to the lake, by increasing the period during which the lakebed is inundated, and by altering land use in the lake bed. Water quality of Pinto Creek and downstream water bodies could also be affected by College Lake pipeline scour. With implementation of Mitigation Measures HYD-2a and HYD-2b to address these potential impacts, and implementation of regulatory agency permit requirements, impacts of the Project on surface water quality would be less than significant with mitigation.

Mitigation Measure HYD-2a: Water Quality Adaptive Management for College Lake

To learn about potential impacts of the Project on College Lake water quality and the quality of downstream water bodies, PV Water shall monitor College Lake water for indications of Cyanobacteria blooms. When the proposed weir crest is elevated to 62.5 feet NAVD88, PV Water shall monitor College Lake water temperature within the water column to establish whether a thermocline develops. PV Water shall use results of this monitoring to support the development of the Adaptive Management Plan (refer to Section 2.7) that establishes management actions to minimize the conditions that can
3. Environmental Setting, Impacts, and Mitigation Measures

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Contribute to algal blooms, including cyanobacteria blooms, such that this impact is mitigated.

**Mitigation Measure HYD-2b: Scour Analysis for Pinto Creek Crossing**

To reduce Project impacts on erosion and sedimentation, PV Water shall evaluate the potential for scour and channel bank erosion due to the Pinto Creek pipeline crossing. The analysis shall recommend a design depth for the pipeline crossing that avoids scour, estimated using standard engineering methods. PV Water shall implement the pipeline depth that avoids scour in final project design.

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**Impact HYD-3: The Project could cause localized temporary or seasonal changes in shallow groundwater levels, but would not degrade groundwater quality or decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin. (Less than Significant)**

**Construction**

As discussed in Impact HYD-1, dewatering may be necessary during construction that extends below groundwater levels. The impact on groundwater during these excavation activities would be temporary and limited to the immediate vicinity of the excavation. The influence of pumping (i.e., cone of depression) would not extend far from the excavation, and the dewatering would be temporary. For these reasons, the impacts of pipeline installation with respect to depletion of groundwater supplies would be less than significant.

**Operations**

**Shallow Groundwater**

As described in Section 3.3.1.3, the lake bottom is classified as Quaternary Basin deposits, consisting of unconsolidated plastic clay and silty clay with high organic content.

Shallow groundwater is present around the lake, and levels fluctuate seasonally. **Table 3.3-6** lists the depths to shallow groundwater around the lake, measured between December 2017 and October 2018 using piezometers. **Figure 3.3-9** illustrates the locations of these piezometers. Water elevations at these piezometers are shown in Appendix HYD. Nine of the twelve piezometers collected data from the northern and northeastern side of College Lake; three piezometers collect data from the southern side of College Lake. Potential Project effects in each area surrounding College Lake are discussed below.

- **Piezometers 1, 4, 5 and 6.** These piezometers collected data north of College Lake. Shallow groundwater was always higher than College Lake WSE at these piezometers. Starting in December 2017, shallow groundwater elevations gradually increased, with intermittent peaks associated with precipitation events. While the overall trend of shallow groundwater elevations increased over the period of data collection, after precipitation event peaks the shallow groundwater elevations in some cases declined to previous levels, while the elevation of College Lake continued to increase. Shallow groundwater in these areas may be draining to College Lake through drainage dikes to the west of the piezometer locations; however, the

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80 Piezometer locations selected based on local topography and land use.
elevation of shallow groundwater north of College Lake and Paulsen Road appears to be controlled by aggradation in and downstream of Casserly Creek and not the WSE of College Lake. Aggradation of Casserly Creek would not be affected by the Project, as discussed in greater detail in Impact HYD-4.

- **Piezometers 2 and 12.** These piezometers collected data northeast of College Lake. Shallow groundwater levels vary from just over 60 feet NAVD88 to just over 62 feet NAVD88 during the wet season at piezometer 2, and appear to be influenced by College Lake WSE once the lake is above 61 feet NAVD88. The effect of lake WSE on shallow groundwater at piezometer 12 is less certain given that shallow groundwater levels remained at an elevated level prior to the lake filling. The Project therefore is not expected to significantly alter the patterns of depth to shallow groundwater in this location. At the end of the wet season, when the lake was at approximately 61 feet NAVD88 (similar to what it would be for a longer period under Project conditions), the shallow groundwater level in piezometer 2 was approximately 61.3 feet NAVD88. Under Project conditions, groundwater in the vicinity of piezometer 2 may remain at 61.3 feet NAVD88 (1.5 feet below ground surface) until May 31, depending on precipitation conditions.

**Table 3.3-6**

<table>
<thead>
<tr>
<th>Piezometer</th>
<th>Ground Surface Elevation (rounded to the nearest foot)</th>
<th>Well Top Elevation (feet)</th>
<th>Groundwater Level range, December 2017-October 2018 (feet)</th>
<th>Groundwater Feet Below Ground Surface (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>64</td>
<td>65.9</td>
<td>58.3-64</td>
<td>0-4</td>
</tr>
<tr>
<td>2</td>
<td>63</td>
<td>64.6</td>
<td>60-62.2</td>
<td>0.5-3</td>
</tr>
<tr>
<td>3</td>
<td>60</td>
<td>61.7</td>
<td>54.7-60</td>
<td>0-5</td>
</tr>
<tr>
<td>4</td>
<td>65</td>
<td>66.8</td>
<td>64.3-65</td>
<td>0-1</td>
</tr>
<tr>
<td>5</td>
<td>67</td>
<td>68.3</td>
<td>64.8-67</td>
<td>0-2</td>
</tr>
<tr>
<td>6</td>
<td>64</td>
<td>65.3</td>
<td>60.4-64</td>
<td>0-3</td>
</tr>
<tr>
<td>7</td>
<td>65</td>
<td>66.4</td>
<td>58.0-65</td>
<td>0-7</td>
</tr>
<tr>
<td>8</td>
<td>70</td>
<td>70.9</td>
<td>62.3-68.4</td>
<td>1-8</td>
</tr>
<tr>
<td>9</td>
<td>67</td>
<td>68.1</td>
<td>59.9-64.3</td>
<td>2-7</td>
</tr>
<tr>
<td>10</td>
<td>63</td>
<td>64.0</td>
<td>59.4-62.8</td>
<td>0-4</td>
</tr>
<tr>
<td>11</td>
<td>62</td>
<td>62.6</td>
<td>59.0-62</td>
<td>0-3</td>
</tr>
<tr>
<td>12</td>
<td>64</td>
<td>64.7</td>
<td>59.3-63.5</td>
<td>0.5-5</td>
</tr>
</tbody>
</table>

**NOTES:**

- a This period is selected because data is available for all piezometers. As shown in Appendix HYD, in some cases the peak measured groundwater level exceeded the ground surface elevation; this was due to local flooding at the time of the peak measurements. For clarity the peak groundwater level ranges reported in this table are reported as the ground surface elevation, if relevant.
- b During this same period, the WSE recorded at the College Lake pumphouse ranged from 48 feet (in June, when water presence is limited to the channel) to 62 feet (in March).
- c The first three days of piezometer installation recorded values lower than this range (down to 60.2 feet NAVD88), due to equalization with surrounding groundwater levels; These low values were excluded from this table in order to present an accurate range of values.
- d The first three days of piezometer installation recorded values lower than this range (down to 54.8 feet NAVD88), due to equalization with surrounding groundwater levels; These low values were excluded from this table in order to present an accurate range of values.
- e The first three days of piezometer installation recorded values lower than this range (down to 56.8 feet NAVD88), due to equalization with surrounding groundwater levels; These low values were excluded from this table in order to present an accurate range of values.

**SOURCE:** Appendix HYD
Figure 3.3-9
Piezometer Locations

Ground Elevation in College Lake

- 62 - 62.5 ft
- 60 - 62 ft
- 58 - 60 ft
- 56 - 58 ft
- 54 - 56 ft
- 52 - 54 ft
- 50 - 52 ft
- 48 - 50 ft

Piezometers

College Lake at 62.5 ft

SOURCE: cbec, 2018

College Lake Integrated Resources Management Project
- **Piezometers 3, 7, and 8.** These piezometers collected data east of College Lake. WSE at these piezometers generally increased during the data collection period. The shallow groundwater elevation measured in piezometer 3 was the same as the College Lake WSE starting at the bottom of the piezometer at 56 feet NAVD88. Changes in shallow groundwater levels in piezometers 7 and 8 in 2018 correlated with lake levels (coefficient greater than 0.93). The Project could result in shallow groundwater elevation remaining at seasonally elevated levels (approximately 62 to 63 feet NAVD88) until May 31 at piezometers 7 and 8.

- **Piezometers 9, 10, and 11.** These piezometers collected data southwest of College Lake. Under existing conditions, even when the lake is drained, shallow groundwater remained at or above 59 to 60 feet NAVD88 throughout the year from late 2017 to late 2018.

  In 2018, College Lake WSE was 61 feet NAVD88 around April 20, and, once pumping began, decreased to 51 feet NAVD88 over 1.5 months (to approximately June 7). College Lake WSE declined at a rate of approximately 6.7 feet per month in 2018 once pumping began.

  With the project, College Lake WSE would decrease at a slower rate in any of the water year scenarios, due to changes in pumping. Modeling indicates that College Lake WSE would decrease from 61 feet NAVD88 to 51 feet NAVD88 over approximately three months, between May 7 and August 15 in a dry year (WY 2014) or between June 1 and September 7 in a very wet year (WY 2017). The decrease in College Lake WSE would begin latest (around June 1) in the WY 2017 scenario, which represents the greatest change compared with existing conditions in terms of duration of College Lake WSE above 61 feet NAVD88. College Lake WSE would decrease at a rate of approximately 1 foot per month between June 1 and September 7, about one-sixth the current rate.

  Assuming that shallow groundwater levels at these piezometers are correlated with College Lake WSE, the highest shallow groundwater levels at June 1 would occur during a very wet year (similar to modeled WY 2017), when College Lake WSE would be around 61 feet NAVD88. Using information from the piezometers from 2018, shallow groundwater would therefore remain within one foot of the ground surface for a longer period at piezometers 10 and 11 (ground surface elevations of 63 and 62, respectively). Presuming that shallow groundwater elevations would decline at a slower rate, in proportion to the slower decrease in College Lake WSE under proposed conditions, shallow groundwater at piezometer 10 would remain within two feet of the ground surface until November 1. Shallow groundwater at piezometer 11 would remain within 1 foot of the ground surface until November 1. Shallow groundwater at piezometer 9 would remain between 4 and 5 feet of the ground surface until November 1. **Table 3.3-7** summarizes existing and future shallow groundwater conditions at piezometers 9 through 11.

  In all locations around College Lake, the Project could increase the duration of elevated shallow groundwater levels or would not have a strong effect on shallow groundwater levels.

  The Project would lengthen the amount of time water remains in College Lake relative to existing conditions, but would reduce the amount of water released downstream to Salsipuedes Creek and the Pajaro River. PV Water would implement adopted Mitigation Measure HWQ-3 to address any seasonal reductions in groundwater levels from baseline elevations at localized areas downstream of the lake. With implementation of adopted Mitigation Measure HWQ-3, the impact on downstream groundwater levels would be **less than significant.**
Table 3.3-7

Existing and with-project shallow groundwater at piezometers 9 through 11

<table>
<thead>
<tr>
<th>Piezometer</th>
<th>11</th>
<th>10</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing Conditions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ground surface elevation, feet NAVD88</td>
<td>62</td>
<td>63</td>
<td>67</td>
</tr>
<tr>
<td>Depth of shallow groundwater below ground surface when College Lake WSE was 61 feet, around 4/20/18</td>
<td>&lt;1 foot (61.8)</td>
<td>&lt;1 foot (62.5)</td>
<td>4 feet (63)</td>
</tr>
<tr>
<td>Change in shallow groundwater elevation between beginning of pumping and College Lake WSE of 51 feet, 2018 (1.5 months)</td>
<td>61.8 to 61</td>
<td>61.8 to 61</td>
<td>63 to 62</td>
</tr>
<tr>
<td>Rate of shallow groundwater elevation decline, 4/20 – 6/7, 2018 (feet per month)</td>
<td>0.5</td>
<td>1</td>
<td>0.7</td>
</tr>
<tr>
<td>Depth below ground surface on June 1, 2018 a</td>
<td>1 foot</td>
<td>2 feet</td>
<td>5 feet</td>
</tr>
<tr>
<td>Project Conditions (2017 water year)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depth below ground surface with Project on June 1b</td>
<td>&lt; 1 foot</td>
<td>&lt; 1 foot</td>
<td>4 feet</td>
</tr>
<tr>
<td>Rate of shallow groundwater elevation decline, with Project (feet per month)</td>
<td>&lt; 0.1</td>
<td>0.2</td>
<td>0.1</td>
</tr>
</tbody>
</table>

Notes:

a College Lake WSE on June 1, 2018, was approximately 54 feet NAVD88.
b College Lake WSE modeled to be 61 feet NAVD88 on June 1 in the WY 2017 scenario.

Source: Appendix HYD

Pajaro Valley Groundwater Basin

As discussed in Section 3.3.1.4, the potential for groundwater recharge to the Pajaro Valley Groundwater Basin in the vicinity of College Lake is very low due to the underlying fine-grained (clay and silt) materials of the lake bed, which have very low permeabilities. The fine-grained, low-permeability lake bed materials separate the shallow groundwater around the lake from the Pajaro Valley Groundwater Basin, so Project effects on the shallow groundwater and Project effects on the Pajaro Valley Groundwater Basin are discussed separately here. Because of this very low recharge potential, changes in operations of College Lake would not substantially affect recharge from College Lake directly into the Pajaro Valley Groundwater Basin. Moreover, if there were any change in direct recharge during operations, the change would be to increase this direct recharge, because water would be stored in College Lake for more days each year under Project operations than under current conditions.

As discussed in Chapter 2, Project Description, the primary purposes of the Project are to help balance the groundwater basin, prevent further seawater intrusion, and meet water supply needs in PV Water’s service area by developing College Lake as a water storage and supply source. PV Water is the exclusive local agency managing groundwater within its boundaries, and the Board of Directors voted to be the Groundwater Sustainability Agency under SGMA for the Pajaro Valley Groundwater Basin in August 2015. Implementation of the Project would reduce overdraft conditions and seawater intrusion in the Pajaro Valley Groundwater Basin. Impacts on sustainable groundwater management would therefore be beneficial, and no adverse effects would result.

Mitigation: None required.
Impact HYD-4: The Project would alter drainage patterns, changing erosion and sedimentation patterns in College Lake and downstream water bodies. *(Less than Significant with Mitigation)*

The Project would not alter sediment delivery to College Lake from upstream sources. The Project would remove an existing weir, construct a new proposed weir within a waterway, and alter seasonal water presence in College Lake, Salsipuedes Creek, and the Pajaro River and lagoon, which could alter patterns of sedimentation in these water bodies. Project impacts related to sedimentation and erosion during construction are discussed in Impact HYD-1.

**College Lake**

The modeled presence of water within College Lake during Project operations is illustrated on Figures 3.3-7a through 3.3-7d. During most of the wet season, when the greatest amount of sediment is transported into College Lake, the proposed weir crest would remain at 60.1 feet NAVD88. The maximum extent of the lake during the wet season therefore would not change due to the Project (refer to Figure 3.3-11c and associated discussion in Impact HYD-5). In the area where Casserly Creek enters College Lake at Paulsen Road, the inundated area would not substantially change compared with existing conditions during the wet season.

During the spring, the lake would remain at a higher elevation than under typical existing conditions (up to 62.5 feet NAVD88, or up to 0.5 feet higher than existing conditions during April-May). As noted above, the proposed weir would not be raised to 62.5 feet NAVD88 until after the last anticipated major precipitation event of the season, such that the College Lake stage would not exceed approximately 62.5 feet NAVD88 after that point in the season. While precipitation could occur after this point in the season, it is estimated that the College Lake inflow would be on the order of 40 cfs or less (based on review of hydrographs from 2014-2017 used in modeling). Most sediment that enters College Lake is estimated to be transported by events with greater discharge during the wet season (e.g., over half of storms in 2017 resulted in discharge greater than 100 cfs in Casserly Creek). Therefore, it is unlikely the proposed weir would substantially alter sedimentation in College Lake.

However, as discussed in Chapter 2, *Project Description*, PV Water would conduct initial geomorphological assessments to confirm the factors in the watershed that control sediment production, transport, and deposition and to guide development of effective maintenance activities. PV Water would remove sediment from College Lake as needed if accumulation is identified during routine monitoring. If sediment accumulation in the lake impedes fish passage, compromises capacity, or impairs operation of the proposed weir or intake structure, removal would be needed.

For the reasons stated above, the potential for sedimentation to substantially increase in College Lake due to Project operations is low, and this impact is considered *less than significant*.

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81 cbec, *College Lake Integrated Resources Management Project Hydrologic and Hydraulic Modeling Technical Memorandum*, November 8, 2018. Figure 7.
Pinto Creek

As discussed in Impact HYD-2, if the College Lake pipeline is not buried to sufficient depths beneath Pinto Creek, additional scour of the Pinto Creek channel could result, a potentially significant impact. Implementation of Mitigation Measure HYD-2b would address this impact by requiring final pipeline design to be based upon more detailed project information and a scour analysis, and the impact would be less than significant with mitigation.

Corralitos Creek

The College Lake pipeline would be tunneled beneath Corralitos Creek using trenchless installation technology (horizontal directional drilling). Once installed, the College Lake pipeline would not substantially alter existing topography or drainage. The pipeline also would not affect the rate or volume of surface runoff with regard to flooding, as the pipeline would not create additional impervious surfaces. Accordingly, long-term impacts of the pipeline on erosion, siltation, or flooding would be less than significant.

Salsipuedes Creek and Pajaro River

Once the Project is operational, it would generally decrease College Lake contributions to Salsipuedes Creek and the Pajaro River throughout the year, due to: (a) the elimination of RD 2049 pumping operations; (b) weir operations toward the end of the wet season; and (c) the proposed diversions of water from College Lake. In particular, College Lake contributions to the Pajaro River would decrease during the fall, late spring, and summer; a detailed breakdown of changes in discharge is provided in Table 3.3-4. Contributions to flow in Salsipuedes Creek and the Pajaro River that remain would occur at times when higher flows are naturally occurring throughout the watershed.

College Lake and Salsipuedes Creek Prior to Weir Raise

Because the proposed weir would be kept at 60.1 feet NAVD88 (the existing weir level) until the end of the wet season, it is unlikely that the Project would prevent more sediment from moving into College Lake from Salsipuedes Creek during reverse flow events (which generally occur during high discharge in the wet season) than occurs under existing conditions. Therefore, the Project is not likely to cause further sedimentation in Salsipuedes Creek near the proposed weir than occurs under existing conditions.

College Lake Outflow and Salsipuedes Creek After Weir Raise

Compared with existing conditions, discharge over the proposed weir is reduced starting after the peak of the last anticipated major storm event for each water year and for subsequent minor flow events. High intermittent discharge from College Lake during the dry season would no longer occur due to general cessation of pumping over the proposed weir.
The decrease in discharge under proposed conditions is more pronounced in drier years (WYs 2014 and 2015) than in wetter years (WYs 2016 and 2017). This is because Corralitos Creek and Pajaro River discharge would be greater than discharge leaving College Lake.

As shown in Table 3.3-4, all statistically significant changes in modeled mean monthly discharge would reduce, not increase, discharge volume, and would occur during periods when, under existing conditions, College Lake or the channel within the lakebed is being pumped (April through October). The flows entering Salsipuedes Creek under either existing or proposed conditions after the weir has been raised each year (0 to 5.3 cfs) are much lower than the peak annual flows of Corralitos Creek upstream of the Salsipuedes Creek confluence (which ranged from 172 to 3,360 cfs between 2012 and 2017). Given the statistically significant reduction in discharge that occurs during periods when existing discharge is much lower than peak discharge, the Project would not substantially alter sedimentation patterns in Salsipuedes Creek.

Pajaro River

The modeled change in average monthly discharge would be within the existing range of variability of discharge in Lower Salsipuedes Creek and the Pajaro River during wetter months; the Project would reduce discharge to Lower Salsipuedes Creek and the Pajaro River during drier months, at relatively low flows (less than 50 cfs).

While the proportion of discharge from College Lake contributing to the Pajaro River is high in both current and proposed conditions, the flows in either case are lower than the calculated peak annual flows of Salsipuedes Creek upstream of the Pajaro River confluence (ranging from 70 to 1,360 cfs) and the Pajaro River (ranging from 180 to 9,450 cfs) during 2014 to 2017 and the changes would generally occur during the dry season. The Project’s reductions in flows are therefore unlikely to alter existing sedimentation and erosion patterns in the Pajaro River. The impact would be less than significant.

Mitigation Measure HYD-2b. Scour Analysis For Pinto Creek Crossing (refer to Impact HYD-2)

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83 cbec, Appendix A in College Lake Integrated Resources Management Project Hydrologic and Hydraulic Modeling Technical Memorandum, November 8, 2018. It is also important to note that the Precipitation Runoff Modeling System hydrologic model, which was used to calculate College Lake inflows, generally over-predicted accumulated lake inflow volume, particularly in dry years. For WY 2014, this over-prediction was enough to cause the simulated lake stage to surpass the 60.1 foot weir crest, while observed lake stages did not reach the weir during WY 2014. The pumping rates applied in the water balance model to reconcile the simulated and observed stages were therefore similarly over-predicted, which led to an artificially high contribution of College Lake flows to the Pajaro River for 2014 under existing conditions.
Impact HYD-5: The Project would not substantially increase the rate or amount of surface runoff, but would impede or redirect flood flows and alter the seasonality of surface runoff. *(Less than Significant with Mitigation)*

As discussed above in Section 3.3.1.4, flood hazards are present in and around College Lake, as well as along Corralitos Creek, Salsipuedes Creek, the Pajaro River, and Pajaro Dunes. As shown on Figures 3.3-7a through 3.3-7d, based on modeling, the Project may retain water in parts of the lake into September, depending on weather conditions and water demand, compared to current conditions.\(^85\) By changing the seasonal patterns of water present within Salsipuedes Creek, the Project could also affect downstream water bodies, such as the Pajaro River and lagoon. If those changes were to increase WSE during flood events, or result in new inundation depths of greater than 0.1 foot on parcels not managed by PV Water as part of the Project (see Figure 2-18 in Chapter 2), the Project’s impacts related to flooding would be significant.

**Paulsen Road and College Lake**

For purposes of flooding, College Lake functions as a basin (instead of a stream). The greater the volume of water in the basin when a storm occurs, the less capacity available to retain inflows into the basin; as a result, water begins to spill over the “top” of the basin – in this case, potentially flooding areas around College Lake that would not have been inundated during the same storm without the Project. Due to proposed weir operations, the weir crest would generally be at 60.1 feet NAVD88 during most potential flood events similar to existing conditions, and so the weir crest elevation would not substantially alter existing flood conditions around College Lake and at Paulsen Road. However, the footprint of the proposed weir and the WTP, if located at the optional site, would be within the one percent annual chance floodplain. The local effects of the Project on flooding at College Lake and Paulsen Road are driven by the location of these facilities, and are described below.

**With Optional WTP Site**

During the ten percent annual chance flood event, the Project would not change inundation depths or cause new inundation compared with existing conditions, as shown in *Table 3.3-8* and *Figures 3.3-10a, 3.3-10b*, and *3.3-10c*.\(^86\) *Table 3.3-8* summarizes flood impacts for locations addressed in this analysis. Cumulative impacts shown in these figures and table are discussed in Impact HYD-6. During the one percent annual chance event with construction of the WTP at the optional site, increased WSE or new inundation would occur in one location, at the southern end of College Lake. Under this scenario, the Project would not alter inundation depths or extents by more than 0.1 foot along Casserly Creek and Paulsen Road.

*Figures 3.3-11a* and *3.3-11b* illustrate modeled changes to WSE along Corralitos/Salsipuedes Creeks and in the channel between College Lake and the Corralitos confluence, respectively. The depth of inundation increases by 0.1 foot near the proposed weir and the WTP with the Project. No new areas of inundation occur during the one percent annual chance event, as shown on *Figure 3.3-11c*.

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\(^85\) It is possible that higher lake levels could persist into the fall. The analyses presented in this EIR are based on modeled results.

\(^86\) On Figures 3.3-10c and 3.3-11c, a threshold depth of 0.049 feet is used, such that depths that would round to 0.0 feet are not displayed.
### TABLE 3.3-8
**MAXIMUM WATER LEVEL (STAGE) DURING 10-YEAR AND 100-YEAR FLOOD EVENTS UNDER EXISTING, PROPOSED, AND CUMULATIVE CONDITIONS**

<table>
<thead>
<tr>
<th>Event</th>
<th>College Lake and Paulsen Road</th>
<th>Orchard Park</th>
<th>Salsipuedes Creek (downstream of confluence)</th>
<th>Corralitos Creek (upstream of confluence)</th>
<th>Pajaro Dunes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Existing Conditions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ten Percent Annual Chance (10-Year)</td>
<td>70.6</td>
<td>70</td>
<td>68</td>
<td>68-80</td>
<td>--</td>
</tr>
<tr>
<td>One Percent Annual Chance (100-year)</td>
<td>73.4</td>
<td>73.4</td>
<td>71</td>
<td>71-81 (extending 0.5 mile upstream of confluence)</td>
<td>13-16 (from south to north along the beach)</td>
</tr>
<tr>
<td><strong>Proposed Conditions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ten Percent Annual Chance (10-Year)</td>
<td>70.6 / --</td>
<td>70 / --</td>
<td>68 / --</td>
<td>68-80 / --</td>
<td>--</td>
</tr>
<tr>
<td>One Percent Annual Chance (100-year)</td>
<td>73.4 / --</td>
<td>73.4 / --</td>
<td>71 / --</td>
<td>71-81 / --</td>
<td>13-16 (from south to north along the beach)</td>
</tr>
<tr>
<td><strong>Cumulative Conditions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ten Percent Annual Chance (10-Year)</td>
<td>70.7 / 0.1</td>
<td>68 / -2</td>
<td>68 / --</td>
<td>68-80 / --</td>
<td>--</td>
</tr>
<tr>
<td>One Percent Annual Chance (100-year)</td>
<td>73.6 / 0.2</td>
<td>72 / -1.4</td>
<td>71 / --</td>
<td>73-83 / 2</td>
<td>13-16 (from south to north along the beach)</td>
</tr>
</tbody>
</table>

**NOTES:**

a Proposed and cumulative conditions elevations are in-channel elevations. In the case of College Lake, Paulsen Road, and Orchard Park, these elevations are also projected floodplain elevations.

b Project with WTP at the optional WTP site. Implementation of the Project at the preferred WTP site would not affect WSE in College Lake during either the 10-year or 100-year flood events. Based on initial lake level of 61.0 feet.

c Cumulative impacts are discussed in Impact HYD-6

**SOURCE:** Appendix HYD.
Figure 3.3-10a
Water Surface Elevation Profile in Corralitos and Salsipuedes Creeks During Ten Percent Annual Chance Flood Event: Existing, Proposed, and Cumulative Conditions

Notes: WSE = water surface elevation.
10-yr = ten percent annual chance flood event.
Lower Salsipuedes Creek refers to the reach between Corralitos Creek and Pajaro River.
Upper Salsipuedes Creek refers to the reach between College Lake and Corralitos Creek.

Higher WSE’s for cumulative effects due to flow not escaping channel because of levee and floodplain improvements.

Lower WSE’s for cumulative effects due to increased floodplain capacity from levee setback.
PV Water BMP Program Services

Profile: Upper Salsipuedes (10-yr)

Project No. 17-1017

Created By: LST

Figure 21

Location of existing weir

Location of proposed PV Water weir

College Lake Integrated Resources Management Project

Figure 3.3-10b

Water Surface Elevation Profile From College Lake to Corralitos Creek During Ten Percent Annual Chance Flood Event: Existing, Proposed, and Cumulative Conditions

Notes:

WSE — water surface elevation.

10-yr — ten percent annual chance flood event.

Cumulative effects WSE nearly identical to existing and proposed, despite additional channel capacity, because of controlling topography and structures downstream.

Cumulative effects WSE lower due to new bridges with greater flow capacity (more dramatic reduction than with 100-year event).

Cumulative effects WSE nearly identical to existing and proposed, despite additional channel capacity, because of controlling topography and structures downstream.

Existing and proposed differ by less than 0.1 ft throughout channel.

SOURCE: cbec, 2018
Figure 3.3-10c
Ten Percent Annual Chance (10-year) Flood Event: Proposed and Existing Conditions

SOURCE: cbec, 2018
NOTE: In this figure, a threshold depth of 0.049 feet is used, such that depths that would round to 0.0 feet are not displayed.
Higher WSE’s for cumulative effects due to flow not escaping channel because of levee and floodplain improvements.

Notes:
- WSE — water surface elevation.
- 100-yr — one percent annual chance flood event.
- Lower Salsipuedes Creek refers to the reach between Corralitos Creek and Pajaro River.
- Upper Salsipuedes Creek refers to the reach between College Lake and Corralitos Creek.

**Figure 3.3-11a**
Water Surface Elevation Profile in Corralitos and Salsipuedes Creeks During One Percent Annual Chance Flood Event: Existing, Proposed, and Cumulative Conditions
Figure 3.3-11b
Water Surface Elevation Profile From College Lake to Corralitos Creek During One Percent Annual Chance Flood Event: Existing, Proposed, and Cumulative Conditions

Notes:
- WSE — water surface elevation.
- 100-yr — ten percent annual chance flood event.
- Lower Salsipuedes Creek refers to the reach between Corralitos Creek and Pajaro River.
- Upper Salsipuedes Creek refers to the reach between College Lake and Corralitos Creek.

Cumulative effects WSE lower due to new bridges with greater flow capacity.
Cumulative effects WSE nearly identical to existing and proposed, despite additional channel capacity, because of controlling topography and structures downstream.

PROPOSED CONDITIONS: Higher by 0.1 ft than existing near the weir, but not within College Lake.
Cumulative effects WSE about 0.2 ft higher within College Lake compared to existing.
One Percent Annual Chance (100-year) Flood Event: Proposed and Existing Conditions

NOTE: In this figure, a threshold depth of 0.049 feet is used, such that depths that would round to 0.0 feet are not displayed.
The proposed weir and the WTP at the optional site would be installed in the 100-year flood hazard zone. The WTP at the optional site would be floodproofed in compliance with National Flood Insurance Program requirements, but could redirect flood flows in the area, affecting on- and offsite flood inundation patterns. Hydraulic modeling comparing the two WTP sites indicated that the optional WTP site did not alter flood impacts compared to locating the plant outside of the floodplain for the 10-year and 50-year events. However, for the 100-year event, locating the WTP at the optional site caused an increase in WSE within College Lake of roughly 0.2 feet compared with the preferred WTP site location which is outside the 100-year floodplain, as further discussed below. The results indicate that the optional WTP site is a primary driver for the Project-related flood impacts observed in the 100-year event. That is, the Project changes inundation patterns because the optional WTP site impedes the one percent annual chance floodplain.

There are no existing structures within the area affected by the Project that would not be removed as part of Project construction. While the Project would displace some flood waters, it would not exacerbate exposure of people or structures to loss, injury, or death due to flooding because the Project would not increase inundation depths or extents in residences or at existing structures.

**With Preferred WTP Site**

The WTP at the preferred site would not be built in the one percent annual chance flood hazard area. The Project with the preferred WTP site therefore would not alter inundation depths or extents during the one percent or ten percent annual chance events within College Lake. Implementation of the Project with the preferred WTP site also would not alter inundation depths or extents by more than 0.1 foot along Casserly Creek and Paulsen Road.

**Orchard Park, Salsipuedes Creek, and Corralitos Creek**

Along Salsipuedes Creek between the proposed weir and the Corralitos Creek confluence, inundation depths during the ten percent annual chance event under proposed conditions would increase by less than 0.1 foot throughout the reach. During the one percent annual chance flood event, the Project would not change WSE or storage areas south of the Pinto Creek confluence.

**Pajaro Lagoon and Pajaro Dunes**

**Conditions Without College Lake Pumped Flows**

With the Project, during April, proposed minimum flows in Salsipuedes Creek for fish passage are 1.0 cfs. The discharge in Salsipuedes Creek would therefore be lower than under current conditions. In addition, a portion of flows from the last storm of the season would be diverted instead of flowing downstream; without these flows to keep the lagoon open, the mouth of the lagoon may close earlier in the year. Figure 3.3-8 compares the modeled percent of time the lagoon mouth is closed and the water level exceedances for Project conditions with existing modeled conditions. Water level exceedance indicates the percent of time the WSE in Pajaro Lagoon exceeds a given elevation.

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87 Neither of these conditions were compared to existing conditions as part of the modeling effort.

88 Provided water surface elevation in College Lake is higher than the “natural level for passage” of 59 feet NAVD88.
The effects of the Project on Pajaro Lagoon depend heavily on the relative annual wetness of conditions. Differences in closure timing and water levels were negligible in the 2016 and 2017 modeled water years. Differences were noticeable in both conditions in the 2014 and 2015 water years. In modeled spring 2015, reduced flows to the lagoon during the last rainstorm of the year as a result of the Project allowed waves to close the lagoon by about 5 to 6 weeks earlier than is typical. In 2014, seasonal closure occurred at roughly the same time for existing and Project conditions, which is likely due to the fact that wave conditions were conducive to mouth closure at that time, regardless of inflows.

The Project did not result in delays in seasonal breach events, since inflows during the first major rainfall event of each year were sufficient to fill and breach the lagoon regardless of prior College Lake releases.

Seasonal water levels in the lagoon tended to be similar to or lower than existing conditions for all modeled water years. Water level predictions are sensitive to the assumed amount of agricultural return flows entering the lagoon, which prevented inflows to the lagoon from dropping to zero in summer. The probability that water levels in the lagoon exceed 6 feet NAVD88 declined from about 50 percent of the time during the year to about 20 percent of the time during the year with the Project.

The predicted increase in expected closure days in April and May is a result of the earlier closure in the spring 2015 water year. Given the small sample size, it is unclear how relevant this result is. While the predicted change is within the expected uncertainty of model predictions for number of closure days per month (10 to 20 percent), it may be possible that during especially dry years, lower inflows could allow waves to close the mouth earlier in the year. With a greater range of years, the threshold for dryness that would influence this shift would become clearer. It is possible that most years would not experience this shift.

While the Project could hasten the closure of the lagoon mouth in spring, a condition during which the possibility of flooding at Pajaro Dunes could increase, by reducing the discharge flowing to the lagoon the Project would result in lower lagoon WSE, reducing the likelihood of flooding at Pajaro Dunes. Consequently, the Project would not adversely affect flood conditions at Pajaro Dunes during conditions without College Lake pumped flows.

**Conditions with Pumped Flows**

While the Project would generally operate as described above, and would not contribute discharge to Salsipuedes Creek during late summer and fall, PV Water may occasionally pump water out of College Lake during the summer or fall. The pumping rate is assumed to be the same as the proposed water treatment processing rate (a production rate of 9,000 gallons per minute or 20 cfs).

While this discharge is lower than the maximum rate of discharge under existing conditions, if pumped flows occur when the WSE is sufficiently elevated in Pajaro Lagoon, it could result in new flooding at Pajaro Dunes. To avoid this potential impact, PV Water would implement **Mitigation Measure HYD-3** would reduce this impact to less than significant.
Impact Conclusion

Implementation of the Project is not expected to substantially increase the rate or amount of, or adversely alter, flood flows with the possible exception of pumped flows. Implementation of Mitigation Measure HYD-3 would ensure that pumped flows do not result in new flood hazards or require mechanical lagoon breaching.

Mitigation Measure HYD-3: Avoid Flooding at Pajaro Dunes During Pumped Flow Events

PV Water shall not pump flow exceeding fish passage requirements into Salsipuedes Creek until receiving approval from the Santa Cruz County Flood Control District indicating that pumped flow can occur without lagoon breaching, based on current water surface elevation conditions in Pajaro Lagoon. The threshold water surface elevations described in the Santa Cruz County Flood Control District current lagoon breaching permits from the U.S. Army Corps of Engineers, the Central Coast Regional Water Quality Control Board, and the California Department of Fish and Wildlife will be used to assess whether pumped flows would require lagoon breaching. PV Water pumped flows shall not result in lagoon water surface elevations exceeding the threshold elevation identified in the lagoon breaching permits.

Impact HYD-6: The Project could conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. (Less than Significant with Mitigation)

Section 3.3.2.1 describes the 2017 Basin Plan. As discussed in Impact HYD-1, PV Water would require all contractors to apply for and obtain all NPDES permits and comply with conditions of the permit(s) as required by the Central Coast RWQCB, pursuant to adopted Mitigation Measure HWQ-1, including the Construction General Permit. Implementation of Mitigation Measure BR-1b would reduce the water quality impacts of inadvertent frac-out during construction of the College Lake pipeline at Corralitos Creek, and implementation of Mitigation Measure HYD-1 would reduce water quality impacts associated with construction in Pinto Creek associated with the College Lake pipeline. Operations of the project would be required to comply with applicable federal and state water quality regulations, such as the federal Clean Water Act and the state Porter-Cologne Water Quality Control Act, which establish beneficial uses of surface and ground waters, and water quality standards and objectives for waters of the state that are protective of water quality when pumping flows from College Lake to Salsipuedes Creek during the dry season, and would implement Mitigation Measure HYD-2a to avoid development of Cyanobacteria blooms in College Lake. Implementation of Mitigation Measure HYD-2b would avoid potential erosion or scour associated with the College Lake pipeline. The Project therefore would not conflict with or obstruct implementation of the water quality control plan.

PV Water elected to become the exclusive groundwater sustainability agency for the Pajaro Valley Groundwater Basin under the SGMA in 2015. With adoption of its first Basin Management Plan in 1994, PV Water has been implementing projects and programs designed to reduce overdraft, halt seawater intrusion, and improve and protect water quality within the Pajaro Valley Groundwater Basin for over 20 years. The Project is one of the potential projects included in the most recent,
updated Basin Management Plan (discussed in greater detail in Section 2.1.2.2) which would help meet the goals of stopping seawater intrusion and basin overdraft. Implementation of the Project would reduce overdraft conditions and seawater intrusion in the Pajaro Valley Groundwater Basin. Impacts on sustainable groundwater management would be beneficial, and the project would not conflict with implementation of a sustainable groundwater management plan.

Mitigation Measure BR-1b: Frac-out Contingency Plan (refer to Section 3.4, Biological Resources)

Mitigation Measure HYD-1: Implement Dewatering Best Management Practices for In-Water Construction (refer to Impact HYD-1)

Mitigation Measure HYD-2a: Water Quality Adaptive Management for College Lake (refer to Impact HYD-2)

Mitigation Measure HYD-2b: Scour Analysis for Pinto Creek Crossing (refer to Impact HYD-2)

Cumulative Impacts

Impact C-HYD-1: The Project, in combination with past, present, and probable future projects in the Project area, would not result in significant adverse cumulative hydrology impacts. (Less than Significant)

Hydrology impacts of the Project are related to seasonal shallow groundwater levels, sedimentation and erosion patterns in Salsipuedes Creek, and flooding in College Lake. The geographic scope of cumulative impacts on shallow groundwater includes College Lake. The geographic scope of cumulative impacts related to scour, changes in discharge, and flooding includes projects in or affecting discharge to Salsipuedes Creek, the Pajaro River, and Pajaro Lagoon.

Cumulative projects considered in as part of the cumulative scenario for this analysis include those listed in Table 3.1-1 (in Section 3.1, Overview) that could alter hydrology, including other Basin Management Plan projects proposed by PV Water and the USACE project. Other BMP projects include the Harkins Slough Recharge Facilities Upgrades Project, Watsonville Slough with Recharge Basins Project, and Murphy Crossing with Recharge Basins Project. While multiple BMP projects are proposed to divert surface water for groundwater storage, only the College Lake Project would divert water from or recharge water to the Salsipuedes Creek watershed.

Groundwater

No other projects in the cumulative scenario would affect shallow groundwater in College Lake, nor would any projects in the cumulative scenario reduce discharge within Salsipuedes Creek. There would be no adverse significant cumulative impact on groundwater as a result of the

89 The Murphy Crossing with Recharge Basins Project is not a Basin Management Plan Phase 1 project.
Project and other projects in the cumulative scenario. Overall, the cumulative projects would benefit the long-term sustainability of the groundwater basin.

**Sedimentation and Erosion**

The USACE project would alter patterns of discharge in Salsipuedes Creek and Pajaro River by installing flood control or reduction infrastructure. The USACE project (shown on Figure 3.1-1) would construct new levees along Corralitos Creek, set back from the existing natural streambanks. The USACE project would also replace existing levees with setback levees along Salsipuedes Creek. Setback levees would expand the meander belt for the streams and widen the waterway cross sections, resulting in reduced risk of levee erosion and increased deposition of sediments carried in floodwaters. There would be no adverse significant cumulative impacts related to sedimentation or erosion to which the Project would contribute.

**Discharge and Flooding**

Other cumulative projects would alter patterns of discharge by installing flood control or reduction infrastructure, such as the components of the USACE project along Pajaro River, Salsipuedes Creek, and Corralitos Creek. Section 3.3.3.2 includes a description of cumulative conditions modeling. The Project in combination with other cumulative flood projects planned for Corralitos and Salsipuedes Creeks could substantially alter flooding patterns in the area, a potentially significant cumulative impact. Figures 3.3-12a and 3.3-12b show the changes in flood inundation during the ten percent annual chance and one percent annual chance flood events in the cumulative scenario. WSE profiles for cumulative conditions are shown on Figures 3.3-10a, 3.3-10b, 3.3-11a, and 3.3-11b. While the cumulative impact would be significant, the Project’s contribution to this impact would not be cumulatively considerable for reasons discussed below.

**Paulsen Road, College Lake, and Orchard Park**

In the cumulative scenario, new inundated areas occur at the northern and southwestern borders of College Lake during the ten percent annual chance flood event, as shown on Figure 3.3-12a. The stage difference between cumulative effects and existing conditions scenarios within College Lake and in the areas immediately downstream were 0.1 feet and 0.2 feet for the 10-year and 100-year events, respectively. This change is primarily caused by the USACE project. While the State Route 152 and College-Holohan Road bridges in the USACE project allow for lower water surface elevations in much of Salsipuedes Creek under cumulative effects conditions, the Orchard Park area becomes inundated from the northern side, along Pinto Creek, which can occur either due to reverse flows from Corralitos Creek or due to College Lake flooding. Unlike under existing and proposed conditions, flood waters do not enter Orchard Park from the river-left bank of Corralitos Creek, upstream of the Salsipuedes Creek confluence, because the USACE project continues to divert flows.

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90 While flood modeling for the cumulative scenario did not incorporate the surface water diversion projects, these projects would divert water during the wet season, and so would lower the overall discharge to Pajaro River during wet periods (such as floods). For this reason, excluding the diversion projects from the flooding evaluation results in a conservative assumption regarding the magnitude of flood impacts.

91 Based on detailed investigation of particle tracking animations and 1-D/2-D lateral structure connection outputs (cbec, College Lake Integrated Resources Management Project Hydrologic and Hydraulic Modeling Technical Memorandum, November 8, 2018).
NOTE: In this figure, a threshold depth of 0.049 feet is used, such that depths that would round to 0.0 feet are not displayed.
One Percent Annual Chance (100-year) Flood Event: Cumulative and Existing Conditions

SOURCE: cbec, 2018
NOTE: In this figure, a threshold depth of 0.049 feet is used, such that depths that would round to 0.0 feet are not displayed.
includes levee improvements along Corralitos Creek as well as along the portion of Salsipuedes Creek upstream of the Corralitos Creek confluence. The flood waters that enter Orchard Park from the north become trapped by the improved levees as they flow south toward Corralitos Creek and must ultimately flow back north to escape into Salsipuedes Creek via Pinto Creek. This accumulation of water within Orchard Park as a result of the improved levees creates a backwater effect into College Lake that persists despite improved channel capacity in Salsipuedes Creek.

**Salsipuedes Creek and Corralitos Creek**

In the cumulative scenario, WSEs are higher in some locations and lower in other locations along Corralitos and Lower Salsipuedes Creeks. Near Orchard Park, WSEs are lower than existing conditions due to upgraded bridge crossings for State Route 152 and Holohan Road (as part of the USACE project). In other locations, where WSEs in the channels increase, the increased WSEs in the channels are due to the downstream USACE project improvements, which result in more water remaining in the channel during flood events, and less water spilling onto the floodplain. In the cumulative scenario, while the WSEs would increase in Salsipuedes Creek channel, flooding outside of the channel would be reduced due to the presence of more effective levees along the creek.

**Pajaro Lagoon**

Flood control and water supply projects throughout the Pajaro River watershed could affect water levels in the Pajaro Lagoon. Modeling of cumulative conditions created resulted in similar outcomes as with-Project conditions. Characteristics of the cumulative projects contribute to this result. First, the flow bypass requirements anticipated for the proposed Murphy Crossing project would counteract the reduction in flows for water supply diversion. Second, the Harkins and Watsonville Slough projects, conservatively assumed to divert nearly all water available for water supply, contributes a relatively small proportion of wet season discharge to Pajaro Lagoon.

**Climate Change**

In 2018, the State of California published the Fourth Climate Change Assessment, which includes a wide-ranging body of technical reports, including rigorous, comprehensive climate change scenarios at a scale suitable for illuminating regional vulnerabilities and localized adaptation strategies in California. The Fourth Climate Change Assessment also includes recommendations and information to directly inform vulnerability assessments and adaptation strategies for, among others, water resources management. As discussed in the technical report for the Central Coast, climate changes that will affect the Central Coast include:

- Maximum and minimum temperatures will increase through the next century.
- Average precipitation is expected to increase slightly, but annual precipitation variability will increase substantially.
- Atmospheric rivers, which are the dominant drivers of locally-extreme rainfall events, are expected to increase.

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The wettest day of the year will become wetter relative to historical conditions.

Water shortages during droughts may be exacerbated.

Modeling conducted for the College Lake Project incorporated a range of previous water year types to assess potential impacts over a range of hydrologic conditions; however, current 10- and 100-year design storms may not remain applicable over decadal or longer timescales. The Project would not alter elevation of the weir until after large storm events, and includes multiple features that result in operational flexibility to accommodate the variable climate conditions anticipated in the future.

At Pajaro Lagoon, inland migration of the beach in response to sea level rise would result in an increase in overall volume of the lagoon at times. The amount of increase in water storage in the lagoon will depend on several factors, including (1) the likelihood that agriculture fields would raise existing levees to continue to contain floodwaters in the lagoon, (2) the ability of sedimentation to partially offset some of the expected sea-level rise, and (3) the need to continue to breach the lagoon mouth at certain elevations to prevent flooding of existing properties. If, despite these factors, the volume of water stored in the lagoon increases, the net impact of the projects in the cumulative scenario could potentially decrease, since the alterations to inflows would represent a smaller fraction of the total lagoon volume.93

In summary, with climate change, the Project would not result in additional or more severe significant adverse impacts beyond those identified in this section. The Project’s contributions to factors causing climate change are evaluated in Section 3.5, Air Quality and Greenhouse Gas Emissions.

**Mitigation:** None required.

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**Impact C-HYD-2: The Project, in combination with past, present, and probable future projects in the Project area, would not result in significant adverse cumulative water quality impacts. (Less than Significant)**

Water quality impacts of the Project are related to the release of pollutants into stormwater during construction, changes in the duration of stable water conditions within College Lake and the Pajaro Lagoon, and changes in land use resulting from Project implementation. The geographic scope for cumulative water quality impacts on College Lake, Salsipuedes Creek, and Pajaro Lagoon includes projects within the Salsipuedes Creek and Pajaro River watersheds.

As discussed in Impact HYD-1, compliance with applicable regulatory requirements designed to reduce the cumulative effects of development on water quality (such as the State Water Resources Control Board Construction General Permit) would ensure that the Project would not result in any

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93 Further modeling would be required to understand the likelihood of this outcome, especially since future precipitation and runoff conditions could also change, which would also impact the amount of water delivered to the lagoon, with or without the Project.
significant water quality impacts as a result of construction-related discharges and operational stormwater and treated water discharges.

In the Pajaro Lagoon, with implementation of the BMP projects that would alter discharge in Pajaro River and Watsonville/Harkins Sloughs, the cumulative effect on the duration of stable water conditions within the lagoon would be very similar to the estimated with-Project lagoon conditions. This occurs for two reasons. First, fish bypass requirements anticipated for the Murphy Crossing project reduce the effects of that project on lagoon conditions. Second, the Watsonville/Harkins Sloughs contribute a relatively small portion of the total discharge to Pajaro Lagoon. As a result, the modeled cumulative conditions closely mirror with-Project conditions in Pajaro Lagoon, which would be less than significant.

As discussed in Section 3.3.1.4, owners and operators of irrigated lands in the Pajaro River watershed are not currently meeting pollutant load allocations for nitrogen compounds and orthophosphate; however, TMDLs have been approved for these pollutants in the Pajaro River watershed and an implementation plan is in place, with a target of compliance within 25 years of the TMDLs’ effective date (July 12, 2016). Interim targets have been set for 2026 and 2031. Progress on the adopted TMDLs for nitrogen compounds and orthophosphate would reduce the nutrient loading of College Lake over time. While the Project would contribute to this reduction by reducing the area of irrigated land within the College Lake basin, it also could result in additional release of nutrients from the lake sediments and consequent cyanobacteria blooms in College Lake. Release of this water into Salsipuedes Creek could contribute to cumulative water quality impacts in the Pajaro River watershed. While the cumulative impact would be significant, the Project’s contribution to this impact would not be cumulatively considerable with implementation of Mitigation Measure HYD-2a.

Mitigation: None required.
3.4 Biological Resources

This section presents an analysis of potential impacts related to biological resources that would result from implementation of the proposed College Lake Integrated Resources Management Project (Project). The analysis includes siting options for both site options (preferred and optional) for the water treatment plant (WTP) as well as preferred and optional pipeline alignments for the College Lake pipeline. Information from the 2014 Basin Management Plan Update Program Environmental Impact Report (2014 BMP Update PEIR) that remains relevant and accurate for the purposes of describing the physical or regulatory setting of biological resources has been incorporated as appropriate. The Project includes mitigation measures adopted by the Board of Directors and several additional measures to reduce the severity and magnitude of potential environmental effects.

3.4.1 Setting

The 2014 BMP Update PEIR Section 3.4.1 describes existing biological resources in the Project region. Regional environmental setting information from the 2014 BMP Update PEIR is included below when relevant. Additional setting information based on database searches and surveys is provided below.

3.4.1.1 Definitions and Literature Review

The following terms are used throughout this section:

- For the assessment of biological resources, the “Project area” is defined as the area supporting any Project component (see Chapter 2, Project Description), including some areas assumed to be affected by construction or operations. The Project area includes the College Lake basin up to 70 feet North American Vertical Datum of 1988 (NAVD88), the proposed weir structure and intake pump station sites, the WTP sites (preferred and optional), the College Lake pipeline alignments (preferred and optional), and construction access and staging areas.

- The “biological resources study area” or “study area” includes a larger area within which potential effects on biological resources were studied for this evaluation. The study area includes the Project area as well as aquatic habitat within Salsipuedes Creek, the Pajaro River, and the Pajaro River Lagoon downstream of College Lake. Figure 3.4-1 shows the study area for biological resources.

- The term “special-status biological resources” is defined as plant, wildlife, or fish species, or natural communities that have some rarity, endangerment, or protection status conferred by state, federal, or local laws, regulations or policies (see Section 3.4.2, Regulatory Framework).

The following resources were used in the analysis of the Project:

- California Department of Fish and Wildlife’s (CDFW) California Natural Diversity Database (CNDDB). CNDDB reports occurrences of special-status species using United States Geological Survey (USGS) 7.5-minute topographic quadrangles. The study area is located in the following USGS 7.5-minute quadrangles: Watsonville West, Watsonville East,
 SOURCE: Esri, 2015; Carollo Engineers, 2017; ESA, 2018

College Lake Integrated Resources Management Project

Figure 3.4-1
Biological Resources Study Area
3. Environmental Setting, Impacts, and Mitigation Measures

3.4 Biological Resources

Soquel, Chittenden, Moss Landing, Prunedale, San Juan Bautista, Loma Prieta, Mt. Madonna, and Gilroy.\(^1\)

- California Native Plant Society, Rare Plant Program Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.45). The database search included the Watsonville West, Watsonville East, Soquel, Chittenden, Moss Landing, Prunedale, San Juan Bautista, Loma Prieta, Mt. Madonna, and Gilroy quadrangles.\(^2\)

- Information documented in prior environmental impact reports (EIRs) prepared by Pajaro Valley Water Management Agency (PV Water), including the 2014 BMP Update PEIR.

- The United States Fish and Wildlife Service (USFWS) National Wetlands Inventory maps were reviewed for mapped wetland features in or near the Project area.\(^3\)

Based on the review of these information sources, a table was compiled of the special-status biological resources with potential to occur within the study area (Table BIO-1 in Appendix BIO).

### 3.4.1.2 Surveys

Results from the following surveys and assessments were used in the analysis of the Project:

- On March 7, 2018, biologists with Environmental Science Associates (ESA) and Kittleson Environmental Consulting (KEC) performed a reconnaissance-level survey of the Project area to document site conditions and assess the potential for special-status biological resources to occur in and around the Project area.

- Aerial photographs and assessments from the 2014 BMP Update PEIR were used for descriptions of aquatic habitat within Salsipuedes Creek, the Pajaro River, and the Pajaro River Lagoon.

- Since 2001, KEC and collaborators have conducted numerous fish and wildlife field studies in the Pajaro River Flood Control Channel, Corralitos Creek/Salsipuedes Creek corridor, lower College Lake within the United States Army Corps of Engineers (USACE) flood control planning area downstream of the existing weir, and the Watsonville Slough system. Wildlife surveys conducted for Watsonville Sloughs Watershed Conservation & Enhancement Plan (2003), the Land Trust of Santa Cruz County-Watsonville Slough Farm (2009-2013), and the recently completed Caltrans Salinas Road interchange project have resulted in a substantial increase in data on California red-legged frog (\textit{Rana draytonii}; CRF) and western pond turtle (\textit{Actinemys marmorata}; WPT) populations and distribution in the lower Pajaro Valley.

- During summer and fall 2018, KEC conducted focused wildlife surveys on Salsipuedes Creek and the Pajaro River for USACE storm damage repairs and Zone 7 flood control clearing.

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from Murphy Road Crossing\textsuperscript{4} to the State Route (SR) 1 bridge.\textsuperscript{5} Surveys considered the potential presence of CRF, WPT, and San Francisco dusky-footed woodrat in the Salsipuedes Creek corridor and in mainstem Pajaro River, within the levees, and areas upstream (east) of SR 1.

- PV Water has funded five years of annual winter-spring waterfowl surveys at College Lake since approval of the 2014 BMP Update PEIR. Detailed waterfowl surveys by KEC and Bryan Mori Biological Consulting Services began in January 2014 and continued through 2018.

- An aquatic resources delineation was conducted within the Project area by ESA biologists on March 27 and 28, 2018.\textsuperscript{6}

- In 2017 and 2018, consultants to PV Water conducted a Critical Riffle Analysis to assess fish passage requirements downstream of College Lake.\textsuperscript{7}

### 3.4.1.3 Regional Setting\textsuperscript{8}

#### Pajaro Valley

Historically, the Pajaro Valley supported a variety of vegetation communities, including extensive riparian forests along waterways, oak savanna intermixed with grasslands in the lowland areas, mixed hardwood forests on hillsides, coastal dunes near the ocean, and coastal scrub on rocky sites. Although remnants of these habitats can be seen in isolated patches, much of the Pajaro Valley is now in agriculture. The Pajaro River Valley is an agricultural area drained by the Pajaro River and two of its major tributaries, Salsipuedes Creek and Corralitos Creek, as well as by Watsonville Slough and Harkins Slough. Portions of these watercourses are bounded by levees to control periodic winter flooding. Smaller drainages also are found in the immediate vicinity of the Pacific Ocean. Figure 3.4-1 shows College Lake and surrounding drainages.

For a general description of the Pajaro River watershed and regional hydrology as well as general climate characteristics, please refer to Section 3.3.1.1 in Section 3.3, Surface Water, Groundwater, and Water Quality.

#### Rivers and Creeks

The lowest reach of the Pajaro River extends 2.4 miles from the mouth of the river, at the Pajaro Lagoon, to the Thurwacher Road Bridge west of SR 1. This reach is bounded by levees on the Santa Cruz County side and a mix of levees and coastal bluffs on the Monterey County side and has a U-shaped channel with steep earthen banks. Riparian plants growing here are tolerant of brackish water conditions. As the river extends upstream to its confluence with Salsipuedes Creek, it has a wider channel, with areas of densely vegetated river terraces and grassy levee slopes. Areas of dense willows and cottonwood trees grow on the terraces. Salsipuedes Creek enters the Pajaro River in the City of Watsonville. From this creek confluence upstream to

\begin{footnotes}
\item[4] Murphy Road Crossing is located on the Pajaro River, approximately 4.5 miles southeast of College Lake, and approximately 5.0 river miles upstream of the Salsipuedes Creek confluence.
\end{footnotes}
Murphy Crossing, the Pajaro River channel morphology and vegetation cover are highly variable, with water flow generally intermittent with the channel bed dry in the summer months. The sediment in the channel bed and banks is unconsolidated coarse sands and gravels and is easily erodible.

Salsipuedes Creek is a major tributary of the Pajaro River flowing through a series of high grassy terraces contained by levees. The stream bottom is generally grassy, due to regular clearing of woody vegetation by Santa Cruz County Flood Control District, Zone 7, to reduce channel roughness and maintain hydraulic capacity. There is sparse tree cover outside the levees.

Corralitos Creek is a tributary to Salsipuedes Creek, and the confluence of the two creeks is approximately 2,000 feet downstream of College Lake. The watershed for Corralitos Creek extends to the north-northwest of Watsonville. Although Salsipuedes Creek is contained by levees, Corralitos Creek is not, and it supports a band of natural riparian vegetation along much of its length.

College Lake is a naturally occurring seasonally wet depression that receives water inflows from the Green Valley, Casserly, and Hughes Creek subwatersheds. Outflows from College Lake enter Salsipuedes Creek. In the early 1920s, local farmers reclaimed the area known as College Lake and in 1934, the Reclamation District 2049 (RD 2049) was formed. RD 2049 typically pumps the lake dry beginning mid-March to allow agricultural use of the lakebed (refer to Section 2.1.4 in Chapter 2, Project Description, for more information on current College Lake operations).

Emergent wetland vegetation occurs in the seasonally wet depression in the winter/spring; the amount of wetland depends upon the rainfall and the spring-season drawdown. Riparian vegetation occurs along portions of the lake edge and along the contributing tributaries.

### 3.4.1.4 Surface Water Hydrology of College Lake

For a description of the surface water hydrology of College Lake, please refer to Section 3.3.1.2 in Section 3.3, Surface Water, Groundwater, and Water Quality. For additional information on summer farming in the lake basin, please refer to Section 2.1.4.2 in Chapter 2, Project Description.

### 3.4.1.5 Vegetation Communities and Associated Wildlife Habitat in the Project Area

The Project area supports ten vegetation communities and associated wildlife habitats. Figures 3.4-2a through 3.4-2c depict the distribution of these areas in the Project area.

Vegetation types are discussed for each of the wildlife habitats and are based on the Preliminary Descriptions of the Terrestrial Natural Communities of California\(^9\) (hereinafter referred to as “Holland”) and A Manual of California Vegetation, Second Edition\(^10\) (hereinafter referred to as “Sawyer et al.”).

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Riparian Scrub

Riparian scrub is found along the east margin of College Lake in one small location. This broadleaf deciduous forest is dominated by native riparian species including arroyo willow (Salix lasiolepis) and red willow (Salix laevigata). Associated species include California blackberry (Rubus ursinus), nettle (Urtica sp.), curly dock (Rumex crispus), and coyote brush (Baccharis pilularis). Riparian scrub contains elements of Central Coast Arroyo Willow Riparian Forest as described in Holland\(^\text{11}\) and also conforms to the Salix lasiolepis Shrubland Alliance in Sawyer et al.\(^\text{12}\)

Riparian scrub provides cover and resources for a variety of wintering and breeding birds, such as yellow-rumped warbler (Dendroica coronata), warbling vireo (Vireo gilvus), orange-crowned warbler (Oreothlypis celata), and Wilson’s warbler (Cardellina pusilla). The mixed understory in this community supports a variety of small mammals and reptiles, including raccoon (Procyon lotor), deer mice (Peromyscus maniculatus), and coast garter snake (Thamnophis elegans terrestris).

Riparian Forest

Riparian forest was observed along portions of College Lake and its tributaries. This broadleaf deciduous forest is dominated by native riparian species including arroyo willow, red willow, black cottonwood (Populus trichocarpa), alder (Alnus spp.), western sycamore (Platanus racemosa), coast live oak (Quercus agrifolia), box elder (Acer negundo var. californicum), shining willow (Salix lasiandra var. lasiandra), and dogwood (Cornus sp.). Understory species include poison-oak (Toxicodendron diversilobum), mugwort (Artemisia douglasiana), California blackberry, and stinging nettle. Invasive, non-native plant species are often found at the edge of the forest, such as adjacent to roadways; non-native species of poison hemlock (Conium maculatum), giant reed (Arundo donax), and bristle ox-tongue (Helminthotheca echioides) were observed. Riparian forest contains elements of the Central Coast Cottonwood-Sycamore Forest and the North Coast Black Cottonwood Riparian Forest\(^\text{13}\), as well as the Populus trichocarpa Forest Alliance and the Salix lucida\(^\text{14}\) Woodland Alliance.\(^\text{15}\)

Wildlife species found in riparian forest are similar to those species found in riparian scrub, as described above. Within the northeast parcel of College Lake (owned by PV Water), mature and decadent cottonwoods and willows provide excellent foraging habitat for brown creeper (Certhia americana), chestnut-backed chickadee (Poecile rufescens) and multiple woodpecker species. Numerous standing snags provide cavity-nest habitat for species like tree swallows (Tachycineta bicolor) and violet-green swallows (Tachycineta thalassina).

\(^{11}\) Holland, R. F., Preliminary Descriptions of the Terrestrial Natural Communities of California. California Department of Fish and Game, Sacramento, CA., 1986.


\(^{13}\) Holland, R. F., Preliminary Descriptions of the Terrestrial Natural Communities of California. California Department of Fish and Game, Sacramento, CA., 1986.

\(^{14}\) Salix lucida is a nomenclatural synonym for Salix lasiandra var. lasiandra (shining willow or Pacific willow).

Figure 3.4-2c
Existing Habitats
Freshwater Emergent Wetland

One small patch of freshwater emergent wetland is present in College Lake in an area of prolonged inundation, and smaller isolated patches may be present in the understory of the large riparian forest in the northeast area of the lake (Figure 3.4-2a). Dominant species include cattails (Typha sp.) and tules (Schoenoplectus sp.), along with other herbaceous wetland species such as smartweed (Persicaria spp.). Freshwater emergent wetland can also be classified as Coastal and Valley Freshwater Marsh as described in Holland (1986) and also conforms to the Typha (angustifolia, domingensis, latifolia) Herbaceous Alliance in Sawyer et al. (2009).

Freshwater emergent wetland may be used by birds associated with vegetated aquatic habitats such as marsh wren (Cistothorus palustris) and red-winged blackbird (Agelaius phoeniceus). This habitat may also be used by amphibians including the Sierran treefrog (Pseudacris sierra) and American bullfrog (Lithobates catesbeianus).

Coyote Brush Scrub

The Project area supports narrow bands of coyote brush scrub along moderate to steep banks, on the east side of the lake basin. This scrub type is dominated by the native shrub coyote brush, yet other species may also be present such as poison oak and California blackberry. Within the Project area, the understory is comprised of non-native grasses, such as wild oats (Avena spp.) and ripgut brome (Bromus diandrus). It conforms to Northern Coastal Scrub and the Baccharis pilularis Shrubland Alliance.

Coyote brush scrub habitat at College Lake provides cover and food for a variety of resident and wintering sparrows, house finch (Haemorhous mexicanus), lesser goldfinch (Spinus psaltria), American goldfinch (Spinus tristis), and Bewick’s wren (Thryomanes bewickii).

Seasonal Wetland

Seasonal wetlands are found along the margins of College Lake and in the northwestern and eastern extensions of the lake. These areas support a wide variety of annual and perennial herbaceous species. Some dominant species include smartweed, cocklebur (Xanthium strumarium), and rushes (Juncus spp.). California blackberry and Himalayan blackberry (Rubus armeniacus) are also prevalent in seasonal wetlands near the existing weir, along some ditches, and as riparian understory. Seasonal wetlands may be mowed or disked in some years, particularly the large areas at the northwest end of College Lake, located in the portion of the lake that has been farmed within the past decade. Multiple seasonal wetlands at higher elevations (63 to 70 feet NAVD88) located on slopes appear to be supported by groundwater sources during the growing season. Seasonal wetland

most closely matches the description for Vernal Marsh,\textsuperscript{20} as well as the \textit{Polygonum lapathifolium-}
\textit{Xanthium strumarium} Herbaceous Alliance.\textsuperscript{21}

Wildlife species found in seasonal wetlands are similar to those found in the freshwater emergent
wetland, described above.

\textbf{Agriculture}

The deep alluvial soils along the floodplain of the Pajaro River and tributaries support a variety of
row crops as well as orchards and vine/bush crops. The very mild climate in this region makes it
suitable for crops such as strawberries, raspberries, blackberries, apples, flowers, lettuces,
artichokes, and other fruits and vegetables. Agricultural habitats are subject to periodic disking,
planting, harvesting, and the application of herbicides, pesticides, and fertilizers which prevent
the establishment of natural plant species and communities. Agricultural fields located at
elevations above approximately 62.5 feet NAVD88 can be planted with berries and orchards (i.e.,
crops requiring a longer growing season) while agricultural fields below 65.2 feet NAVD88 are
typically planted with vegetable row crops (i.e., crops requiring a shorter growing season). Crop
selection is directly related to elevation and location within the College Lake basin.

Agricultural fields within the College Lake basin are periodically fallowed, at the discretion of the
farmer. In fallow years, these fields support weedy plant species, including: bristly ox-tongue;
cocklebur; swamp pigweed (\textit{Crypsis schoenoides}, \textit{C. vaginiflora}); fat-hen (\textit{Atriplex prostrata});
smartweeds; and, curly dock. Many of these plants are adapted to seasonal inundation, open, bare
ground, rapid maturity, and high seed production, and rapidly colonize bare farm fields in the spring
during low-water periods or as College Lake is drained in April. No special-status plant species are
expected to occur in the active cropland agricultural areas, or areas periodically fallowed.

Agricultural areas can support wildlife species that have adapted to disturbances, but generally
support few wildlife species because of their lack of diversity in vegetation and foraging
opportunities. California ground squirrels (\textit{Ottospermophilus beecheyi}) and Botta's pocket
gopher (\textit{Thomomys bottae}) often occur along the margins of cropland. Raptors such as red-tailed
hawk (\textit{Buteo jamaicensis}), American kestrel (\textit{Falco sparverius}), white-tailed kite (\textit{Elanus leucurus}),
and northern harrier (\textit{Circus hudsonius}) often forage for these and other small rodents over
agricultural lands. Fallow fields can attract other foraging birds, including Brewer's blackbird
(\textit{Euphagus cyanocephalus}), American pipit (\textit{Anthus rubescens}) and killdeer (\textit{Charadrius vociferus}).

\textbf{Farmed wetlands}

During the wet season, the higher elevations along the margins of College Lake (approximately
58 to 62.5 feet NAVD88) are inundated continuously (in above-average rainfall years) or
periodically (in below-average rainfall years) and the seasonal vegetation described above may
establish opportunistically as a result of the year-specific inundation pattern. These conditions

\textsuperscript{20} Holland, R. F., \textit{Preliminary Descriptions of the Terrestrial Natural Communities of California.} California
Department of Fish and Game, Sacramento, CA., 1986.

meet the definition of “wetlands” provided by the USACE\textsuperscript{22} and U.S. Environmental Protection Agency\textsuperscript{23} even though these areas support hydrophytic vegetation only for a very short period of time. This highly managed system presents a unique situation where farm fields provide aquatic habitat during the winter and early spring, seasonal wetland habitat for a brief period as College Lake is drawn down, arable farmland in the summer, and fallow fields in the fall and early winter. These areas are not classified as open water because they lack an ordinary high water mark.

**Annual Grassland**

This community typically comprises a dense to sparse cover of annual grasses, often associated with numerous species of annual and perennial forbs. These grasslands grow actively during winter and spring and remain dormant during summer and early fall. In the Project area, annual grassland is generally found on fine textured, clay-rich soils that are not cultivated, such as some slopes abutting College Lake. Plant species typical of the area include wild radish (*Raphanus sativus*), bristly ox-tongue, Italian ryegrass (*Festuca perennis*), and brome grasses (*Bromus* spp.). The vast majority of grasslands within the Project area have been used for cultivated agriculture at some point and do not resemble native plant dominated grasslands in their species composition. Grasslands in the greater Watsonville area provide habitat for special-status species, including Santa Cruz tarplant (*Holocarpha macradenia*), Monterey spineflower (*Chorizanthe pungens* var. *pungens*), Congdon’s tarplant (*Centromadia parryi* subsp. *congdonii*), San Francisco popcorn flower (*Plagiobothrys diffusus*), Choris’ popcorn flower (*Plagiobothrys choristanus* var. *chorisianus*), Santa Cruz clover (*Trifolium buckwestiorum*), and Kellogg’s horkelia, yet none have been historically recorded from the Project area. In addition, long-term agricultural use of land within the Project area reduces the potential for species occurrence. Annual grassland can also be classified as Valley and Foothill Grassland as described in Holland (1986)\textsuperscript{24} and also conforms to the following vegetation types identified by Sawyer et al. (2009).\textsuperscript{25}

- *Brassica nigra* and other mustards Herbaceous Semi-Natural Alliance
- *Bromus* (diandrus, hordeaceus)- *Brachypodium distachyon* Herbaceous Semi-Natural Alliance

Annual grassland provides little cover for wildlife, yet numerous species forage and several species breed in this community. Small mammals such as deer mice, California ground squirrel, and Botta’s pocket gopher are common residents in annual grasslands. Larger mammals such as coyote (*Canis latrans*) and grey fox (*Urocyon cinereoargenteus*) occasionally forage in this community as well.

A variety of birds use annual grasslands as foraging habitat, including savannah sparrows (*Passerculus sandwichensis*) and western meadowlarks (*Sturnella neglecta*). Mourning doves


\textsuperscript{24} Holland, R. F., Preliminary Descriptions of the Terrestrial Natural Communities of California. California Department of Fish and Game, Sacramento, CA., 1986.

3. Environmental Setting, Impacts, and Mitigation Measures

3.4 Biological Resources

Zenaida macroura) may nest in grasslands in the Project area. Raptors, such as red-tailed hawks and northern harriers (Circus cyaneus), commonly forage over grasslands as well. Some species of raptors, such as red-tailed hawks and white-tailed kites, may occasionally nest in trees within grasslands. Western fence lizards (Sceloporus occidentalis), gopher snakes (Pituophis catenifer catenifer), and other snakes are also likely to occur in this community. Long-term agricultural use in the area may limit habitat suitability in the Project area.

Urban/Developed and Upland Tree Groves

Urban development is scattered throughout the Project area. These areas consist of homes, buildings associated with farming, and towns, of which Watsonville is the largest. Urban and developed areas tend to be landscaped with non-native ornamental plant species, including groves of trees. Stands of upland landscape trees, including eucalyptus (Eucalyptus spp.), Monterey cypress (Cupressus macrocarpa) and coast live oak occur within the Project area, such as along the perimeter of College Lake. No special-status plant species occur in these areas; Monterey pine trees (Pinus radiata) within the Project area were planted, and are not considered native stands that would have a special status.

As with agricultural areas, developed and landscaped areas can support wildlife species that have adapted to site disturbance but native plants are often absent and wildlife abundance and diversity are generally low. Raccoons and Virginia opossums (Didelphis virginiana) occur regularly in urban areas. Birds adapted to the urban landscape include house finches, northern mockingbirds (Mimus polyglottos), mourning doves, European starlings, house sparrows (Passer domesticus), and rock doves (Columba livia).

Perennial Stream

One perennial stream is mapped within the Project area: Corralitos Creek. Additional perennial streams in the greater study area, such as Salsipuedes Creek and the Pajaro River, are described in Section 3.4.1.6. The bed of Corralitos Creek consists of silt and sand with some gravel. Water depth at the time of the March 2018 aquatic resources delineation was around one foot. Creek width based on the ordinary high water mark was estimated to be 50 feet based on an observable scour line below which leaf litter and organic material was absent and vegetation had obviously been affected by water flows and inundation. Bank vegetation consists of an overstory of riparian trees including arroyo willow and white alder with many understory vines including California blackberry, Cape ivy (Delairea odorata), and English ivy (Hedera helix). Because of this dense overstory canopy, emergent vegetation in the channel and along the lower banks within the ordinary high water mark is limited.

Ditch

Ditches are man-made irrigation or drainage features associated with agricultural production. Ditches within the study area are assumed to provide mainly a drainage function. Three perennial ditches are present within College Lake; these features are located at the lowest elevation within the lake basin and have surface water throughout the agricultural production season (refer to Figure 3.4-2a). A small seasonal engineered ditch, also called Pinto Creek or the Pinto Lake outflow ditch, is found adjacent to the pipeline alignment between the proposed intake pump.
station site and the preferred WTP site (refer to Figure 3.4-2a). Roadside ditches are present along West Beach Street (sometimes referred to as West Beach Street drainage ditch); the ditch adjacent to the south side of the street is within the Project area (refer to Figure 3.4-2c). These roadside ditches likely drain runoff from both the paved road and the adjacent farm fields, which then flows southwest into Watsonville Slough downstream of Beach Road, and eventually joins the ocean.

### 3.4.1.6 Aquatic Habitats in the Study Area Outside of the Project Area

Aquatic habitats within Salsipuedes Creek, the Pajaro River, and the Pajaro River Lagoon downstream of College Lake occur in the study area, but outside of the Project area. These reaches are shown on Figure 3.4-1 and described in Sections 3.4.1.3, 3.3.1.2, and 3.3.1.3.

### 3.4.1.7 Sensitive Natural Communities

Sensitive natural communities are those identified by CDFW as terrestrial natural communities native to California, listed in the California Sensitive Natural Communities list. Sensitive natural communities with State ranks of S1 – critically imperiled, S2 – imperiled, and S3 – vulnerable, are considered sensitive. The following sensitive natural communities occur in the Project Area:

- *Populus trichocarpa* Forest Alliance, black cottonwood forest (61.120.00, rank S3)
- *Salix laevigata* Woodland Alliance, red willow thickets (61.205.00, rank S3)
- *Salix lucida* Woodland Alliance, shining willow groves (61.204.00, rank S3)

The sensitive natural communities within the Project area are also designated as riparian habitat and wetlands and other waters of the United States and State (see Section 3.4.1.9) and are afforded a higher level of regulatory protection because of this designation.

### 3.4.1.8 Environmentally Sensitive Habitat Areas

The southern portion of the pipeline alignment for the Project is located within the Coastal Zone (refer to Figure 3.4-2c). The California Coastal Act defines Environmentally Sensitive Habitat Areas (ESHA) as “any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments.” (Cal. Public Resources Code Section 30107.5). ESHA is designated within the Coastal Zone by the California Coastal Commission (CCC) or in an applicable local coastal program. The Santa Cruz County Local Coastal Program (LCP) restricts development in environmentally sensitive coastal habitat areas. The study area contains potentially jurisdictional waters (the West Beach Street drainage ditch) within the Coastal Zone which, pursuant to Santa Cruz County Code criteria, would be considered ESHA.27

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### 3.4.1.9 Aquatic Resources in the Project Area

ESA’s aquatic resources delineation of the Project area\(^{28}\) concluded that there are 341.76 acres of potentially jurisdictional waters of the U.S. present, including the following:

- 179.71 acres of farmed wetland (cropland/agricultural);
- 50.70 acres of seasonal wetland;
- 0.90 acre of freshwater emergent wetland;
- 107.06 acres of riparian forest wetland;
- 0.41 acre of riparian scrub;
- 0.27 acre of perennial stream; and
- 2.71 acres of ditch.

The aquatic resources in the Project area are described in Section 3.4.1.5, Vegetation Communities and Associated Wildlife Habitats in the Project Area, and shown on Figure 3.4-2a.

### 3.4.1.10 Special-Status Species

For the purposes of this EIR, “special-status species” include threatened, endangered, rare, candidate, and other sensitive species identified in local and regional plans, policies, and regulations, and by the CDFW, United States Fish and Wildlife Service (USFWS), and National Marine Fisheries Service (NMFS). Special-status species also include those species listed in Sections 15380(b)-(d) of the California Environmental Quality Act (CEQA) Guidelines. Special-status species include:

- Plant and wildlife species listed as rare, threatened, and endangered under the Federal Endangered Species Act (FESA) and California Endangered Species Act (CESA);
- Candidate species (species that are proposed for listing under either federal or state law);
- Species designated by CDFW as species of special concern or Fully Protected Species;
- Species protected by the federal Migratory Bird Treaty Act (MBTA) (16 United States Code [USC] Sections 703-711) and the California Fish and Game Code;
- Bald and golden eagles protected by the federal Bald and Golden Eagle Protection Act (16 USC Section 668); and
- Species that may be considered rare or endangered pursuant to Section 15380 of the CEQA Guidelines (including plants species with California Rare Plant Ranks of 1 or 2).

Appendix BIO provides the results of species occurrence database queries from the CNDDB, California Native Plant Society Electronic Inventory, USFWS, and NMFS. Based on this information, Table BIO-1 in Appendix BIO provides a focused list of special-status plant and animal species considered based on biologist expertise and includes an assessment of these

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species and their potential to occur within the study area based on previous special-status record locations and current site conditions. Based on this review, special-status species with a moderate or higher potential to occur within the study area are discussed in detail below.

Special-status plant species are either unlikely to occur or have a low potential to occur due to the absence of suitable habitat and regular or periodic disturbance by diskng.

**Fish**

**Pajaro River and the Eastern Watershed Fisheries**

The Pajaro River provides habitat for at least nine documented fish species, including native fish species such as south-central California coast (S-CCC) steelhead, Pacific lamprey (*Lampetra tridentata*), and hitch (*Lavinia exilicauda*).

**Steelhead**

The Pajaro River watershed is one of the major components of the S-CCC Distinct Population Segment (DPS) of steelhead, as defined by NMFS. Coastal steelhead are anadromous fish, spawning in coastal ocean tributaries but migrating to ocean waters as one- to three-year-old juveniles (smolts). Most of their adult life is spent in ocean waters, but they return to coastal tributaries to spawn. Steelhead in this DPS are listed as a federal threatened species.

In south-central California, near the southern limit of the range for steelhead on the Pacific Coast, it is estimated that annual S-CCC steelhead runs have declined dramatically from an estimated 25,000 returning adults historically, to currently less than 500 returning adults. Studies from the 1960s report steelhead runs in the Pajaro River ranging from 1,000 to 2,000 individuals (62 FR 43974). Reliable data to estimate current run size are not available, but are substantially smaller due to habitat quality declines stemming from water quality changes in the wake of land development along the watershed and loss of vegetation and channelization along riparian corridors. The Pajaro River serves as a migration pathway for adult steelhead migrating upriver to spawning and nursery habitat in the upper watershed, and for steelhead smolts migrating downriver from that habitat to the ocean. The adult steelhead migration period in the Pajaro River has not been studied, but is expected to be similar to Waddell Creek in northern Santa Cruz County where Shapovalov and Taft (1954) documented adults entering freshwater to spawn from late December into April, with peak migration occurring January through mid-March. Only about

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32 Shapovalov, L. and A. C. Taft, The Life Histories of the Steelhead Rainbow Trout (*Salmo gairdneri gairdneri*) and Silver Salmon (*Oncorhynchus kisutch*) with Special Reference to Waddell Creek, California, and Recommendations Regarding Their Management. State of California, Department of Fish and Game, Fish Bulletin No. 98, 1954.
8 percent of all adult steelhead captured in an upstream trap over a period of nine years (1933-1942) migrated after April 1.\textsuperscript{33} Most smolts migrate to the Pacific Ocean in April and May.

In the Pajaro River upper watershed, Pescadero, Uvas, Llagas, and Pacheco creeks and their tributaries provide potential spawning and rearing habitat. Pescadero and Uvas creeks provide access, spawning, and rearing in all but extreme drought years. Llagas and Pacheco creeks tend to be drier, and use of those streams is less frequent and less extensive.

During periods of lower flows beginning in late spring, the water temperatures of local streams increase. Part of this increase is due to the seasonal increase in day length and air temperatures, and part is due to the reduced temperature buffering provided by the reduced streamflows. Smolts can suffer from heat stress at higher temperatures; however, since smolts travel mostly at night when water temperatures are cooler, heat stress probably is minor for short migrations. Migrating smolts travel relatively quickly; therefore, temperature probably is not a problem at times when the flows are sufficient to allow easy passage through riffles. Steelhead spawning or rearing is unlikely to naturally occur in the Pajaro River downstream of Murphy Crossing because of the lack of spawning gravels and low and warm summer streamflows, but in May/June of 2008, KEC observed two steelhead spawning reds and young-of-the-year steelhead approximately 0.5 miles upstream of the SR 1 bridge following the nearby release of 42 adult steelhead rescued from drying reaches in Uvas Creek.\textsuperscript{34}

**Pacific Lamprey**

Pacific lamprey, a California species of special concern, is an anadromous species that, like steelhead, migrate into freshwater to spawn and juveniles return to the ocean to mature. Adult migration times for lamprey tend to occur somewhat later (March-May) than the peak of the steelhead adult migration (January-March). However, lamprey adults are able to negotiate relatively shallow riffles. Juvenile lampreys migrate to the ocean with peak winter flows, and rarely suffer migration blockage.

**Monterey Roach**

Monterey roach (\textit{Lavinia symmetricus subditus}), a subspecies of California roach and a California species of special concern, have similar habitat requirements to California roach in other areas where they are generally found in small streams and are adapted to life in intermittent watercourses where dense populations are frequently observed in isolated pools. Roach can tolerate a relatively wide range of temperatures and dissolved oxygen levels and are found in habitats ranging from cold, clear, well-aerated salmonid streams to intermittent streams where they can survive extremely high temperatures (30 to 35 degrees Celsius) and low dissolved oxygen levels (1 to 2 parts per million).\textsuperscript{35}

\textsuperscript{33} Ibid.

\textsuperscript{34} G. Kittleson, personal observation, May 29, 2008 and June 16, 2008.

\textsuperscript{35} Moyle, P.B., R. M. Quiñones, J. V. Katz and J. Weaver, Fish Species of Special Concern in California. Sacramento: California Department of Fish and Wildlife, 2015.
Monterey Hitch

Monterey hitch (*Lavinia exilicauda harengus*), a subspecies of hitch and a California species of special concern, can occupy a wide variety of habitats, but are most abundant in lowland areas with large pools or in small reservoirs. Monterey Hitch were found to be most abundant in low-gradient sites in the Pajaro River basin that had permanent water and large pools in summer. The water at these sites tended to be clear, warm in late summer, and moderately deep. Bottom substrates were mostly a mixture of sand and gravel and the presence of cover (e.g., fallen trees, overhanging bushes) was an important factor. Monterey hitch is known to occur in mainstem Pajaro River and upstream tributaries such as Uvas, Llagas, and Pacheco creeks.

Salsipuedes/Corralitos Creek Sub-Watershed Fisheries

S-CCC steelhead and Pacific lamprey regularly use the watershed of Corralitos Creek, which joins Salsipuedes Creek downstream of College Lake at SR 152. Diversion dams on Corralitos and Browns creeks and wells downstream of their confluence (operated by the City of Watsonville) affect spring and summer streamflows and may limit seasonal fish passage opportunities in lower Corralitos Creek and in Salsipuedes Creek.

Steelhead

Steelhead regularly spawn and rear in the Corralitos Creek watershed in Corralitos Creek, Shingle Mill Creek, Browns Creek, and Ramsey Creek. Upstream of College Lake, Casserly Creek and Green Valley Creek support steelhead and resident rainbow trout. Salsipuedes Creek is considered a migration corridor due to a lack of suitable spawning substrates and rearing pools, high water temperatures, and low summer flows with periodic fluctuations resulting from College Lake drainage pumping.

Corralitos Creek has long been recognized as a regionally important steelhead resource, and has been the beneficiary of several significant steelhead enhancement projects. Since 2008, four steelhead passage improvement projects have been completed by Santa Cruz County and the Resource Conservation District of Santa Cruz County at partial-barrier culverts on Corralitos Creek and its tributary Shingle Mill Creek. In addition, in 2008 the City of Watsonville rebuilt the fish ladder and screens to NMFS criteria at its Corralitos Creek diversion.

Inflows to College Lake come primarily from Casserly Creek and Green Valley Creek, which enters Casserly Creek immediately upstream of College Lake. Smaller tributaries, groundwater, and agricultural return flows also provide inflow to College Lake. Seasonally, flow direction along the reach of Salsipuedes Creek between College Lake and the Corralitos Creek confluence can be reversed and, which it is, surface water enters the lake from Salsipuedes Creek.

Green Valley Creek has two partial barriers to adult steelhead upstream migration, but more importantly, has low stream flows in its lower reaches by spring of even wet years. Poor smolt outmigration conditions appear to prevent maintenance of a steelhead run in Green Valley Creek. Smith noted that a healthy resident rainbow trout, rather than steelhead, population is apparently

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36 Ibid.
present in Green Valley Creek based upon lack of smolt colors or smolt-sized fish in spring, presence of abundant smolt-sized fish in late spring, abundance of resident adults in the population, and distinctive genetic structure compared to Corralitos Creek. Casserly Creek and two of its tributaries, Banks Creek and Gaffney Creek, do support a steelhead population, and flows sufficient for smolt migration to College Lake are present in Casserly Creek through May in most years.38

While College Lake and its main tributary stream, Casserly Creek, support steelhead, the size and condition of the steelhead run is less studied, and consequently less understood. However, available evidence suggests College Lake provides the significant steelhead habitat and population benefits typically associated with estuaries and floodplains. Studies have confirmed that size at ocean entry for juvenile salmonids plays a critical role in determining ocean survival,39 and therefore systems capable of producing greater numbers of relatively large juvenile salmonids each year are likely to have more robust adult populations.40 Moreover, high winter flows in small upper watershed streams tend to displace a relatively large percentage of small young-of-the-year steelhead year class, while downstream velocity refuges such as estuaries, floodplains, and lakes, can significantly increase juvenile winter survival, thus aiding in overall population stability and persistence. College Lake is hypothesized to provide such habitat for steelhead. A steelhead smolt outmigration study was conducted in the spring of 2011 at the outlet of College Lake in order to gather pertinent data on relative population size, seasonal use, and general condition of the steelhead population in this subbasin.41 The study was compromised by overwhelmingly high flows and tampering of the trap, and therefore did not provide population size estimates. Based on the limited data generated by the 2011 study, it appears likely that at least some juvenile steelhead from the upper watershed spend time rearing in College Lake during the winter and early spring prior to migrating out to the ocean.42 Scale samples collected from two steelhead smolts indicated recent growth rates, based on back calculation, of approximately 130 percent between winter annulus formation and the spring (April) capture dates. Upper watershed streams are typically not sufficiently productive to support such rapid growth rates in winter, but ponds, lakes, and seasonally inundated floodplains and agricultural fields have been shown to provide highly productive rearing habitat for juvenile salmonids.

The practice of draining College Lake through pumping occurs annually during the peak steelhead smolt outmigration period, and therefore blocks a presumably large portion of the smolt population in College Lake and Casserly Creek from migrating to the ocean. If left full, rather

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than annually drained, the lowland lake would be too warm to allow summer rearing by steelhead, especially in the presence of warm water fishes.

Salsipuedes Creek downstream of the Corralitos Creek confluence consist of a degraded channel flowing in a series of high grassy terraces contained by levees. The stream bottom is generally grassy, due to repeated clearing of woody vegetation, and tree cover is sparse. Summer flows are low and variable (due to intermittent pumping from College Lake). Salsipuedes Creek does not provide suitable spawning or summer rearing habitat for steelhead. No juvenile steelhead were observed during biological monitoring of construction and dewatering activities at approximately ten USACE storm damage repairs sites on Salsipuedes Creek during summer 2018.43

**Pajaro River Lagoon Fisheries**

**Steelhead**

Pajaro River and Salsipuedes Creek streamflows provide for steelhead passage and also supply freshwater to the Pajaro River estuary. In spring, the freshwater inflow provides a surface wedge of lighter freshwater on top of the salt water in the Pajaro River estuary. This freshwater wedge allows steelhead smolts to move up and down in the water column to aid in gradually adjusting to seawater. When flows are sufficient for passage to the estuary, the inflows are probably adequate to provide a good freshwater to saltwater transition zone. Migrating smolts may spend several weeks feeding in the estuary and adjusting to seawater. This transition may not be required, as many central California streams lack good transitional estuaries while sustaining steelhead populations. However, the transition may improve survival of smolts, especially smaller smolts, upon their entering the ocean.

A beach berm forms across the mouth of the Pajaro River in most years (refer to Appendix HYD). Beach berm formation at Pajaro River generally occurs once stream discharge has receded each year. Tidal flux through the mouth is substantially higher than freshwater inflows; even after the sandbar forms, seepage through the large sandbar probably is sufficient to prevent overtopping and sandbar breaching.

After sandbar formation, freshwater inflows lower the salinity of the summer lagoon and may be important to lagoon ecology.44 Based on observations between 2012 and 2017, the beach berm formed annually in mid to late summer, with the exception of drought years 2014-2015, when the beach berm formed earlier due to low Pajaro River discharge (Appendix HYD). This is generally much later than the period of steelhead smolt passage and estuary adjustment and is also later than the present practice of pumping water from College Lake. Juvenile steelhead have not been documented to rear in the Pajaro Lagoon during six years (2012-2017) of late summer sampling.45 However, some of these surveys (e.g., 2016 and 2017) have been conducted when the sandbar was open, creating tidally-influenced conditions that are not favorable to juvenile

43 Podlech, M., personal observations, July 2018.
steelhead rearing. Smith\textsuperscript{46} noted that steelhead apparently do not rear in the lagoon because spawning areas are far upstream within Pajaro River tributaries, but that the estuary provides potentially important feeding habitat in spring for outmigrating smolts.

**Tidewater Gobies**

Tidewater goby (*Eucyclogobius newberryi*), a federal endangered species, is present in the Pajaro River estuary and up to a mile further upstream in the Pajaro River. Sandbar formation is important for providing the calmer lagoon conditions favored by tidewater goby, and the salinity of the lagoon generally is not as important to goby viability. Aquatic sampling and surveys in the Pajaro Lagoon from 2012 through 2017 have found tidewater goby widely distributed in the Pajaro Lagoon, as far upstream as the Watsonville Wastewater Treatment Facility,\textsuperscript{47} but they are typically present in low numbers.\textsuperscript{48} Tidewater goby is also known to use the lowermost reach of Watsonville Slough, downstream of the Shell Road pump station. No tidewater goby studies have been conducted in the slough reaches areas upstream of Shell Road and San Andreas Road in Watsonville Slough.

The tidewater goby in central California maintain highly localized populations in lagoons ranging from freshwater (Soquel Creek in 1988, Pescadero Creek in 1985) to ocean salinities (Corcoran and Moran lagoons in 1996). After partial sandbar formation in late spring and summer, lagoon height increases, backing brackish water upstream to above SR 1. Tidewater goby may be found that far upstream in years of high abundance; however, in years of heavy winter floods, this species is probably confined to the downstream portion of the Pajaro River estuary and to Watsonville Slough.\textsuperscript{49}

**Critical Habitat**

Critical habitat for two federally listed fish species, S-CCC DPS and tidewater goby, is designated within the study area.

**South-Central California Coast Steelhead**

Critical habitat for the S-CCC DPS within the study area includes most, but not all, occupied habitat from the Pajaro River, including Salsipuedes Creek and Corralitos Creek. Primary constituent elements considered essential for the conservation of the S-CCC DPS are those sites and habitat components that support one or more life stages and contain physical or biological features essential to survival, growth, and reproduction.

The Federal Register critical habitat designation notice for S-CCC DPS (70 FR 52488) defines the primary constituent elements for S-CCC DPS habitat as follows:

\textsuperscript{46} Smith, J. J., Steelhead distribution and ecology in the upper Pajaro River system, 2002.
\textsuperscript{47} Kittleson, G., personal observation, 2012.
• Freshwater spawning sites with sufficient water quantity and quality as well as adequate substrate (i.e., spawning gravels of appropriate sizes) to support spawning, incubation and development.

• Freshwater rearing sites with: sufficient water quantity and floodplain connectivity to form and maintain physical habitat conditions and allow development and mobility; sufficient water quality to support growth and development; food and nutrient resources such as terrestrial and aquatic invertebrates and forage fish; and natural cover such as shade, submerged and overhanging large wood, log jams, aquatic vegetation, large rocks and boulders, side channels, and undercut banks.

• Freshwater migration corridors free of obstruction and excessive risk of predation with adequate water quantity to allow for juvenile and adult mobility; cover, shelter, and holding areas for juveniles and adults; and adequate water quality to allow for survival.

• Estuarine areas that provide uncontaminated water and substrates; food and nutrient sources to support growth and development; and connected shallow water areas and wetlands to conceal and shelter juveniles. Estuarine areas include coastal lagoons that are seasonally stable, predominantly freshwater - flooded habitats that remain disconnected from the marine environment except during high streamflow events, and tidally-influenced estuaries that provide a dynamic shallow water environment.

• Marine areas with sufficient water quality to support growth, development and mobility; food and nutrient resources such as marine invertebrates and forage fish; and nearshore marine habitats with adequate depth, cover and marine vegetation to provide shelter.

Tidewater Goby
Tidewater goby critical habitat Unit SC-8 (Pajaro River) includes the lower reach of the Pajaro River and the lagoon. This unit is currently occupied by tidewater goby. The entire unit is within the study area. The Federal Register critical habitat designation notice for tidewater goby (78 FR 8746) defines the primary constituent elements for tidewater goby as follows:

• Persistent, shallow (in the range of approximately 0.3 to 6.6 feet (0.1 to 2 meters)), still-to-slow-moving lagoons, estuaries, and coastal streams with salinity up to 12 parts per thousand, which provide adequate space for normal behavior and individual and population growth that contain one or more of the following:
  – Substrates (e.g., sand, silt, mud) suitable for the construction of burrows for reproduction;
  – Submerged and emergent aquatic vegetation, such as Sago pondweed (Stuckenia pectinata), ditch grass (Ruppia maritima), broadleaf cattail (Typha latifolia), and bulrushes (Scirpus spp.), that provides protection from predators and high flow events; or
  – Presence of a sandbar(s) across the mouth of a lagoon or estuary during the late spring, summer, and fall that closes or partially closes the lagoon or estuary, thereby providing relatively stable water levels and salinity.

Essential Fish Habitat
A portion of the study area has been identified by the Pacific Fishery Management Council as Essential Fish Habitat (EFH) for various life stages of marine and estuarine fish species managed under the following two Fisheries Management Plans (FMPs): Pacific Coast Groundfish FMP and Coastal Pelagic Species FMP. EFH is the aquatic habitat (water and substrate) necessary for
fish to spawn, breed, feed, or grow to maturity (50 Code of Federal Regulations 227) that will allow a level of production needed to support a long-term, sustainable commercial fishery and contribute to a healthy ecosystem.

**Pacific Coast Groundfish FMP**

The Pacific Coast Groundfish Fishery Management Council has designated EFH for 80-plus species of groundfish, which taken together include all waters from the high-water line and the upriver extent of saltwater intrusion in river mouths along the coast from Washington to California, including the Pajaro River. Within the study area, Starry Flounder (*Platichthys stellatus*) and English sole (*Parophrys vetulus*) have been reported by Smith to occur in the Pajaro River estuary.

**Coastal Pelagic Species FMP**

Four fish species, Pacific sardine (*Sardinops sagax*), northern anchovy (*Engraulis mordax*), Pacific mackerel (*Scomber japonicus*), and jack mackerel (*Trachurus symmetricus*), and one invertebrate species, California market squid (*Loligo opalescens*) are managed under the Coastal Pelagic Species FMP. The EFH designation for coastal pelagic species groups the managed species into one complex based on similarities in their life histories and habitat requirements. EFH is based upon a thermal range bordered within the geographic area where a coastal pelagic species occurs at any life stage, where the species has occurred historically during periods of similar environmental conditions, or where environmental conditions do not preclude colonization by the coastal pelagic species. Within the study area, Pacific sardine and northern anchovy have been reported by Smith to occur in the Pajaro River estuary.

**Wildlife Species**

**Amphibians**

**California Red-legged Frog**

The CRF is listed as threatened under FESA and is a California species of special concern. CRF are present in the Pajaro River in the study area. CRF have been observed at 19 distinct locations in the Pajaro River downstream of Murphy Crossing since 2009. The first records of CRF breeding in the main stem Pajaro River were made in March 2019. The location was a perennial side channel off the main Pajaro River that had developed as a result of scouring during 2017. Six egg masses and four adult frogs were observed at this location just upstream of the SR 1 bridge. Adult frogs were observed at this same location beginning in July 2018. CRF are also known to occur in Soda Lake and Chittenden Pass upstream of the study area, the Watsonville Slough system to the north and the Elkhorn Slough system to the south.

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CRF have not been observed in College Lake, or the Corralitos Creek/Salsipuedes Creek corridor, nor have they been observed in those areas in daytime surveys conducted during annual waterfowl surveys from 2014 to 2018. However, the riparian forest and scrub within College Lake, riparian forest and aquatic habitat north of Paulsen Road, Corralitos Creek, and aquatic habitat within Salsipuedes Creek in the study area provide potential non-breeding aquatic habitat and breeding habitat in some locations. CRF may also occasionally occur along College Lake shoreline. Annual grassland adjacent to potential aquatic habitat provide upland refugia or dispersal habitat for CRF. There is low potential for CRF to occur within agricultural drainage ditches within the study area including the Pinto Creek drainage ditch and the West Beach Street drainage ditch. Bullfrogs are occasionally seen in the West Beach Street ditch and connecting agricultural ditches, which can reduce habitat quality for CRF.

**Reptiles**

**Western Pond Turtle**

WPT occurs in the Pacific Coast region of North America from Washington State to Baja California, west of the Cascade Mountains and Sierra Nevada Range. It is a California species of special concern. It is the only native turtle in California. Recent genetic studies indicate the presence of four groups or clades within the species; although historically there were two recognized subspecies. The species appears to be declining in abundance in the northernmost and southernmost portion of its range, but not in the core of its range from central California to southern Oregon. The primary threats are loss and alteration of both aquatic and terrestrial habitats. These losses fragment remaining populations and, perhaps, magnify the effects of introduced species through predation, competition, and epidemic diseases.

Within the Pajaro River, WPT are widespread in both the main river channel and off-channel scour areas where suitable pools occur. They are commonly observed during warm, sunny days basking on submerged wood and mud banks from Thurwachter Road Bridge upstream to Murphy Crossing. Results from a mark-recapture study conducted between 2009 to 2013 estimate a population of approximately 150 WPT within the Pajaro River study area below Murphy Crossing to the Pajaro Lagoon. Although the population appears to be skewed towards adults with a male-biased sex ratio, enough juveniles and subadults have been observed to confirm that a reproducing population inhabits the lower Pajaro River watershed. Potential and confirmed nesting habitat is present in the non-native grassland and weedy, ruderal habitat near the river and within the channelized floodplain of the Pajaro River. All age classes, from hatchling to adult, have been documented.

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54 Kittleson, G., personal observation, 2018.
57 Ibid.
Elsewhere in the vicinity of the study area, individual WPTs have been observed in Pinto Lake, Struve Slough, Watsonville Slough, Hanson Slough and at the Salinas Road Pond. No WPT have been observed in or downstream of College Lake, or in Salsipuedes Creek, upstream of the confluence with the Pajaro River. Despite the paucity of WPT data in College Lake, Pinto Lake, and Kelly Lake, WPT may be expected to occur throughout the study area riparian/wetland system.

**Birds**

In response to comments received on the Notice of Preparation, the following discussion of birds includes descriptions of general avian resources of the College Lake, Corralitos Creek, and Pajaro River watersheds, in addition to descriptions of specific special-status species listed in Table BIO-1 in Appendix BIO.

**College Lake Area Avian Resources**

As a managed, seasonal surface water body surrounded by a mix of riparian, grassland, farmland and developed areas, College Lake provides a range of habitat conditions that reflect the wide range bird use observed. College Lake is renowned for its wide range of wading bird, waterfowl and raptor species. College Lake is a well-known winter bird stopover location.

College Lake has 231 documented bird species, more than half of the 445 bird species that have been identified county-wide. Due to its recognized value as a regionally significant waterfowl habitat, PV Water has funded five years of annual winter-spring waterfowl surveys at College Lake since approval of the 2014 BMP Update PEIR. Formal surveys began January 2014 and are continuing through 2018. The purpose of this effort is to develop a more detailed baseline of bird populations, species diversity, seasonal variations, and habitat use throughout College Lake’s storage area and adjacent wetland, upland, and riparian habitats. During the past five years of PV Water-funded waterfowl surveys, between 82 and 140 species have been documented at College Lake each study season. Notably, eight species of nesting raptors have been observed, including white-tailed kite, a CDFW Fully Protected Species.

The development of this multi-year avian resource baseline information is critical to understand the potential Project impacts on (1) waterfowl use in the over-wintering season and (2) shorebird use that typically occurs during the spring migration season and corresponding lake draining period in mid-March to mid-April of each year. In addition, a focused breeding bird census is underway County-wide in 2018 and includes the Project area and watershed. Adaptive management of any approved water supply alternative would utilize this baseline, pre-Project data.

The data reflected the conversion from deep winter ponding to willow lacustrine habitat to mudflat as the lake bottom is drained for active farming. Because it is rapidly drained for farming in the spring migration period, College Lake is unique in the Central Coast when transitory freshwater mudflats appear for several weeks during spring migration, a time when the

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Watsonville Sloughs and other neighboring lakes are filled with winter runoff. This conversion results in important spring migration habitat for waterfowl and shorebirds. A paucity of data for summer and early fall corresponds with the typical onset of active row crop agriculture, following pump out of the basin and its drainage channels.

Table 3.4-1 lists the most common waterfowl species totals for each study season. The most commonly observed species is American coot, with nearly 25,000 individuals counted. Ruddy duck (*Oxyura jamaicensis*) is the second most numerous waterfowl species observed in the study period with 13,220 individuals documented.

The 2014 to 2018 College Lake waterfowl study period encompasses a wide range of water year types, ranging from critically dry to extremely wet. The dates, rates and extent of College Lake filling varied from year to year during the study period. The initial 2014 study year had late light rains and extremely low runoff that did not fill and spill the College lake. The opposite conditions occurred in 2017, which saw almost five months of water surface elevations over 62 feet NAVD88 and persistent flooding conditions over Paulsen Road at the Casserly Creek outlet into College Lake. Observed winter-spring waterfowl abundance at College Lake reflects this variability. Differences in water year type and relative abundance by month (monthly total divided by number of surveys) for the most commonly observed waterfowl species is shown in Table BIO-2 at the end of Appendix BIO.

Spring shorebird and wading bird use of College Lake is highly dependent on annual RD 2049 pumping operations. The shorebird and wading bird abundance at College Lake from 2014 to 2018 also reflects the wide variability in water year type, but shows a regular peak in April and May during the lake’s rapid drawdown. Two wading bird species, great blue heron (*Ardea herodias*) and great egret (*Ardea alba*), nest locally at Pinto Lake and can be found in relatively large numbers during and after the drawdown period feeding on abundant small fish and Louisiana swamp crayfish (*Procambarus clarkia*) that are stranded in low-lying mudflat areas, flooded furrows, and ditch lines. Waterfowl and shorebird nesting observations are limited at College Lake. Nesting attempts by Canada goose, mallard, pied-billed grebe, killdeer, and American avocet (*Recurvirostra americana*) have been documented during the 2014 to 2018 bird study period, but only Canada geese, pied-billed grebe and mallard appear to successfully fledge young at College Lake. Killdeer and American avocet nesting at College Lake appears to have limited success due to nest predation and challenges presented by water drawdown.

Factors besides water level that have been shown to annually affect waterfowl and shorebird abundance and distribution include: crop choice; type and timing of active farming in the agricultural wetlands; vegetation types in active and fallowed fields; slope-side farming and orchard activity; and amount and duration of mudflat habitat. The persistent presence of predators like American peregrine falcon (*Falco peregrinus*), bald eagle (*Haliaeetus leucocephalus*), and coyote during annual waterfowl surveys have been shown to influence waterfowl behavior and numbers during counts.
### Table 3.4-1

**2014-2018 College Lake Study Waterfowl Totals**

<table>
<thead>
<tr>
<th>Species Name</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>Study Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Coot - <em>Fulica americana</em></td>
<td>1247</td>
<td>11834</td>
<td>4266</td>
<td>2055</td>
<td>5552</td>
<td>24954</td>
</tr>
<tr>
<td>Ruddy Duck - <em>Oxyura jamaicensis</em></td>
<td>2319</td>
<td>3725</td>
<td>2231</td>
<td>1999</td>
<td>2946</td>
<td>13220</td>
</tr>
<tr>
<td>American Wigeon - <em>Mareca americana</em></td>
<td>772</td>
<td>1295</td>
<td>4573</td>
<td>580</td>
<td>777</td>
<td>7997</td>
</tr>
<tr>
<td>Northern Shoveler - <em>Spatula clypeata</em></td>
<td>1009</td>
<td>2255</td>
<td>1423</td>
<td>376</td>
<td>2437</td>
<td>7500</td>
</tr>
<tr>
<td>Mallard - <em>Anas platyrhynchos</em></td>
<td>3677</td>
<td>718</td>
<td>1315</td>
<td>558</td>
<td>1180</td>
<td>7448</td>
</tr>
<tr>
<td>Ring-necked Duck - <em>Aythya collaris</em></td>
<td>887</td>
<td>1035</td>
<td>2012</td>
<td>1026</td>
<td>689</td>
<td>5649</td>
</tr>
<tr>
<td>Gadwall - <em>Mareca strepera</em></td>
<td>1047</td>
<td>812</td>
<td>648</td>
<td>171</td>
<td>896</td>
<td>3574</td>
</tr>
<tr>
<td>Canada Goose - <em>Branta canadensis</em></td>
<td>579</td>
<td>409</td>
<td>765</td>
<td>534</td>
<td>1169</td>
<td>3456</td>
</tr>
<tr>
<td>Canvasback - <em>Aythya valisineria</em></td>
<td>235</td>
<td>603</td>
<td>902</td>
<td>299</td>
<td>698</td>
<td>2737</td>
</tr>
<tr>
<td>Cinnamon Teal - <em>Spatula cyanoptera</em></td>
<td>297</td>
<td>232</td>
<td>554</td>
<td>36</td>
<td>150</td>
<td>1269</td>
</tr>
<tr>
<td>Green-winged Teal - <em>Anas crecca</em></td>
<td>67</td>
<td>176</td>
<td>248</td>
<td>134</td>
<td>398</td>
<td>1023</td>
</tr>
<tr>
<td>Bufflehead - <em>Bucephala albeola</em></td>
<td>161</td>
<td>309</td>
<td>98</td>
<td>78</td>
<td>18</td>
<td>664</td>
</tr>
<tr>
<td>Hooded Merganser - <em>Lophodytes cucullatus</em></td>
<td>148</td>
<td>82</td>
<td>96</td>
<td>122</td>
<td>191</td>
<td>639</td>
</tr>
<tr>
<td>Pied-billed Grebe - <em>Podilymbus podiceps</em></td>
<td>100</td>
<td>117</td>
<td>73</td>
<td>57</td>
<td>193</td>
<td>540</td>
</tr>
<tr>
<td>Northern Pintail - <em>Anas acuta</em></td>
<td>20</td>
<td>36</td>
<td>188</td>
<td>70</td>
<td>106</td>
<td>420</td>
</tr>
<tr>
<td>Eared Grebe - <em>Podiceps nigricollis</em></td>
<td>1</td>
<td>49</td>
<td>22</td>
<td>14</td>
<td>11</td>
<td>97</td>
</tr>
</tbody>
</table>

SOURCE: Kittleson Environmental Consulting and Bryan Mori Biological Consulting Services, Results of Waterfowl Surveys Conducted at College Lake from January 2014 through 2018, 2018
Pajaro River and Corralitos Creek/Salsipuedes Creek Avian Resources

The bird community of the Lower Pajaro River was investigated in May and June of 2007, 2010, and 2012 to document the current status of populations using the Project area during the breeding season.\(^{60-62}\) The purpose of the ongoing County bird investigations is to assist in the assessment of potential impacts that may result from the Pajaro River Levee Bench Sediment Excavation Project and provide current field data to the USACE Pajaro River Flood Control Project EIR process. Although the surveys were done for Pajaro River and Corralitos/Salsipuedes Creek flood control management projects, the data and observations are applicable to the Project.

A total of 64 bird species were observed during the 2007, 2010, and 2012 study periods on the Pajaro River downstream of Murphy Crossing. The special-status species observed during the 2007, 2010, and 2012 study periods within the boundaries of the Pajaro River and Corralitos Creek/Salsipuedes Creek area were limited to yellow warbler (\textit{Setophaga petechia}) and white-tailed kite. Yellow warbler was confirmed as a nesting species throughout the willow riparian habitats in the lower Pajaro during general and plot surveys. White-tailed kite was regularly observed, but no nesting was confirmed on the Pajaro. Swainson’s thrush (\textit{Catharus ustulatus}) was observed to be a fairly common nesting species.

Special Status Bird Species

**Tricolored Blackbird**  
Tricolored blackbird (\textit{Agelaius tricolor}) is considered a California species of special concern and state candidate for listing as an endangered species. Tricolored blackbirds are found almost exclusively in the Central Valley and central and southern coastal areas of California. The tricolored blackbird is highly colonial and forms dense breeding colonies of up to tens of thousands of pairs. This species typically nests in tall, dense, stands of cattails or tules, but also nests in blackberry, wild rose bushes, and tall herbs. Nesting colonies are typically located near standing or flowing freshwater. Tricolored blackbirds form large, often multi-species, flocks during the non-breeding period and range more widely during the non-breeding period than during the reproductive season. There are no recent records of this species nesting in the vicinity of the study area. This species may occasionally forage in agricultural fields, riparian scrub, or emergent wetland vegetation in the winter, but is not expected to nest within the study area due to absence of recent known nesting occurrence records in the region.

**Short-eared Owl**  
Short-eared owl (\textit{Asio flammeus}) is considered a California species of special concern. This species inhabits densely vegetated grasslands, emergent wetlands, and shrublands along the Pacific coast with abundant prey (e.g., voles, other small mammals, birds, reptiles, amphibians, and arthropods). Short-eared owls require dense vegetative cover such as tall grasses and freshwater emergent vegetation for roosting and resting. Nesting occurs from April through July,

with nests constructed on dry ground in depressions concealed by dense vegetation. This species could forage in grassland or agricultural fields during winter or migration. Grassland areas within the study area are regularly disturbed by mowing or tiling, which limits nesting potential.

**Burrowing Owl**
Western burrowing owl (*Athene cunicularia*) is considered a California species of special concern. It is a small, terrestrial owl of open country that favors flat, open grassland and sparse shrubland ecosystems. In California, western burrowing owls are found in close association with California ground squirrels. Ground squirrels provide western burrowing owls with nesting and refuge burrows, and maintain areas of short vegetation height, providing foraging habitat and allowing for visual detection of avian predators by burrowing owls. Burrowing owls are semicolonial nesters, and group size is one of the most significant factors contributing to site constancy by breeding burrowing owls. The nesting season, as recognized by the CDFW, runs from February 1 through August 31. This species could forage in grassland or agricultural fields during winter or migration. Grassland areas within the study area are regularly disturbed by mowing or tiling, which limits nesting potential.

**Golden Eagle**
Golden eagle (*Aquila chrysaetos*) is a CDFW Fully Protected Species. Golden eagles nest in open areas on cliffs and in large trees, often constructing multiple nests in one breeding territory. They prefer open habitats such as rolling grasslands, deserts, savannahs, and early successional forest and shrub habitats, with cliffs or large trees for nesting and cover. Golden eagles have occasionally been observed over College Lake and are commonly observed hunting ground squirrels on grazing lands along Pioneer Road two miles northwest of College Lake. Closest nest occurrence is approximately 10 miles southeast near Sugarloaf Peak. While no nesting has been reported in the College Lake Project area, suitable nesting habitat is present within the College Lake basin in the mature upland eucalyptus stands near the Santa Cruz County Fairgrounds, behind Our Lady Help of Christians Catholic Church, and along the slopes above the Casserly Creek floodplain, upstream of Paulsen-Whiting Road.

**White-tailed Kite**
White-tailed kite is a CDFW Fully Protected Species. These raptors forage for small rodents and other prey primarily in open grassy or scrubby areas. They nest in large shrubs or trees adjacent to this habitat. Kites are likely to be found foraging in a variety of vegetation communities throughout the Project area such as grassland, northern coastal scrub, and central maritime chaparral. White-tailed kites have been observed foraging and nesting at College Lake in trees along the northern and western banks. Agricultural fields and grasslands provide foraging habitat and kites also have potential to nest in trees within the study area.

**American Peregrine Falcon**
Peregrine falcon is a CDFW Fully Protected Species. They are known throughout California and are year-around residents along the Pacific coast. The peregrine is a specialist, preying primarily on mid-sized birds in flight, such as pigeons and doves. Occasionally these birds will eat insects and bats. Although typical nesting sites for the species are tall cliffs, preferably over or near water, peregrines are also known to use urban sites, including bridges and tall buildings. This
species has been observed perched in the study area and foraging for smaller birds over College Lake. This species is not known to nest in the vicinity of College Lake and nesting habitat is limited in the study area.

**Bald Eagle**

Bald eagle is listed as endangered under CESA and is a CDFW Fully Protected Species. In California, breeding habitat is typically found near reservoirs, lakes, and rivers in mountain and foothill forests and woodlands. Bald eagles typically build large stick nests in the upper canopy of the tallest trees in the area. Since 2014, a pair has successfully nested in a mature eucalyptus grove in Gallighan Slough (approximately 4.5 miles southwest of College Lake) in four of the past five years.\(^6^3\) Bald eagles regularly hunt fish and American coot (*Fulica americana*) at College Lake when the lake is full. While no nesting has been reported in the College Lake Project area, suitable nesting habitat is present within the College Lake basin in the mature upland eucalyptus stands near the Santa Cruz County Fairgrounds, behind Our Lady Help of Christians Catholic Church, and along the slopes above the Casserly Creek floodplain, upstream of Paulsen-Whiting Road.

**Yellow Warbler**

The yellow warbler, a California species of special concern, is a common breeding bird in the Pajaro River, with confirmed breeding in the dense willow riparian habitat along the river.\(^6^4\) More recently, this species was observed in Casserly Creek in May 2017. This species breeds from April to late July and commonly nests in willow-riparian habitats. Despite many local declines, yellow warblers currently occupy much of their former breeding range, except in the Central Valley, where they are close to extirpation. Broad-scale significant declines have been documented for the U.S. Pacific Northwest region (1979 to 1999) and declines approaching significance in California (1968 to 2016).\(^6^5,6^6\) Both local abundance and long-term trends, however, vary greatly by region.

Yellow warblers generally occupy riparian vegetation near water along streams and in wet meadows.\(^6^7\) Throughout California, they are found in willows (*Salix* spp.) and cottonwoods (*Populus* spp.). This species has potential to nest and forage in riparian forest and scrub within the study area.

**Bryant’s Savannah Sparrow**

Bryant’s savannah sparrow (*Passerculus sandwichensis alaudinus*) is considered a California species of special concern which inhabits coastal marshes and adjacent transitional grasslands within the coastal fog belt from Humboldt Bay to Morro Bay.\(^6^8\) Bryant’s savannah sparrow is one

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\(^6^8\) Shuford, W. D., and Gardali, T., California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento, Bryant’s sparrow, pg 382-387, 2008.
of four subspecies of savannah sparrow which breed in California and is fairly common at College Lake\(^69\) between October and April, but has not been observed nesting at College Lake (typically between May and June) even though it is within the subspecies breeding range. This species builds an open-cup nest of grass beneath dense matted grasses or weeds on the ground.\(^70\) Bryant’s savannah sparrow utilizes fallow fields regularly to forage insects and seeds and is observed at the Pajaro River mouth; potential nesting habitat is present at the Pajaro Lagoon.\(^67\)

**Mammals**

**Western Red Bat**

Western red bat (*Lasiurus blossevillii*) is considered a California species of special concern. In California, the western red bat is found in coastal areas south of the San Francisco Bay and in the Central Valley and surrounding foothills. They roost in tree and shrub foliage, predominantly in edge habitats adjacent to streams and open fields. They are often associated with riparian habitats. The western red bat could occur in trees within the study area, particularly those associated with riparian areas.

**San Francisco Dusky-footed Woodrat**

San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*) is a common rodent species in riparian woodlands, oak woodland and oak scrub habitats in the Monterey Bay region, where it builds large, long lasting house structures from sticks and woody material (middens). It is a California species of special concern and is present in low numbers within riparian habitat in the study area. Woodrat middens have been observed in willow-riparian habitat of upper College Lake and woodrats are infrequently observed along the Pajaro River upstream of the Salispuedes confluence, within the narrow riparian woodland habitat.\(^71\)

### 3.4.2 Regulatory Framework

#### 3.4.2.1 Federal

**Federal Endangered Species Act**

The USFWS (jurisdiction over terrestrial and freshwater aquatic species) and NMFS (jurisdiction over most anadromous and marine fish, and mammals) oversee the FESA. The FESA prohibits the “take”\(^72\) of any fish or wildlife species listed as threatened or endangered, including the destruction

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\(^{70}\) Shuford, W. D., and Gardali, T., California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento, Bryant’s sparrow, pg 382-387, 2008.

\(^{71}\) Kittleson, G., personal observations, 2018.

\(^{72}\) The definition of “take” pursuant to the FESA is to “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.” (16 USCS § 1532). The USFWS has also interpreted “harm” to include significant habitat modification or degradation that significantly impairs essential behavioral patterns of fish or wildlife. NMFS has defined harm to mean “an act which actually kills or injures fish or wildlife. Such an act may include significant habitat modification or degradation which actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including, breeding, spawning, rearing, migrating, feeding or sheltering.” 50 CFR 222.102.
of habitat that could hinder species recovery. Section 7 of the FESA mandates that a federal agency undertaking funding, issuing a permit or authorization, or carrying out an activity, consult with the USFWS and, or NMFS, depending on the affected species, to ensure that federal agency actions do not jeopardize the continued existence of a listed species or destroy or adversely modify critical habitat for listed species. The federal agency is required to consult with the USFWS and NMFS if it determines the Project “may affect” listed species or critical habitat.

**Federal Migratory Bird Treaty Act**

The federal MBTA (16 USC Section 703) prohibits the pursuit, hunting, take, capture, or killing of migratory birds in the United States, including nests and eggs of migratory birds during the breeding season. The current U.S. Department of the Interior interpretation of the MBTA (memorandum M-37050 in December 2017) does not prohibit or penalize take of migratory birds that results from incidental take during operations. However, taking of nests from construction activity remains prohibited under MBTA.

**Magnuson-Stevens Fishery Conservation and Management Act**

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act or MSA) (16 USC Sections 1801–1884) of 1976, as amended in 1996 and reauthorized in 2007, is intended to protect fisheries resources and fishing activities within 200 miles of shore. Conservation and management of U.S. fisheries, development of domestic fisheries, and phasing out of foreign fishing activities are the main objectives of the MSA. The MSA provided NOAA Fisheries with legislative authority to regulate U.S. fisheries in the area between 3 miles and 200 miles offshore and established eight regional fishery management councils that manage the harvest of the fish and shellfish resources in these waters.

The MSA defines “essential fish habitat” as those waters and substrate that support fish for spawning, breeding, feeding, or maturation. The MSA requires that NOAA Fisheries, the regional fishery management councils, and federal agencies that take an action that may have an effect on managed fish species under MSA, identify essential fish habitat and protect important marine and anadromous fish habitat. The regional fishery management councils, with assistance from NOAA Fisheries, are required to develop and implement Fishery Management Plans. Fishery Management Plans delineate essential fish habitat and management goals for all managed fish species, including some fish species that are not protected under the MSA. Federal agency actions that fund, permit, or carry out activities that may adversely affect essential fish habitat are required under Section 305(b) of the MSA, in conjunction with required Section 7 consultation under FESA, to consult with NOAA Fisheries regarding potential adverse effects of their actions on essential fish habitat and to respond in writing to NOAA Fisheries’ recommendations.

**Clean Water Act Section 404**

The federal Clean Water Act (CWA) was enacted as an amendment to the federal Water Pollution Control Act of 1972, which outlined the basic structure for regulating discharges of pollutants to waters of the United States. The CWA serves as the primary federal law protecting the quality of the nation’s surface waters, including lakes, rivers, and coastal wetlands.
Waters of the United States are areas subject to federal jurisdiction pursuant to Section 404 of the CWA. Waters of the United States are typically divided into two types: (1) wetlands and (2) other waters of the United States. Wetlands are “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” (33 CFR Section 328.3(c)(4), 40 CFR Section 230.3(o)(3)(iv)). To be considered subject to federal jurisdiction, a wetland must normally support hydrophytic vegetation (plants growing in water or wet soils), hydric soils, and wetland hydrology. Other waters of the United States are seasonal or perennial water bodies, including lakes, stream channels, drainages, ponds, and other surface water features, that exhibit an ordinary high-water mark but lack positive indicators for the three wetland parameters (33 CFR 328.4).

CWA Section 404 regulates the discharge of dredged and fill materials into waters of the United States. Applicants must obtain a permit from the USACE for discharges of dredged or fill material into waters of the United States, including wetlands, before proceeding with a proposed activity.

3.4.2.2 State

California Coastal Act

The California Coastal Act (Public Resources Code Section 30000 et seq.) provides for the long-term management of lands within California’s Coastal Zone boundary, as established by the California Legislature and defined in the Coastal Act. Of primary relevance to terrestrial biological resources are Coastal Act policies concerning ESHAs and adjacent developments, and diking, filling, or dredging and continued movement of sediment and nutrients.

The CCC, in partnership with coastal cities and counties, plans and regulates the use of land and water in the Coastal Zone under the Coastal Act. Development activities are broadly defined by the Coastal Act to include: the construction of buildings and structures, divisions of land, and activities that change the intensity of use of land or public access to coastal waters. A development activity within the Coastal Zone generally requires a coastal development permit from either the CCC, or from a local government with a certified LCP, to ensure that the activity complies with the Coastal Act. The Coastal Act includes goals and policies that constitute the statutory standards that are applied to planning and regulatory decisions made by the CCC and by local governments.

The CCC generally treats wetlands, streams, riparian habitats, and open coastal waters as ESHAs, although exceptions may exist where the definition of ESHA is not satisfied. Because the CCC typically defines wetlands based on a “one-parameter approach”, CCC jurisdictional wetlands are typically greater in extent than those regulated by the USACE under the CWA. An ESHA may also be found in upland areas, for example stands of large, mature trees in an area otherwise lacking such habitat.

73 Environmental Laboratory, Corps of Engineers Wetland Delineation Manual, Final Report, Department of the Army Waterways Experiment Station, Vicksburg, Mississippi, January 1987.
The principal Coastal Act policy pertaining to ESHAs is Public Resources Code Section 30240, which provides: “Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within such areas.” ESHA policy is applied by the CCC or by local agencies with approved LCPs.

**California Endangered Species Act**

California adopted the CESA in 1984. The state act prohibits the take\(^{74}\) of state listed endangered and threatened species; however, habitat destruction is not included in the state’s definition of take. Section 2090 of CESA requires state agencies to comply with endangered species protection and recovery and to promote conservation of these species. The CDFW administers the act and authorizes take through Section 2081 agreements (except for designated fully-protected species, as described under the heading, California Fish and Game Code, below). Under CCR Title 14, Section 786.9(b), CDFW can also approve the take of state rare plants under Section 2081.

**California Fish and Game Code**

Under California Fish and Game Code (CFGC) Section 3503, it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto. CFGC Section 3503.5 prohibits take, possession, or destruction of any birds in the orders Falconiformes (hawks)\(^{75}\) or Strigiformes (owls), or of their nests and eggs.

CFGC Sections 3511 [birds], 4700 [mammals], 5050 [reptiles and amphibians] and 5515 [fish] allows the designation of a species as Fully Protected. This is a greater level of protection than is afforded by the CESA, since such a “Fully Protected” designation means the listed species cannot be taken at any time.

Under CFGC Sections 1600-1616, the CDFW regulates activities that would substantially divert, obstruct the natural flow of, or substantially change rivers, streams and lakes. CDFW’s regulated limits are defined in CFGC Section 1602 as, “bed, channel, or bank of, any river, stream, or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake….\)” The CDFW requires a Streambed Alteration Agreement for activities within its regulated area. If CDFW determines that a project would result in substantial adverse effects on an existing fish or wildlife resource, CDFW would prepare a Lake or Streambed Alteration Agreement that includes reasonable measures to protect the resources.

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\(^{74}\) Take, under the CESA, is defined as “to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.”

\(^{75}\) At the time Section 3503.5 was written, the order Falconiformes included diurnal birds of prey in the families Accipitridae (eagles, hawks, kites, harriers and others) and Falconidae (falcons and caracaras). In 2010, Accipitridae was placed in a new order, Accipitriformes, by the North American Classification Committee (NACC). However, for the purposes of this report, we interpret the reference to the order Falconiformes in Section 3503.5 to also include diurnal birds of prey in the order Accipitriformes.
CEQA Guidelines Section 15380

Although threatened and endangered species are protected by specific federal and state statutes, CEQA Guidelines section 15380 provides that a species not listed on the federal or state list of protected species may be considered rare or endangered if the species can be shown to meet certain specified criteria. These criteria have been modeled after the definition in the FESA and the section of the CFGC dealing with rare or endangered plants or animals. This section was included in the Guidelines primarily to deal with situations in which a public agency is reviewing a project that may have a significant effect on, for example, a “candidate species” that has not yet been listed by either the USFWS or CDFW. Thus, CEQA provides an agency with the ability to protect a species from a project’s potential impacts until the respective government agencies have an opportunity to designate the species as protected, if warranted.

Clean Water Act Section 401

Under CWA Section 401, applicants for a federal license or permit to conduct activities that may result in the discharge of a pollutant into waters of the United States must obtain certification from the state in which the discharge would originate or, if appropriate, from the interstate water pollution control agency with jurisdiction over affected water at the point where the discharge would originate. The California Regional Water Quality Control Board (RWQCB) administers this certification. Therefore, all projects that have a federal component and that may affect state water quality (including projects that require federal agency approval, such as issuance of a Section 404 permit) must also comply with CWA Section 401.

Porter-Cologne Water Quality Control Act of 1969

The Porter-Cologne Water Quality Control Act established the State Water Resources Control Board (State Water Board) and divided the state into nine basins, each with its own RWQCB. The State Water Board is the primary state agency responsible for protecting the quality of the state’s surface and subsurface water supplies, while the RWQCBs are responsible for developing and enforcing water quality objectives and implementation plans (basin plans).

The Porter-Cologne Water Quality Control Act authorizes the State Water Board to enact state policies regarding water quality in accordance with Section 303 of the CWA. In addition, the act authorizes the State Water Board to issue Water Discharge Requirements for projects that would discharge to state waters. “Waters of the state” are broadly defined as “any surface water or groundwater, including saline waters, within the boundaries of the state”76 and include isolated, intrastate, and non-navigable waters and/or wetlands. The Porter-Cologne Water Quality Control Act also provides for protection of the beneficial uses of waters of the state, as described in the regional basin plan.

With respect to biological resources, the State Water Board and RWQCBs have authority over any fill activities within state waters, including isolated water/wetlands that may be outside the jurisdiction of the USACE. The California Wetlands Conservation Policy (Executive Order W-59-93) established a primary objective to “ensure no overall net loss… of wetlands acreage

76 California Water Code Section 13050.
and values in California.” The RWQCBs implement this policy, which requires mitigation for wetland impacts.

3.4.2.3 Local

Table 2-10 in Chapter 2, Project Description, identifies the approvals from Santa Cruz County and/or the City of Watsonville required for the Project. Table 3.4-2 presents pertinent local plans and policies regarding biological resources to support County and City consideration of the Project’s consistency with general policies. In some cases, local policies are used in this EIR as criteria to determine the significance of physical effects on the environment (e.g., Impact BR-8 in Section 3.4.3.3).

| TABLE 3.4-2 |
| LOCAL PLANS AND POLICIES RELEVANT TO THE PROJECT |

| CITY OF WATSONVILLE PLANS AND POLICIES |

| City of Watsonville 2005 General Plan |
| Goal 9.8: Wildlife Habitat. Preserve and protect the remaining areas of wildlife habitat for their scenic and scientific value. |
| Implementation measure 9.A.4 Biological Study. The City shall cooperate with the County in preparing a biological study for protection of the sloughs and habitat dependent on the sloughs located in and around Watsonville. A plant inventory and map of sensitive biological and botanical resources should be a part of the study. |
| Implementation measure 9.F.1 Habitat Protection. Impacts to important wildlife habitat areas shall be identified as part of the City’s development review and environmental review processes, and appropriate mitigations shall be considered. Mitigation measures to be considered include: designation of sensitive areas as open space, restriction of new development on lands that provide important wildlife habitat, setback requirements, habitat conservation plans, and habitat mitigation banking. Lands within the urban limit line that provide important wildlife habitat include, but are not limited to the following: a) Riparian Corridors, b) Fresh Water Marshes and Sloughs, c) Woodlands and Steep Slopes. |

| SANTA CRUZ COUNTY PLANS AND POLICIES |

| Santa Cruz County General Plan / Local Coastal Program |
| Objective 5.1: To maintain the biological diversity of the County through an integrated program of open space acquisition and protection, identification and protection of habitat and wildlife corridors and habitats, low-intensity and resource-compatible land uses in sensitive habitats and mitigations on projects and resource extraction to reduce impacts on plant and animal life. (see Santa Cruz County General Plan/Local Coastal Program for details) |
| Policy 5.1.4: Implement the protection of sensitive habitats by maintaining the existing Sensitive Habitat Protection ordinance. The ordinance identifies sensitive habitats, determines which uses are allowed in and adjacent to sensitive habitats, and specifies required performance standards for land in or adjacent to those areas. Any amendments to this ordinance will require a finding that sensitive habitats will be afforded equal or greater protection by the amended language. |
| Policy 5.1.6: Sensitive habitats will be protected against any significant disruption of habitat values: and any proposed development within or adjacent to these areas must maintain or enhance the functional capacity of the habitat. Reduce in scale, redesign, or if no other alternative exists, deny any project which cannot sufficiently mitigate significant adverse impacts on sensitive habitats unless approval of a project is legally necessary to allow a reasonable use of the land. |
| Policy 5.1.11: For areas which may not meet the definition of sensitive habitat, yet contain valuable wildlife resources (such as migration corridors or exceptional diversity), protect these wildlife habitat values and species and use other mitigation measures identified through environmental review process. |

77 California Government Code Section 53091 exempts agencies like PV Water from complying with local building and zoning ordinances when locating or constructing facilities for the production, generation, storage, treatment, or transmission of water. California Government Code Section 65402(c) requires that PV Water notify cities and counties of its plans to construct projects or to acquire or dispose of property. The planning agency then has 40 days to determine project consistency with its general plan. If the planning agency disapproves, the disapproval may be overruled by PV Water.
TABLE 3.4-2 (CONTINUED)  
LOCAL PLANS AND POLICIES RELEVANT TO THE PROJECT

SANTA CRUZ COUNTY PLANS AND POLICIES (cont.)

Santa Cruz County General Plan / Local Coastal Program (cont.)

<table>
<thead>
<tr>
<th>Policy</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1.12</td>
<td>Require as a condition of development approval, restoration of any areas of the subject property which is identified as degraded sensitive habitat, with the magnitude of restoration to be commensurate with the scope of the project. Such conditions may include erosion control measures, removal of non-native or invasive species, planting with characteristic native species, diversion of polluting run-off, water impoundment, and other appropriate means. The object of habitat restoration activities will be to enhance the functional capacity and biological productivity of the habitat(s) and whenever feasible, to restore them to a condition which can be sustained by natural occurrences, such as tidal flushing of lagoons.</td>
</tr>
<tr>
<td>5.1.13</td>
<td>Designate the following areas as Riparian Corridors: a) 50 feet from the top of a distinct channel or physical evidence of high water mark on perennial stream; b) 30 feet from the top of a distinct channel or physical evidence of high water mark of an intermittent stream as designated from the General Plan maps and through field inspection of undesignated intermittent and ephemeral streams; c) 100 feet of the high water mark of a lake, wetland, estuary, lagoon, or natural body of standing water; d) The landward limit of a riparian woodland community; e) Wooded arroyos within urban areas. Transitional areas between terrestrial and aquatic systems are where the water table is usually at or near the surface, or the land is covered by water. Under a unified methodology now used by all federal agencies, wetlands defined as &quot;those areas meeting certain criteria for hydrology, vegetation, and soils.&quot; Examples of wetlands are saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, and fens.</td>
</tr>
<tr>
<td>5.1.14</td>
<td>Implement the protection of Riparian Corridors and Wetlands through the Riparian Corridor and Wetland Protection ordinance. The ordinance identifies and defines riparian corridors and wetlands, determines the uses which are allowed in and adjacent to these habitats, and specifies required buffer setbacks and performance standards for land in and adjacent to these areas. Any amendments to this ordinance will require a finding that riparian corridors and wetlands will be afforded equal or greater protection by the amended language.</td>
</tr>
<tr>
<td>5.1.15</td>
<td>Require a buffer setback from riparian corridors in addition to the specified distances found in the definition of riparian corridor. This setback will be identified in the Riparian Corridor and Wetland Protection ordinance and established based on stream characteristics, vegetation and slope. Allow reductions to the buffer setback only upon approval of a riparian exception. Require a 10-foot separation from the edge of the riparian corridor buffer to any structure. For wetlands, the buffer setback is included in the riparian corridor which surrounds the wetland.</td>
</tr>
<tr>
<td>5.1.16</td>
<td>Prohibit development within the 100-foot riparian corridor of all wetlands. Require measurements to prevent water quality degradation from adjacent land uses, as outlined in the Water Resources section.</td>
</tr>
<tr>
<td>5.1.17</td>
<td>Allow compatible uses in and adjacent to riparian corridors that do not impair or degrade the riparian plant and animal systems, or water supply values, such as non-motorized recreation and pedestrian trails, parks, interpretive facilities and fishing facilities.</td>
</tr>
<tr>
<td>5.1.18</td>
<td>Require development in or adjacent to wetlands to incorporate the recommendations of a management plan which evaluates: migratory waterfowl use December 1 to April 30; compatibility of agricultural use and biotic and water quality protection; and the protection of adjoining lands.</td>
</tr>
<tr>
<td>5.1.19</td>
<td>Require new water diversions, dams, and reservoirs which are constructed on anadromous fish streams to be designed to protect fish populations and to provide adequate flow levels for successful fish production.</td>
</tr>
<tr>
<td>5.1.20</td>
<td>Pending a determination based on a biological assessment, preserve perennial stream flows at 95 percent of normal levels during summer months and at 70 percent of the normal winter baseflow levels. Oppose new water rights which would diminish the instream flows necessary to maintain anadromous fish runs and riparian vegetation below the 97 percent/70 percent standard.</td>
</tr>
</tbody>
</table>

Santa Cruz County Municipal Code

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>16.30 Riparian Corridor and Wetland Protection</td>
<td>Chapter 16.30 Protection. No person shall undertake any development activities other than those allowed through exemptions and exceptions as defined in the Santa Cruz Municipal Code (see code for details)</td>
</tr>
<tr>
<td>16.32 Sensitive Habitat Protection</td>
<td>Chapter 16.32 Sensitive Habitat Protection (see code for details)</td>
</tr>
<tr>
<td>16.34 Significant Trees Protection</td>
<td>Chapter 16.34 Significant Trees Protection (see code for details)</td>
</tr>
</tbody>
</table>

3.4.3 Impacts and Mitigation Measures

3.4.3.1 Significance Criteria

In accordance with the CEQA, state CEQA Guidelines (including Appendix G), relevant plans, policies, and/or guidelines, and agency standards, the Project could have a significant impact on Biological Resources if it were to:

- Have 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 CDFW or USFWS;
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by CDFW and USFWS;
- Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

The following topics are not analyzed further in this section for the reasons described below:

- **Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.**
  The Project would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan, because there are no adopted Habitat Conservation Plans, Natural Community Conservation Plans, or other approved habitat conservation plans within the Project area.

3.4.3.2 Methodology

As described in Section 3.1, this EIR provides an independent analysis of the Project’s potential environmental impacts. As part of approval of the 2014 BMP Update PEIR, the Board of Directors adopted extensive mitigation measures (Resolution 2014-05) to avoid or reduce significant impacts on biological resources. **Appendix PD-2** presents these measures, which are considered part of the College Lake Project and thus are considered prior to any significance determinations. Potential impacts are evaluated in the following section. If warranted, additional mitigation is included and takes the form of (1) modifications to update the mitigation measures presented in Appendix PD-2 to reflect current conditions and site-specific impacts; or (2) new mitigation measures to replace or augment an adopted mitigation measure.
3.4.3.3 Impacts and Mitigation Measures

Impact BR-1: Construction of Project components could result in a substantial adverse effect on special-status species. (Less than Significant with Mitigation)

Overview of Construction Activities
Activities associated with construction of the proposed weir structure and intake pump station, demolition of the existing weir and intake pump station, construction of the WTP, and construction of the College Lake pipeline have the potential to impact special-status species and/or their habitat.

The work area for the removal of the existing weir structure and intake pump station and construction of the proposed weir structure and intake pump station is approximately 0.57 acre. Of this area, 0.37 acre is within Salsipuedes Creek and adjacent seasonal wetland, riparian forest, and farmed wetland habitats. The remaining area (0.20 acre) is upland agriculture and annual grassland. Temporary sheetpiles and/or a cofferdam may be installed during installation of the new weir and dewatering likely would be needed. It is anticipated that the work area would be kept dry during removal of the existing weir through the use of dewatering wells or sumps if necessary.

Both WTP sites are located within existing agricultural areas west of Salsipuedes Creek and south of College Lake. If the WTP is installed at the preferred site, the temporary disturbance area would be approximately 6.5 acres in extent (including five acres of permanent disturbance), and if it is installed at the optional WTP site, the temporary disturbance area would be a total of approximately 6.9 acres in extent (including six acres of permanent disturbance).

The width of the construction corridor for the College Lake pipeline would be approximately 40 feet in agricultural areas and 20 feet in urban areas. The majority of the pipeline route consists of developed or agricultural areas. Conventional open trench construction techniques would be used for installation of pipelines in existing roadways and agricultural fields. Crossings of several surface features, including Corralitos Creek, railroads, and state highways, would require trenchless construction. The pipeline would be constructed through the Pinto Creek drainage ditch using open trench construction during the dry weather season. Although Pinto Creek, which is within the Project area, is typically dry in the summer, if water is present during construction in Pinto Creek, it is assumed that temporary cofferdams would be installed through this ditch and that the work area would be dewatered.

Construction Impacts on Special-Status Species
Several special-status fish and wildlife species have a moderate or high potential to occur within or adjacent to the Project construction areas described above. Potential construction-related impacts on these species are addressed below. No special-status plant species have potential to occur within the study area. Therefore, there would be no impact on special-status plant species.

Fish, California Red-legged Frog, and Western Pond Turtle
S-CCC steelhead are known to occur in Salsipuedes Creek, Corralitos Creek, College Lake, and upstream tributary streams. Pacific lamprey are known to occur in Salsipuedes Creek and
Corralitos Creek, and may be present in College Lake. Hitch and roach (presumably belonging to the special-status subspecies) have also been observed in College Lake. CRF have not been observed within Salsipuedes Creek or Corralitos Creek within the study area. However, these areas contain potentially suitable breeding and non-breeding aquatic habitat and CRF have potential to occur in these creeks within the study area. Although WPT have not been observed within Salsipuedes Creek or Corralitos Creek within the study area, it has potential to occur within these creeks. There is low potential for CRF and WPT to occur within agricultural drainage ditches within the study area.

Individual steelhead, Monterey roach, Monterey hitch, CRF, and WPT have potential to occur within Salsipuedes Creek during demolition of the existing weir structure and intake pump station and installation of the proposed weir structure and intake pump station. CRF and WPT also have potential to occur in Pinto Creek and the West Beach Street drainage ditch during pipeline installation. The movement of construction vehicles, equipment, or Project materials across the Project area could cause direct mortality of individuals, if present, by crushing. Impacts could also occur due to increased sedimentation in streams, deteriorated water quality, dewatering of channel pools, reducing the wetted extent of the pools (including exposing CRF egg masses or larvae to desiccation or predation), or other construction disturbance. Increased noise and human presence from construction equipment, vehicles, and personnel may alter CRF and WPT behavior in ways that could result in injury or mortality. Project activities could also result in increased movement, flushing from cover, or other altered activity patterns that reduce energy reserves and increase predation risks. Trash left on-site during or after construction could attract predators. Construction activities could promote the long-term spread of non-native invasive vegetation, which could degrade habitat over time. These impacts would be significant.

The adopted Mitigation Measures BIO-1b, 2a through 2l, and 2n, which address most of these potential impacts, are presented in Appendix PD-2. Implementation of these adopted mitigation measures would reduce but not completely eliminate potential impacts on steelhead, CRF, WPT and their habitat to a less-than-significant level. Additional impacts on steelhead due to potential stranding and poor water quality during construction, and the loss of CRF and WPT habitat are discussed below.

Lake Drainage for Construction Activities
As described in Section 2.1.4 and Section 3.3, Surface Water, Groundwater, and Water Quality, under current operations, RD 2049 pumps water out of College Lake in the spring to accommodate summer agricultural production. This lowers the water surface elevation of College Lake below the elevation of the existing weir and prevents juvenile steelhead (smolts) from migrating downstream to the ocean. Juvenile steelhead become trapped immediately upstream of the existing weir, exposing them to rapidly declining water levels and dissolved oxygen concentrations, increased water temperatures, predation pressures, and potential pump entrainment or impingement. While full implementation of the Project would reduce this existing adverse effect on steelhead, College Lake would still need to be drained prior to construction of the proposed weir structure in a manner similar to existing RD 2049 operations, potentially resulting in similar adverse effects to steelhead and other special-status fish species, a significant impact. Mitigation Measure BR-1a would reduce this impact to less than significant by requiring implementation of measures to
minimize harm and mortality to steelhead and other native fish resulting from lake draining and construction site dewatering.

**Degraded Water Quality**
Eroded sediment and hazardous construction chemicals from Project construction activities can be transported offsite via stormwater runoff and adversely affect receiving downstream water bodies and degrade habitat for aquatic animals. Compliance with the NPDES General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (Order 2009-0009-DWQ, NPDES No. CAS000002; as amended by Orders 2010-0014-DWQ and 2012-006-DWQ) (also referred to as the Construction General Permit) mandates the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP would specify established best management practices to be used to control stormwater run-on/runoff and sediment (such as use of check dams and fiber rolls for reducing erosion on slopes and retaining sediment in stormwater) that would be implemented during construction. These best management practices would avoid or minimize stormwater and water quality effects on aquatic habitat caused by construction site runoff. The Project is larger than one acre and is therefore required to comply with conditions of the Construction General Permit. As such, PV Water would comply with conditions of the Construction General Permit, and any additional measures required by the RWQCB as the local agency for oversight on compliance with the Construction General Permit, pursuant to adopted Mitigation Measure HWQ-1. See additional discussion of potential water quality-related impacts in Section 3.3, Surface Water, Groundwater, and Water Quality.

One section of the new pipeline would be installed beneath Corralitos Creek using horizontal directional drilling (HDD). Although not anticipated, there is potential for frac-outs to occur using HDD. If a frac-out occurs, bentonite slurry could be released into the Corralitos Creek, which could degrade water quality and adversely affect steelhead, CRF, and WPT habitat and/or individuals by increasing suspended sediments, a significant impact. Mitigation Measure BR-1b would reduce this impact to less than significant by requiring preparation of a Frac-out Contingency Plan and implementation of measures to contain and clean-up any frac-outs in waterways to minimize impacts of frac-outs on special-status species and their habitat.

**Temporary and Permanent Loss of Habitat**
Removal of the existing weir structure and intake pump station and installation of the proposed weir structure and intake pump station, including installation of temporary sheetpiles and or a cofferdam and dewatering, would temporarily impact approximately:

- 0.1 acre of steelhead, and potential CRF and WPT aquatic habitat within Salsipuedes Creek; and
- 0.3 acre of riparian and seasonal wetland dispersal habitat associated with Salsipuedes Creek.

Removal of the existing weir structure and intake pump station would create approximately 300 square feet of open water channel aquatic habitat. The installation of the proposed adjustable weir

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78 A frac-out is the condition where drilling mud or fluid is inadvertently released through fractured bedrock into the surrounding substrate and travels toward the surface where it could impact sensitive aquatic habitat and degrade water quality (i.e., elevated turbidity, suspended sediment, and deposition of drilling material into the water body).
would result in 0.07 acre of increased open water channel aquatic habitat and the permanent loss of approximately 0.029 acre of riparian and seasonal wetland dispersal habitat.

Installation of the pipeline through the Pinto Creek drainage ditch, including installation of temporary cofferdams and dewatering if needed, would temporarily impact approximately 100 square feet of potential CRF and WPT aquatic habitat. Temporary and permanent loss of CRF and WPT habitat would be significant. Revised Mitigation Measures BIO-1c and BIO-1d below would reduce these impacts to less than significant by ensuring that temporarily impacted habitat is restored to pre-construction conditions and providing compensation for permanent loss of potential habitat.

**Birds**

College Lake has over 200 documented bird species. During the past five years of PV Water funded waterfowl surveys, between 82 and 140 species have been documented at College Lake each study season. These birds and their nests are protected by the MBTA and CFGC. In addition, special-status birds such as white-tailed kite (a CDFW Fully Protected Species), yellow warbler (a California species of special concern), golden eagle (a CDFW Fully Protected Species), and bald eagle (a CESA endangered and CDFW Fully Protected Species) have potential to nest in or around the construction area.

Construction activities could result in direct impacts on breeding birds through direct removal of breeding habitat such as apple trees at the preferred WTP site and other vegetation removal during removal of the existing weir structure and intake pump station, installation of the proposed weir structure and intake pump station, and pipeline installation. Trees, shrubs, and other structures adjacent to the construction footprint provide nesting habitat for these species. If nesting birds are present, their breeding may be disrupted due to construction noise and activities. The effects of disturbance from construction activities on breeding birds would be a potentially significant impact. In accordance with adopted Mitigation Measure BIO-2i, for any work conducted within the breeding bird season, PV Water would ensure that the Project area is surveyed for breeding birds and that any breeding birds are avoided. Adopted Mitigation Measures BIO-2i would ensure that potential impacts on special-status birds are less than significant.

Other special-status birds, such as American peregrine falcon, are either known to forage or hunt, or have potential to forage or hunt within the Project area. Project construction impacts would only temporarily disturb a small extent of suitable foraging habitat for these species at College Lake and Salsipuedes Creek, and impacts on habitat would be short-lived and less than significant.

**Bats**

Bats, including special-status bats such as western red bat, have potential to roost in trees in riparian areas in or around the Project area. Roosting bats could be disturbed, killed, or injured by tree removal activity if present in construction areas. Noise or construction activities near an active bat roost could disrupt breeding or roosting, a potentially significant impact. Implementation of Mitigation Measure BR-1c would reduce this impact to less than significant by requiring the identification and avoidance of active bat roost sites and the implementation of avoidance and minimization measures when non-maternity or hibernation bat roosts cannot be avoided.
San Francisco Dusky-footed Woodrat

The San Francisco dusky-footed woodrat has potential to occur within the Project area at Salsipuedes Creek during removal of the existing weir structure and pump station, and installation of the proposed weir structure and pump station. If woodrat nests are present within the construction area, individual woodrats could be injured or killed by construction equipment, a potentially significant impact. Implementation of Mitigation Measure BR-1d would reduce this impact to less than significant by requiring pre-construction surveys for San Francisco dusky-footed woodrat, avoidance of nests, and relocation of nests if they cannot be avoided.

Impact Conclusion

Compliance with the adopted Mitigation Measures BIO-1b, 2a through 2l, 2n, and HWQ-1, implementation of revised adopted Mitigation Measures BIO-1c and 1d, and implementation of Mitigation Measures BR-1a through 1d would effectively reduce construction-related impacts on special-status species and their habitat to less-than-significant levels. Thus, construction-related impacts on special-status species would be less than significant with mitigation.

Mitigation Measure BR-1a: Fish Relocations.

Prior to, or concurrent with, draining of College Lake and/or dewatering of the construction site, special-status and other native fish species shall be captured and relocated by a qualified fisheries biologist. The following measures shall be taken to minimize harm and mortality to steelhead and other native fish resulting from fish relocation and dewatering activities:

1) Fish relocation shall be performed by a qualified fisheries biologist, with all necessary state and federal authorizations. Captured fish shall be moved to the nearest appropriate site outside of the work area. A record of relocation activities shall be maintained and include the date of capture and relocation, the method of capture, the location of the relocation site in relation to the Project site, and the number and species of fish captured and relocated;

2) Electrofishing shall be conducted by properly trained personnel following NOAA Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act, June 2000.

3) Prior to capturing fish, the most appropriate release location(s) shall be determined.

4) The most efficient method for capturing fish shall be determined by the biologist. Complex stream habitat generally requires the use of electrofishing equipment, whereas in outlet pools, fish may be concentrated by pumping-down the pool and then seining or dip-netting fish.

5) Handling of salmonids shall be minimized. However, when handling is necessary, hands or nets shall be wetted prior to touching fish.

6) Captured fish shall be held in cool, shaded, aerated water in a container with a lid. Aeration shall be provided with a battery-powered external bubbler. Fish shall be

Text that has been revised in adopted mitigation measures is indicated with underlining where text has been added, and strikethrough where text has been deleted.
3.4 Biological Resources

7) Air and water temperatures shall be measured periodically. A thermometer shall be placed in holding containers and, if necessary, periodically conduct partial water changes to maintain a stable water temperature. If water temperature reaches or exceeds 18 degrees Celsius, fish shall be released and rescue operations ceased, if feasible.

8) Overcrowding in containers shall be avoided by having at least two containers and segregating young-of-year fish from larger age-classes to avoid predation. If fish are abundant, the capturing of fish and amphibians shall cease periodically and shall be released at the predetermined locations.

9) Species and year-class of fish shall be visually estimated at time of release. The number of fish captured shall be counted and recorded. Anesthetization or measuring fish shall be avoided unless requested by appropriate resource agencies (NMFS, CDFW).

Fish relocation activities are typically restricted to the period of June 15 through November 1. However, draining of College Lake may have to commence prior to June 1 to ensure the lake is fully drained prior to the start of construction. If lake draining commences prior to June 1 (as it regularly does under existing conditions), fish relocations would be timed accordingly. Given that steelhead present at the time of draining are likely to be smolts attempting to reach the ocean, pre-June 1 relocations concurrent with lake draining would ensure suitable downstream passage conditions and timing for relocated smolts.

Mitigation Measure BR-1b: Frac-out Contingency Plan.

If HDD installation is implemented, PV Water shall require the contractor to retain a licensed geotechnical engineer to develop a Frac-out Contingency Plan. PV Water would submit the Frac-out Contingency Plan to the appropriate resource agencies (CDFW, RWQCB, USACE, USFWS, and NMFS) for review prior to the start of construction of any pipeline that would use HDD installation to avoid surface waters. The Frac-out Contingency Plan shall be implemented where HDD installation under a waterway will occur to avoid, minimize, or mitigate for potential Project impacts during HDD installation, as specified in the Frac-out Contingency Plan. The Frac-out Contingency Plan shall include, at a minimum:

1) Measures describing training of construction personnel about monitoring procedures, equipment, materials and procedures in place for the prevention, containment, clean-up (such as creating a containment area and using a pump, using a vacuum truck, etc.), and disposal of released bentonite slurry, and agency notification protocols;

2) Methods for preventing frac-out including maintaining pressure in the borehole to avoid exceeding the strength of the overlying soil.

3) Methods for detecting an accidental release of bentonite slurry that include: (a) monitoring by a minimum of one biological monitor throughout drilling operations to ensure swift response if a frac-out occurs; (b) continuous monitoring of drilling pressures to ensure they do not exceed those needed to penetrate the formation; (c) continuous monitoring of slurry returns at the exit and entry pits to
determine if slurry circulation has been lost; and (d) continuous monitoring by spotters to follow the progress of the drill bit during the pilot hole operation, and reaming and pull back operations.

4) Protocols that the contractor would follow if there is a loss of circulation or other indicator of a release of slurry.

5) Cleanup and disposal procedures and equipment the contractor would use if a frac-out occurs.

6) If a frac-out occurs, the contractor shall immediately halt work, implement the measures outlined in Item 5 of the Frac-out Contingency Plan to contain, clean-up, and dispose of the bentonite slurry, and, if the frac-out occurs in the water channel, notify and consult with the staffs of the agencies listed above before HDD activities can begin again.

PV Water shall require the contractor to implement Frac-out Contingency Plan to ensure that measures are implemented to prevent frac-out and if a frac-out occurs, implement measures to contain, clean-up, and dispose of the bentonite slurry.

Mitigation Measure BIO-1c (Revised):

Where construction impacts to mixed riparian or willow riparian forest occur, revegetation and restoration measures will be developed as part of a revegetation plan approved by CDFW, RWQCB, and if applicable, USACE and/or California Coastal Commission, pursuant to regulatory agency permitting. The revegetation plan will include specific plans for the revegetation of impacted riparian forest, and for restoration of nearby creek riparian habitat, as appropriate. Upon approval by Santa Cruz County and other applicable agencies, PV Water the PVWMA may choose to coordinate with the Natural Resources Conservation Service (NRCS) and the Santa Cruz County Resource Conservation District (RCD) to develop and implement the required riparian revegetation, including providing funds to the RCD for their implementation of the revegetation. Revegetation measures will include the use of locally obtained plant materials, detailed descriptions of installation methods, after-installation care, weed control measures, success criteria, and corrective measures if the success criteria are not met. Temporarily impacted areas will be restored to pre-construction conditions with equivalent or greater habitat quality. Revegetation will include a 3:1 replacement ratio of the acreage of riparian habitat lost and for all trees lost as result of the Project to account for the reduced habitat values of smaller trees compared with mature vegetation. Success criteria for replanting will be less than 20 percent mortality of individual species annually for 5 years. Replanting will be conducted each year that plantings exceed 20 percent mortality, such that 80 percent plant survival is maintained each year of the 5-year monitoring period. Cover provided by invasive, non-native plant species shall not exceed 5 percent during each year of the 5-year monitoring period.

Mitigation Measure BIO-1d (Revised):

Where construction impacts to open water (creeks, streams, jurisdictional ditches), seasonal wetlands, or coastal freshwater marsh occurs, revegetation and restoration measures will be developed as part of a revegetation plan approved by CDFW, RWQCB, USACE, and/or California Coastal Commission, and/or Santa Cruz County, pursuant to regulatory agency permitting. Upon approval by Santa Cruz County and other applicable agencies, PV Water the PVWMA may choose to coordinate with the Natural Resources
3. Environmental Setting, Impacts, and Mitigation Measures

3.4 Biological Resources

Conservation Service (NRCS) and the Santa Cruz County Resource Conservation District (RCD) to develop and implement the required wetland revegetation and restoration, including providing funds to the RCD for their implementation of the revegetation and restoration. The revegetation plan will include specific plans for the revegetation of impacted coastal marsh wetlands, and for restoration of nearby wetland habitat, as appropriate. Revegetation measures will include the use of locally obtained plant materials, detailed descriptions of installation methods, after-installation care, weed control measures, success criteria, and corrective measures if the success criteria are not met. Temporarily impacted areas will be restored to pre-construction conditions with equivalent or greater habitat quality. Revegetation will include a 3:1 replacement ratio (or an equivalent habitat replacement strategy as agreed upon by PV Water PWMA and regulatory agencies) for impacted wetlands. If natural recovery is a viable strategy, then a wetland plant cover exceeding 50 percent should be attained after two growing seasons. Mitigation may occur via restoration, creation, or preservation of wetlands or waters. Mitigation will occur at a site acceptable to permitting agencies and pursuant to the Project’s permit requirements. If the compensatory mitigation includes restoration, enhancement, or creation of wetlands or waters, a qualified biologist will monitor the designated wetland mitigation area for a minimum of five years to ascertain if the wetland mitigation is successful. Annual reports will be submitted to permitting agencies by December 31 of each monitoring year, describing the results of the monitoring and any remedial actions needed to achieve a minimum 3:1 habitat replacement ratio or equivalent for permanent impacts on wetlands and other waters.

Mitigation Measure BR-1c: Avoid and Minimize Impacts on Special-status Bat Species.

A qualified biologist who is experienced with bat surveying techniques, behavior, roosting habitat, and identification of local bat species shall be consulted prior to initiation of construction activities to conduct a preconstruction habitat assessment to characterize potential bat habitat and identify active roost sites. The preconstruction habitat assessment shall be conducted within 100 feet of construction activities conducted in and around riparian habitat.

Should potential roosting habitat or potentially active bat roosts be identified during the habitat assessment in trees and/or structures to be disturbed under the Project, the following measures shall be implemented:

1. Removal or disturbance of trees or structures (e.g. the existing weir and intake pump station) identified as potential bat roosting habitat or active roosts shall occur when bats are active, approximately between the periods of March 1 to April 15 and August 15 to October 15, to the extent feasible. These dates avoid bat maternity roosting season (approximately April 15 to August 31) and periods of winter torpor (approximately October 15 to February 28).

2. If removal or disturbance of trees and structures identified as potential bat roosting habitat or active roosts during the periods when bats are active is not feasible, a qualified biologist would conduct pre-construction surveys within 14 days prior to disturbance to further evaluate bat activity within the potential habitat or roost site.
   a. If active bat roosts are not identified in potential habitat during preconstruction surveys, no further action is required prior to removal of- or disturbance to trees and structures within the preconstruction survey area.
b. If active bat roosts or evidence of roosting is identified during pre-construction surveys, the qualified biologist shall determine, if possible, the type of roost and species.

i. If special-status bat species or maternity or hibernation roosts are detected during these surveys, appropriate species- and roost-specific avoidance and protection measures shall be developed by the qualified biologist in coordination with CDFW. Such measures may include postponing the removal of structures or trees, or establishing exclusionary work buffers while the roost is active. A minimum 100-foot no disturbance buffer shall be established around special-status species, maternity, or hibernation roosts until the qualified biologist determines they are no longer active. The size of the no-disturbance buffer may be adjusted by the qualified biologist, in coordination with CDFW, depending on the species present, roost type, existing screening around the roost site (such as dense vegetation or a building), as well as the type of construction activity that would occur around the roost site, and if construction would not alter the behavior of the adult or young in a way that would cause injury or death to those individuals.

Under no circumstances shall active maternity roosts be disturbed until the roost disbands at the completion of the maternity roosting season or otherwise becomes inactive, as determined by the qualified biologist.

ii. If a non-maternity or hibernation roost (e.g., bachelor daytime roost) is identified, disturbance to- or removal of trees or structures may occur under the supervision of a qualified biologist as described under measure 3).

3. The qualified biologist shall be present during tree and structure disturbance or removal if active non-maternity or hibernation bat roosts or potential roosting habitat are present. Trees and structures with active non-maternity or hibernation roosts or potential habitat shall be disturbed or removed only under clear weather conditions when precipitation is not forecast for three days and when nighttime temperatures are at least 50 degrees Fahrenheit, and when wind speeds are less than 15 mph.

a. Trimming or removal of trees with active (non-maternity or hibernation) or potentially active roost sites shall follow a two-step removal process:

i. On the first day of tree removal and under supervision of the qualified biologist, branches and limbs not containing cavities or fissures in which bats could roost, shall be cut only using hand tools (e.g., chainsaws).

ii. On the following day and under the supervision of the qualified biologist, the remainder of the tree may be removed, either using hand tools or other equipment (e.g. excavator or backhoe).

iii. All felled trees shall remain on the ground for at least 24 hours prior to chipping, off-site removal, or other processing to allow any bats to escape, or be inspected once felled by the qualified biologist to ensure no bats remain within the tree and/or branches.

b. Disturbance to or removal of structures containing or suspected to contain active bat (non-maternity or hibernation) or potentially active bat roosts shall be done in the evening and after bats have emerged from the roost to forage. Structures shall be partially dismantled to significantly change the roost conditions, causing bats
to abandon and not return to the roost. Removal would be completed the subsequent day.

4. Bat roosts that begin during construction are presumed to be unaffected as long as a similar type of construction continues, and no buffer would be necessary. Direct impacts on bat roosts or take of individual bats would be avoided.

**Mitigation Measure BR-1d: Avoidance and Minimization Measures for San Francisco Dusky-Footed Woodrat.**

The following measures shall be implemented to avoid and minimize impacts on San Francisco dusky-footed woodrat:

1. A qualified wildlife biologist shall conduct preconstruction surveys for San Francisco dusky-footed woodrat in the Salsipuedes Creek riparian corridor within the existing and proposed weir structure and intake pump station work area. The surveys shall be conducted within 14 days prior to the start of construction in suitable habitat and shall identify any woodrat nests located within 50 feet of anticipated construction disturbance areas.

2. If woodrat nests are found during the preconstruction surveys, the wildlife biologist shall conduct additional surveys throughout the duration of construction activities at the Project site to identify any newly constructed woodrat nests.

3. If nests are observed outside of the construction area, the qualified biologist shall demarcate a minimum 50-foot buffer area with orange construction fencing and require that all construction activities and disturbance remain outside of the fencing.

4. Active woodrat nests located within the anticipated construction disturbance areas shall be relocated. Nests shall be relocated outside of the peak breeding season as feasible to minimize disturbance to young woodrats. Woodrat breeding season is December to September with peak breeding in mid-spring. Relocation of woodrats and/or their nests shall be conducted by the qualified wildlife biologist as follows:
   a. Clear understory vegetation from around the nest using hand tools.
   b. After all vegetative cover has been cleared around the nest, the biologist shall gently disturb the nest to encourage the woodrat(s) to abandon the nest and seek cover in adjacent habitat.
   c. Once the woodrats have left the nest, the biologist shall carefully relocate the nest sticks to suitable habitat outside of the construction disturbance area, piling the sticks at the base of trees or large shrubs if available. If multiple nests are relocated, the stick piles shall be placed at least 25 feet from one another.
   d. The qualified biologist supervising woodrat nest relocation shall ensure potential health hazards to the biologists moving nests are addressed to minimize the risk of contracting diseases associated with woodrats and woodrat nests. These include hantavirus, Lyme disease, and plague. The biologists that relocate nests shall take the following precautionary safety measures:
      i. Wear a Cal/OSHA-certified facial respirator to reduce inhalation of potential disease causing organisms.
ii. Wear a white Tyvec protective suit to provide a barrier for ticks and fleas and facilitate their detection and removal and use gloves.

e. If young woodrats are encountered during dismantling of the nest, nest material shall be replaced and a 50-foot no-disturbance buffer shall be established around the active nest. The buffer shall remain in place until the young woodrats have matured enough to disperse on their own accord and the nest is no longer active. Nesting substrate shall then be collected and relocated to suitable habitat outside of the Project area.

Impact BR-2: Construction of Project components would result in a substantial adverse effect on riparian habitat or other sensitive natural community or on state or federally protected wetlands or waters through direct removal, filling, hydrological interruption, or other means. (Less than Significant with Mitigation)

Sensitive natural communities, including riparian habitat, ESHA, and state or federally protected wetlands or waters occur within and adjacent to the Project area, as described in Section 3.4.1.7. Sensitive natural communities within or adjacent to Project construction areas could be temporarily or permanently impacted during Project construction. Project construction activities that could impact these sensitive features are described in Impact BR-1. Potential construction impacts on sensitive natural communities are described below.

Direct Impacts

Salsipuedes Creek within the Project area includes the open water perennial channel and associated riparian forest and seasonal wetland. These features are considered sensitive natural communities and the open water, riparian forest, seasonal wetland, and farmed wetland, are considered potentially jurisdictional as regulated by the USACE, CDFW, and RWQCB. Removal of the existing weir structure and intake pump station and installation of the proposed weir structure and intake pump station, including installation of temporary sheetpiles and/or a cofferdam and dewatering, would result in temporary and permanent impacts on these resources, as shown below in Table 3.4-3.

<table>
<thead>
<tr>
<th>Resource Type</th>
<th>Permanent Intake pump station, adjustable weir, and concrete wing walls</th>
<th>Conversion to open water in Salsipuedes Creek</th>
<th>Temporary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salsipuedes Creek</td>
<td>0.003</td>
<td>-</td>
<td>0.092</td>
</tr>
<tr>
<td>Riparian Forest</td>
<td>0.008</td>
<td>0.024</td>
<td>0.015</td>
</tr>
<tr>
<td>Seasonal Wetland</td>
<td>0.018</td>
<td>0.041</td>
<td>0.260</td>
</tr>
<tr>
<td>Farmed Wetland</td>
<td>-</td>
<td>-</td>
<td>0.003</td>
</tr>
<tr>
<td>Total</td>
<td>0.029</td>
<td>0.065</td>
<td>0.370</td>
</tr>
</tbody>
</table>

SOURCE: Environmental Science Associates
The intake pump station, adjustable weir, and concrete wing walls would permanently impact 0.029 acre of riparian habitat and state and federally-protected wetlands and waters. Approximately, 0.065 acre of riparian and seasonal wetland habitat would be converted to open water in Salsipuedes Creek since the upstream and downstream concrete weir abutments and concrete wing walls would effectively increase the width of the channel in these areas and the channel would be lined in concrete. This habitat conversion would thereby further increase the area of open water where seasonal wetland and riparian habitat are currently located. The net loss of wetlands and other waters of the U.S. would be approximately 0.029 acre.

Pinto Creek within the Project area is an open water seasonal channel that is considered a sensitive natural community and potentially jurisdictional by the USACE and RWQCB. Installation of the pipeline through the Pinto Creek drainage ditch including installation of temporary cofferdams and dewatering if needed, would temporarily impact approximately 100 square feet of Pinto Creek. Temporary and permanent loss of a sensitive natural community is a potentially significant impact.

**Indirect Impacts**

Sensitive natural communities near many Project components, including Salsipuedes Creek and Pinto Creek downstream of the Project footprint and the West Beach Street drainage ditch, could be subject to indirect impacts as a result of Project construction. The West Beach Street drainage ditch is a sensitive natural community, potentially jurisdictional as regulated by the USACE, CDFW, and RWQCB, and is located within the Coastal Zone and therefore may be considered an ESHA by the CCC/County LCP. Indirect impacts on sensitive natural communities outside the Project footprint could occur if construction activities inadvertently extend beyond the designated construction work area, if sediment is discharged downstream as a result of the installation of temporary cofferdams and dewatering, and/or if trash and debris is left in the features following construction. Other indirect impacts include sedimentation as a result of increased soil erosion from grading or trenching activities and degradation of water quality from pollutants (e.g., oil, hydraulic fluid) that are conveyed by surface water runoff from the construction site to offsite sensitive natural communities. These indirect impacts would be potentially significant.

PV Water would require the contractor to prepare and implement a SWPPP and best management practices to avoid or minimize water quality effects on aquatic sensitive natural communities, pursuant to adopted Mitigation Measure HWQ-1, which would reduce impacts from sedimentation and erosion to less than significant. Further, implementation of adopted Mitigation Measures BIO-1b, revised Mitigation Measures BIO-1c and 1d, and revised Mitigation Measure BIO-1e, would ensure that direct and indirect impacts on sensitive natural communities are less than significant. In accordance with Mitigation Measure BIO-1b, PV Water would require the contractor to implement measures to maintain water quality and to control erosion and sedimentation such as restricting trenching across all waterways to low-flow periods, diverting water around work areas, and placing sediment curtains downstream of the construction zone. In accordance with revised adopted Mitigation Measures BIO-1c and BIO-1d, PV Water would ensure that temporarily impacted sensitive natural communities are restored to pre-construction conditions and provide compensation for permanent loss of sensitive natural communities. In accordance with the revised Mitigation Measure BIO-1e, PV Water would ensure that, where construction occurs and/or facilities are
placed within a riparian or wetland development setback area, indirect impacts on adjacent riparian and wetland vegetation would be reduced.

As described under Impact BR-1, the College Lake pipeline would be installed beneath Corralitos Creek, a sensitive natural community and potentially jurisdictional feature regulated by the USACE, CDFW, and RWQCB. The pipeline would be installed using HDD or jack and bore methods, requiring preparation of a Frac-out Contingency Plan and implementation of measures in the Plan to contain and clean-up any frac-outs in waterways to minimize impacts of frac-outs on sensitive natural communities pursuant to Mitigation Measure BR-1b.

Impact Conclusion
Compliance with the adopted Mitigation Measures BIO-1b and HWQ-1, implementation of revised adopted Mitigation Measures BIO-1c, BIO-1d, and BIO-1e, and implementation of Mitigation Measure BR-1b would effectively reduce and mitigate impacts on sensitive natural communities, including potentially jurisdictional wetlands and waters, to a less-than-significant level. Thus impacts would be less than significant with mitigation. Minimization of temporary and permanent impacts on sensitive natural communities (including potentially jurisdictional features regulated by the USACE, CDFW, and RWQCB) would be achieved through implementation of best management practices to protect water quality, and a Frac-Out Contingency Plan to protect Corralitos Creek. Mitigation for temporary and permanent impacts on sensitive natural communities would be achieved through on-site restoration and revegetation of areas temporarily impacted by construction, and off-site restoration and wetland creation to replace the area of sensitive natural communities that would be permanently lost. On and off-site revegetation would be carried out at a 3:1 replacement ratio, and according to a revegetation plan with stated success criteria. Success would be tracked and assessed through monitoring and reporting.

Mitigation Measure BIO-1e (Revised).
Where construction and/or facilities are placed within a riparian or wetland development setback area (as defined in the Santa Cruz County Municipal Code), indirect impacts to adjacent riparian and wetland vegetation will be minimized. Where feasible, buffer plantings of native trees and shrubs will be installed between the facility and the adjacent wetland or riparian resource to provide a vegetated buffer. A buffer planting plan will be prepared as part of a revegetation plan approved by CDFW, RWQCB, USACE, and/or California Coastal Commission, pursuant to regulatory agency permitting. The buffer planting plan will include specific revegetation measures, including the use of locally obtained plant materials, detailed descriptions of installation methods, after-installation care, weed control measures, success criteria, and corrective measures if the success criteria are not met.

Mitigation Measure BR-1b: Frac-out Contingency Plan (See Impact BR-1)

Mitigation Measure BIO-1c (Revised) (See Impact BR-1)

Mitigation Measure BIO-1d (Revised) (See Impact BR-1)
Impact BR-3: Construction of Project components could interfere substantially with the movement of any native resident or migratory wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. *(Less than Significant)*

Impacts on special-status species including CRF, WPT, specials-status birds, and steelhead, that have potential to utilize the Project area as a movement corridor are assessed in Impacts BR-1 and BR-2.

When filled with stormwater runoff in winter and spring, College Lake supports a variety of waterfowl, including ducks, herons, gulls and shorebirds. College Lake provides wintering habitat for many migratory bird species, and is noted for waterfowl abundance and diversity during the winter. It also provides migration habitat for many shorebird species during spring drawdown. No construction activities would occur within College Lake, so there would be no impact on the migratory wildlife corridor within College Lake during project construction.

Salsipuedes Creek and Corralitos Creek within the Project area also provide a movement corridor for common wildlife species such as birds and amphibians that utilize creek and riparian corridors throughout the Pajaro Valley. As described in Impacts BR-1 and BR-2, construction activities would temporarily impact Salsipuedes Creek during construction of the proposed weir structure and intake pump station and removal of the existing weir and pump station. These impacts would be relatively small and short-term (approximately 16 months). The proposed weir structure and intake pump station would be larger than the existing weir structure and intake pump station, but are not expected to significantly impede wildlife movement through Salsipuedes Creek. The remaining adjacent vegetated riparian floodplain would remain intact and would provide wildlife passage around the new facilities, and the impact would be *less than significant*.

**Mitigation:** None required.

Impact BR-4: Project operations could result in a substantial adverse effect on riparian habitat or other sensitive natural community or on state or federally protected wetlands or waters through direct removal, filling, hydrological interruption, or other means. *(Less than Significant)*

An analysis of the changes to existing vegetation communities and habitats within College Lake, Salsipuedes Creek, Pajaro River, and Pajaro Lagoon from Project operations is provided below under the heading Habitat Changes from Project Operations. An analysis of potential impacts as a result of these operational habitat changes and Project maintenance activities is provided below under the heading Project Operation Impacts on Sensitive Natural Communities and Protected Wetlands and Waters. The discussion of habitat changes from project operations also supports the analysis of potential impacts on special-status species presented in Impacts BR-5, BR-6, BR-7.

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80 This construction duration excludes pre-commissioning and takes into account a four-month break between November and May when the site would be winterized and no construction would occur within the Salsipuedes Creek channel.
Habitat Changes from Project Operations

College Lake

Proposed College Lake water management operations would change the seasonal inundation patterns of habitats within the lake basin. The largest effects would be at the lowest elevations within the basin, which would remain inundated through the summer, as shown on Figures 3.3-7a through 3.3-7d (in Section 3.3, Surface Water, Groundwater, and Water Quality). In contrast, higher elevations are likely to experience relatively little change as a result of the Project, for all water year types. Table 3.4-4 summarizes the anticipated changes to inundation periods, for an above-average rainfall year (modeled from Water Year 2016, as described in Appendix HYD). While inundation patterns vary from year to year, and would continue to vary substantially between above- and below-average rainfall years and based on seasonal rainfall patterns and water supply withdrawals, an above-average rainfall year was used to approximate an average inundation scenario with the Project (refer to Figure 3.3-7c in Section 3.3, Surface Water, Groundwater, and Water Quality). This is the basis for estimating habitat changes as a result of proposed water management operations. Anticipated habitat effects under proposed operations at water surface elevations 57 feet NAVD88 and below; 57 to 59 feet NAVD88; 59 to 62 feet NAVD88; 62 to 64 feet NAVD88; and 64 to 70 feet NAVD88 are summarized below.

Elevations 57 Feet and Lower

As shown in Table 3.4-4, areas below 57 feet NAVD88 would remain inundated three to four months longer than under baseline conditions, with inundation from approximately November through August or September, depending on the timing of water supply withdrawals. In addition, the water level would decrease at a slower rate during the summer months, based on agricultural demand, in contrast with the rapid pumping that takes place in April under existing RD 2049 operations.

Under project operation, these changes could influence mudflat habitat and seasonal wetland vegetation along the lake edges. As described in Chapter 2, Project Description, rather than seasonal farming in the summer and fall as currently occurs, the inundated area would be managed through vegetation mowing and disking as frequently as once per year when College Lake’s basin is dry enough to accommodate tractors, and as needed based on the vegetation management and maintenance actions described in Section 2.7, Chapter 2, Project Description. For example, disking and tilling, trimming and mowing, and removal of flow-constricting vegetation within channels could occur as needed to maintain vegetation in College Lake. With Project operations, between elevations 50 and 57 feet NAVD88, the combined effects of the longer inundation period and regular vegetation management actions are expected to result in exposed mudflat habitat in the late summer or fall.

81 It is possible that higher lake levels could persist into the fall. The analyses presented in this EIR are based on modeled results.
### Table 3.4-4
**Anticipated Changes to Inundation Periods and Habitats**

<table>
<thead>
<tr>
<th>Water Surface Elevation (feet NAVD88)</th>
<th>With Project Inundation Period (62.5 foot weir)</th>
<th>Existing Habitats</th>
<th>With Project Habitats, anticipated change</th>
</tr>
</thead>
<tbody>
<tr>
<td>50 up to 57</td>
<td>4-7 months</td>
<td>Farmed wetland habitat consists of: 1. Open water (November 1 to March 31) 2. Seasonal wetland vegetation (April 1 to May 31) 3. Agriculture (June 1 to October 31)</td>
<td>Farmed wetland would convert to managed seasonal wetland which would consist of: 1. Open water (November 1 to July or August) 2. Mudflat with sparse seasonal wetland vegetation (July or August to October 31) No farming would occur at this elevation with the Project. Vegetation management (mowing, disking) would occur annually to maintain open water and mudflat habitat and prevent woody plant encroachment.</td>
</tr>
<tr>
<td></td>
<td>7-11 months</td>
<td>Riparian Forest</td>
<td>No habitat type change. Riparian Forest present below 57 feet NAVD88 is expected to persist with its current riparian species composition and abundance in the short term but may shift in species composition and abundance in the future with a dominance of inundation-tolerant species such as Pacific willow (Salix lasiandra), and possibly a sparser overstory canopy with freshwater emergent plants in the understory.</td>
</tr>
<tr>
<td>57 up to 59</td>
<td>4 months</td>
<td>Farmed wetland habitat consists of: 1. Open water (December 1 to March 31) 2. Seasonal wetland vegetation (April 1 to May 31) 3. Agriculture (June 1 to November 30)</td>
<td>Farmed wetland would convert to managed seasonal wetland, similar to 50 to 57 feet NAVD88. No farming would occur at this elevation with the Project. Vegetation management (mowing, disking) would occur annually to maintain open water, mudflat, and seasonal wetland habitat and prevent woody plant encroachment.</td>
</tr>
<tr>
<td></td>
<td>6-7 months</td>
<td>Riparian Forest</td>
<td>No habitat type change, though species composition may change as this forest matures and older trees senesce.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Seasonal Wetland</td>
<td>No habitat type change. This area would be managed as seasonal open water and wetland through mowing and disking, to prevent woody plant encroachment, similar to existing conditions.</td>
</tr>
<tr>
<td>59 up to 62</td>
<td>1-4 months</td>
<td>Farmed wetland habitat consists of: 1. Open water (January 1 to March 31) 2. Seasonal wetland vegetation (April 1 to May 31) 3. Agriculture (June 1 to December 30)</td>
<td>No habitat type change. Although this elevation range would be inundated for longer durations (especially at the lower end of the range), these areas would continue to be used for seasonal crops in years and locations where at least one crop rotation is feasible. Areas that are not farmed would be managed as seasonal open water and wetland through mowing and disking, to prevent woody plant encroachment, similar to existing conditions.</td>
</tr>
<tr>
<td></td>
<td>2-6 months</td>
<td>Riparian Forest, Seasonal Wetland</td>
<td>No habitat type change.</td>
</tr>
<tr>
<td>62 up to 64</td>
<td>1-6 weeks, not continuous</td>
<td>Farmed wetland</td>
<td>No habitat type change. Although this elevation range would be inundated for longer durations these areas would continue to be used for seasonal crops in years and locations where at least one crop rotation is feasible. Areas that are not farmed would be managed as seasonal open water and wetland through mowing and disking, to prevent woody plant encroachment, similar to existing conditions.</td>
</tr>
<tr>
<td></td>
<td>2-8 weeks, not continuous</td>
<td>Riparian Forest, Riparian Scrub, and Seasonal Wetland</td>
<td>No habitat type change.</td>
</tr>
<tr>
<td>64 up to 70</td>
<td>Periodic inundation of one week or less</td>
<td>Annual Grassland</td>
<td>Seasonal Wetland.</td>
</tr>
<tr>
<td></td>
<td>Periodic inundation of one week or less</td>
<td>Agriculture</td>
<td>Farmed wetland. This is not likely to change the land use practices or habitat value.</td>
</tr>
</tbody>
</table>

**NOTES:**
- Based on observed water surface elevation during 2016.
- Based on the modeled above-average rainfall year (2016). See Appendix HYD and Figures 3.3-7a through 3.3-7c in Section 3.3, Surface Water, Groundwater, and Water Quality.
- Agriculture includes a fallow period after harvest during which field sites are bare, tilled soil.
- The anticipated change of agricultural land to farmed wetland would not affect the agricultural land use of this area.

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Additionally, limited seasonal wetland vegetation may establish following the receding water line, and would be comprised of species that tolerate prolonged seed inundation and whose seed can germinate in the summer. This would likely include the following species that are common at College Lake: cocklebur, fat-hen, smartweed, and swamp pricklygrass. In below-average rainfall years and depending on the rainfall and water surface elevation patterns, willow and cottonwood seedlings may establish and would be mowed and/or disked in the fall similar to current agricultural practices. Proposed vegetation management activities (described in Section 2.7) would maintain open water habitat in the winter and spring for aquatic species, and mudflat with seasonal wetland vegetation in the late summer or fall for shorebirds and migratory waterfowl. The spring and summer inundation at these elevations would also likely provide suitable conditions for algae growth in the deepest portions of College Lake, similar to neighboring Pinto Lake and Kelly Lake.

Existing riparian forest at elevations below 57 feet NAVD88 is likely to persist because mature trees would have leaves and branches above the water surface elevation during the growing season. Seedling recruitment of the same riparian species (willows and cottonwoods, primarily) would occur only in very dry years when the lake area at 57 feet NAVD88 elevation is wet but not inundated for a long-enough period in March, April, or May when seedlings typically establish. Vegetative recruitment may also occur in all water year types. Given the variation in inundation patterns between years, it is likely that suitable riparian forest establishment conditions would occur periodically during dry years when low branches are inundated for a shorter period of time. In contrast, average or above-average water years may provide opportunities for establishment of more emergent vegetation, such as cattails, than riparian species in the understory.

**Elevations Between 57 and 59 Feet**

Elevations between 57 and 59 feet NAVD88 that are typically inundated between December and March 31, followed by seasonal agricultural production between June and October, would transition to open water between approximately December 1 and July, and seasonal wetland through the late summer and fall. The inundated lake area would maintain open water for two to three additional months and may be disked or tilled as currently occurs under the agricultural production period. Existing riparian forest is unlikely to convert to a different habitat type under Project operation, though species composition may shift from species with a shorter inundation tolerance (arroyo willow) to species with a longer inundation tolerance (cottonwood, Pacific willow).

**Elevations Between 59 and 64 Feet**

The area between 59 and 64 feet NAVD88 would undergo minimal habitat changes overall. Anticipated changes in the storage area and period, primarily between 62.5 and 63.5 feet NAVD88 with the higher weir elevation and slower spring and summer draw-down, would make this zone more suitable for wetland habitats. The existing wetland boundary, which was mapped fairly consistently at 62.5 feet NAVD88 according to the aquatic resources delineation, would

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shift upslope by about 1 foot in elevation to 63.5 feet NAVD88. Areas up to 63.5 feet NAVD88 are expected to support the minimum duration and frequency of inundation, saturation, or shallow groundwater table (within 12 inches of the soil surface) during the growing season to meet the USACE’s technical standard for wetland hydrology. Therefore, existing upland habitat types, grassland and agriculture between 62.5 feet NAVD88 and approximately 63.5 feet NAVD88 would transition to wetland habitat types; existing grassland would transition to seasonal wetland and existing agricultural areas would transition to farmed wetland habitat. These habitat changes are expected to occur over approximately 0.2-0.5 acre, too small an area to provide meaningful habitat functions or values. Predicting how much and which areas would convert to specific wetland types is not possible given the variability from year to year in precipitation totals as well as fluctuating water level within College Lake. However, the area of seasonal and farmed wetland habitat is anticipated to nominally increase under the Project, compared to existing conditions.

Vegetation management would occur as needed between 59 and 63 feet NAVD88, as described in Section 2.7 in Chapter 2, Project Description, to maintain habitat for waterfowl and other species, and to maintain and operate College Lake for water storage. Anticipated changes in wetland habitat types would not conflict with continued annual agricultural use of land above 63 feet NAVD88, and between 59 feet and 63 feet in dry years; agricultural land use would continue between 59 feet and 64 feet NAVD88 in areas currently used for agriculture, and according to the conditions described in Impact LU-1 (refer to Section 3.2, Land Use and Agricultural Resources).

Elevations Above 64 Feet

Habitats above 64 feet NAVD88 are not expected to change as a result of College Lake water management operations.

In summary, proposed lake operations could result in the following changes:

- existing farmed wetlands below 59 feet NAVD88 would change to open water habitat during the spring followed by a combination of mudflat and seasonal wetland vegetation the late summer and fall;
- existing annual grassland between 62.5 feet NAVD88 and 63.5 feet NAVD88 would likely to convert to seasonal wetland; and
- existing agricultural areas between 62.5 feet NAVD88 and 63.5 feet NAVD88 would convert to farmed wetland.

Salsipuedes Creek, Pajaro River, and Pajaro Lagoon

Discharge downstream of College Lake would change under Project operations. As described in Subsection 3.3.3.3 in Section 3.3, Surface Water, Groundwater, and Water Quality, the Project would generally reduce the discharge from College Lake into Salsipuedes Creek and the Pajaro River (with slight increases in December and January and the greatest decreases in April and May), due to the elimination of pumping over the weir, weir operations toward the end of the wet season, and the proposed diversions of water from College Lake (refer to Table 3.4-5). In general, during Project operation, discharge during the winter and early spring months would be

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3. Environmental Setting, Impacts, and Mitigation Measures

3.4 Biological Resources

similar to existing conditions. Discharge within the late spring and summer months would change somewhat under the Project. Instead of intermittent artificial discharge from College Lake pumping operations during the late spring and summer months (when, under existing conditions, RD 2049 pumps water out of the lake), a lower volume of water would steadily leave the lake during April through June (the smolt season), after which no additional water would flow from College Lake into Salsipuedes Creek during the dry season except occasionally when PV Water might pump flows over the weir (refer to Section 2.7.1.2 in Chapter 2, Project Description, and discussions under Impacts HYD-2 and HYD-5 in Section 3.3, Surface Water, Groundwater, and Water Quality). These changes would be most apparent just downstream of College Lake and would be less apparent in the Pajaro Lagoon where the flow contribution from College Lake is minimized by the influence of additional water sources. As shown in Table 3.3-4 in Section 3.3, Surface Water, Groundwater, and Water Quality, monthly average flow contributions from College Lake to Salsipuedes Creek would decline by statistically significant amounts from the late spring to early fall months during the modeled above-average water year (WY 2016). Monthly average flow contributions to the Pajaro River would decline by statistically significant amounts in late summer and early fall months during the modeled above-average water year (WY 2016). The majority of the reduction would be due to proposed elimination of artificial pumping into Salsipuedes Creek. During these same months under the modeled above-average water year (WY 2016), the percent contributions to the Pajaro Lagoon would remain nearly the same between existing and Project conditions.

### Table 3.4-5

**Average Monthly Discharge (cfs) for Modeled Existing and Modeled Project Conditions for the Above-Average Water Year (WY 2016)**

<table>
<thead>
<tr>
<th></th>
<th>Salsipuedes Creek Reach</th>
<th>Pajaro River Below the Confluence with Salsipuedes Creek</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Existing</td>
<td>Project</td>
</tr>
<tr>
<td>October</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>November</td>
<td>7</td>
<td>0.1</td>
</tr>
<tr>
<td>December</td>
<td>11</td>
<td>13</td>
</tr>
<tr>
<td>January</td>
<td>135</td>
<td>140</td>
</tr>
<tr>
<td>February</td>
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<tr>
<td>March</td>
<td>219</td>
<td>214</td>
</tr>
<tr>
<td>April</td>
<td>19</td>
<td>8</td>
</tr>
<tr>
<td>May</td>
<td>19</td>
<td>2</td>
</tr>
<tr>
<td>June</td>
<td>2</td>
<td>0.3</td>
</tr>
<tr>
<td>July</td>
<td>2</td>
<td>0.2</td>
</tr>
<tr>
<td>August</td>
<td>1</td>
<td>0.1</td>
</tr>
<tr>
<td>September</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

**NOTE:** Existing spring discharge largely due to artificial draining of College Lake due to RD 2049 pumping. Existing discharge from June to October are due to intermittent maintenance pumping out of College Lake. Does not account for any transmission losses or gains within the Lower Salsipuedes Creek Reach.

Table 3.4-5 includes the average monthly discharge under existing and with-Project conditions in two reaches (Salsipuedes between College Lake and its confluence with the Pajaro River and the Pajaro River below the confluence with Salsipuedes Creek) for the above-average water year (WY 2016). As shown in Table 3.4-5, average monthly discharge is similar under existing and Project conditions in December through March. Average monthly discharge then decreases starting in April through the fall months. There are decreases in the remaining summer and fall months (June through October), but discharge during this time period is fairly low under both existing and Project conditions. The greatest decrease between average monthly existing and with-Project discharge within the growing season occurs in April and May.

Overall, there would be similar flow conditions in the Pajaro River in the spring and summer when comparing existing to with-Project conditions. Although there would be a decrease in the average monthly flow in April and May, there would still be continuous flow down the river during this time that would support wetland and riparian vegetation. There would be a greater decrease in flow in April and May with the Project within Salsipuedes Creek compared to the Pajaro River. However, the overall flow trend in this reach is high flow in the early spring, followed by a sudden drop in April. It is assumed that the current wetland and riparian vegetation conditions within this reach are supported and maintained by this seasonal flow shift. Under the Project, there would continue to be high flow in the early spring followed by a sudden drop in April, with low flow in the summer months to maintain the existing hydrologic and vegetation conditions. Therefore, it is not anticipated that the composition or extent of wetland or riparian vegetation within either Salsipuedes Creek or Pajaro River would change under Project conditions.

**Project Operation Impacts on Sensitive Natural Communities and Protected Wetlands and Waters**

Project operations would change the seasonal inundation patterns within the College Lake basin and would change discharge downstream of College Lake, as described above. Sensitive natural communities, including riparian habitat and state or federally protected wetlands and waters occur within these areas. Sensitive natural communities, including state or federally protected wetlands and waters within the College Lake basin are described in Section 3.4.1.7 and Section 3.4.1.9, and include riparian scrub, riparian forest, freshwater emergent wetland, seasonal wetland, farmed wetlands, perennial stream, and ditches. Sensitive natural communities, including open water creek, instream wetlands, and riparian corridors are present within Salsipuedes Creek and the Pajaro River downstream of College Lake. As discussed above, existing riparian and wetland habitats are expected to remain the same, with the following exceptions:

- **Farmed wetlands below 59 feet NAVD88** would no longer be farmed due to the longer inundation period. These areas would provide open water habitat for a longer period of the year followed by mudflat and seasonal wetland vegetation in the late summer or fall. These areas would be characterized as managed seasonal wetlands, and in the absence of farming would provide improved habitat functions and values for wildlife.

- **Annual grassland habitat between 62.5 feet NAVD88 and 63.5 feet NAVD88** would likely convert to seasonal wetland because, on average, these areas would support suitable wetland conditions.
Areas designated as agriculture between 62.5 feet NAVD88 and 63.5 feet NAVD88 would likely convert to farmed wetland because on average, these areas would support suitable wetland conditions.

Therefore, impacts on sensitive natural communities, including protected wetlands and waters, within College Lake would be minimal and favorable because they would result in improved functions and values and would likely increase the total area of wetland habitat.

**Impact Conclusion**

As described above, the composition and characteristics of wetland habitats within College Lake are expected to undergo changes at the lowest elevation in the lake primarily due to longer inundation periods. The total area of aquatic habitats is not expected to decrease, and may nominally increase. Similarly, riparian habitats in College Lake are not expected to decrease in total extent, though species composition at the lowest elevations may shift to species that are more tolerant of inundation. The composition or extent of wetland or riparian vegetation downstream of College Lake under Project operations is not anticipated to change. Overall, the flow regime within Salsipuedes Creek and the Pajaro River downstream of College Lake would be similar under Project operations compared to existing conditions. Although there would be a decrease in flow in April and May, overall future with-Project conditions would generally be the same in the spring and summer growing season as currently exist. Therefore, Project operations on sensitive natural communities, including wetlands and waters, downstream of College Lake would be *less than significant*.

**Mitigation:** None required.

**Impact BR-5: Project operations could result in a substantial adverse effect on terrestrial special-status species. (Less than Significant with Mitigation).**

**Project Operation Impacts on Special-status Terrestrial Species**

Special-status terrestrial wildlife species that have a moderate or high potential to occur within or adjacent to the Project operation areas (College Lake, Salsipuedes Creek, and the Pajaro River) include CRF, WPT, special-status and nesting birds, western red bat and San Francisco dusky-footed woodrat (refer to Table BIO-1 in Appendix BIO). Potential operation-related impacts on these species are addressed below, based on the potential habitat changes presented in Impact BR-4. No special-status plant species have potential to occur within the study area; therefore, there would be no impact on special-status plant species due to Project operation. Potential impacts on special-status fish species are discussed in Impact BR-6.

**College Lake**

Neither CRF or WPT have been observed within College Lake, but both species have a moderate potential to occur within the riparian forest and scrub around the lake, and may occasionally disperse through other portions of the lake. Several special-status bird species have at least a moderate potential to forage within College Lake, including tricolored blackbird, short-eared owl,
burrowing owl, golden eagle, white-tailed kite, American peregrine falcon, bald eagle, yellow warbler, and Bryant’s savannah sparrow. Additionally, suitable nesting habitat is present for golden eagle, white-tailed kite, bald eagle, and yellow warbler, as well as many common bird species. Suitable roosting habitat for western red bat is present among tree and shrub foliage edge habitat and San Francisco dusky-footed woodrat middens have been observed in riparian habitat College Lake.

Project operations would potentially change the composition of some habitat types within College Lake as described above under the heading *Habitat Changes from Project Operations* in Impact BR-4. These changes include:

- existing farmed wetlands below 59 feet NAVD88 would change to open water habitat during the spring followed by a combination of mudflat and seasonal wetland vegetation in the late summer and fall;

- existing annual grassland between 62.5 feet NAVD88 and 63.5 feet NAVD88 would likely convert to seasonal wetland; and

- existing agricultural areas between 62.5 feet NAVD88 and 63.5 feet NAVD88 would convert to farmed wetland.

Existing farmed wetlands do not provide habitat for CRF or WPT species and conversion of those areas to open water, mudflat, and seasonal wetland would increase the quality of dispersal habitat available to them. Grassland areas provide upland dispersal habitat for both species and conversion of grassland to seasonal wetland would continue to provide similar dispersal habitat for both species. Existing agricultural areas do not provide habitat for these species and their conversion to farmed wetland would not change the habitat quality for these species from existing conditions. Therefore, potential habitat changes under Project operations would result in less than significant impacts on CRF and WPT or their habitat.

Habitat conversion is expected to have nominal effects on special-status birds due to the relatively small quantity of suitable habitats for these species that would change under Project operations and the similar habitat functions and values these converted habitat areas would provide. Further, other common birds known to nest in various habitats of College Lake would be similarly unaffected by habitat conversion for these same reasons. Habitat conversions would primarily affect foraging habitat for special-status birds, as nesting habitat for special-status birds determined to have at least a moderate potential to breed at College Lake would be unchanged by Project operations. An increase in open water, mudflat, and seasonal wetland habitat from farmed wetlands under the Project would increase suitable foraging habitat for special-status birds. The conversion of grasslands and agricultural areas (approximately 0.2-0.5 acre) to seasonal wetlands and farmed wetlands, respectively, is not expected to substantially affect foraging opportunity for special-status birds which currently use these upland habitats due to availability of similar habitat within the greater study area which would persist during Project operation. Therefore, potential habitat changes under Project operations would result in less-than-significant impacts on special-status birds.
Project operations, including maintenance activities, would maintain the existing extent of riparian and scrub habitat types within College Lake and these areas would remain available for use by CRF, WPT, special-status birds, western red bat and San Francisco dusky-footed woodrat under future with-Project operations. Therefore, Project operations would result in less-than-significant impacts on these species.

As described in Chapter 2, Section 2.7, maintenance activities would be conducted within College Lake as needed to meet Project objectives. Maintenance activities would be implemented during the dry season to maintain areas below 59 feet NAVD88 as open water during the wet season. If individual CRF or WPT are present within maintenance work areas they could be injured or killed by maintenance equipment, which would be a significant impact. Implementation of revised Mitigation Measure BIO-2j and revised Mitigation Measure BIO-2k, would reduce potential maintenance impacts on CRF and WPT to less than significant.

Maintenance activities within College Lake may occur during the breeding season for birds protected under the MBTA or Fish and Game Code. Vegetation or debris removal could result in direct impacts on breeding birds through direct removal of birds or their nests, if present. Nesting birds may also be disrupted by maintenance equipment noise and activities, which could result in nest abandonment. These impacts are potentially significant. Implementation of revised adopted Mitigation Measure BIO-2i would ensure that potential impacts on special-status birds are reduced to less-than-significant levels by ensuring that the Project area is surveyed for breeding birds and that breeding birds are avoided.

Potential operational impacts on native resident and migratory bird movement, corridors, and nursery sites are discussed in Impact BR-7.

Salsipuedes Creek and Pajaro River

Although CRF have not been observed in the study area at Salsipuedes Creek, this area provides aquatic non-breeding habitat suitable for this species. The presence of dense wetland vegetation, turbid water, and high stream velocity limits CRF breeding potential in this reach. Likewise, WPT have not been observed within this reach of Salsipuedes Creek and have low potential to occur because of the limited presence of open water areas.

CRF have been observed within the Pajaro River, and have just recently (March 2019) been observed breeding in isolated scour ponds located on floodplain benches within the levee, just north of the SR 1 crossing. Similar nearby scour ponds also provide suitable breeding habitat. WPT are known to occur within the Pajaro River and a breeding population has been documented within the study area.

As described above, the general flow pattern within the study area reaches of Salsipuedes Creek and the Pajaro River (heavy flow in the early spring, followed by a sudden drop in April) would remain with the Project. It is not anticipated that the composition or extent of wetland or riparian vegetation, or the extent of habitat for CRF or WPT, would change with the Project. Therefore, impacts on CRF and WPT downstream of College Lake would be less than significant.
As the composition and extent of wetland and riparian vegetation would not change downstream of College Lake as a result of Project operations, suitable habitat along Salsipuedes Creek and the Pajaro River is expected to continue to provide similar opportunity for special-status and nesting birds, western red bat, and San Francisco dusky footed woodrat as existing conditions. Impacts of Project operations on these species in Salsipuedes Creek and Pajaro River would be less than significant.

**Impact Conclusion**

Implementation of revised adopted Mitigation Measures BIO-2i, 2j, and 2k would effectively reduce impacts on special-status terrestrial species from Project operations to less-than-significant levels. Thus impacts would be *less than significant with mitigation*.

**Mitigation Measure BIO-2i: Nesting Bird Surveys (Revised):**

Prior to any project construction or maintenance activities, the project proponent will take the following steps to avoid direct losses of nests, eggs, and nestlings and indirect impacts on avian breeding success:

- If construction or maintenance activities occur only during the non-breeding season, between August 31 and February 1, no surveys will be required.
- During the breeding bird season (February 1 through August 31), a qualified biologist will survey construction or maintenance areas in the vicinity of the Project site for nesting raptors and passerine birds not more than 14 days prior to any ground-disturbing activity or vegetation removal.
- Surveys will include all potential habitats within 500 feet (for raptors) of activities and all onsite vegetation including bare ground within 250 feet of activities (for all other species).
- If results are positive for nesting birds, avoidance procedures will be adopted, if necessary, on a case-by-case basis. These may include implementation of buffer areas (minimum 50-foot buffer for passerines and 250-foot minimum buffer for raptors) or seasonal avoidance.

**Mitigation Measure BIO-2j: CRFT (Revised):**

The following measures for avoidance and minimization of adverse impacts on California Red-Legged Frog (*Rana draytonii*) (CRF) during construction and maintenance of the Project BMP projects are those typically employed for construction activities that may result in short-term impacts on individuals and their habitat. The focus of these measures is on scheduling activities at certain times of year, keeping the disturbance footprint to a minimum, and monitoring. Consultation with the USFWS will be conducted and a Biological Opinion developed for each BMP Update component that requires a USACE Section 404 Wetland Permit.

Ongoing and future CRF studies in the Project area may result in site-specific conditions that would be integrated into the future project-level BMP component designs, permitting and operations. CRF-1 through CRF-9 would apply only to Project locations identified as CRF habitat.
CRF-1. The Agency PV Water will annually submit the name(s) and credentials of biologists who would conduct activities specified in the following measures. No project activities would begin until the Agency receives approval from the Service that the biologist(s) is qualified to conduct the work.

CRF-2. A USFWS-approved biologist will survey the work construction or maintenance site 48 hours prior to the onset of activities. If CRF, tadpoles, or eggs are found, the approved biologist will determine the closest appropriate relocation site. The approved biologist will be allowed sufficient time to move them from the work site before work activities begin. Only USFWS -approved biologists will participate in activities associated with the capture, handling, and moving of CRF.

CRF-3. Before any construction or maintenance activities begin on a project, a USFWS -approved biologist will conduct a training session for all construction personnel. At a minimum, the training will include a description of the CRF and its habitat, the importance of the CRF and its habitat, general measures that are being implemented to conserve the CRF as they relate to the Project, and the boundaries within which the Project may be accomplished. Brochures, books and briefings may be used in the training session, provided that a qualified person is on hand to answer any questions.

CRF-4. A USFWS-approved biologist will be present at the work construction or maintenance site until such time as all removal of CRF, instruction of workers, and disturbance of habitat have been completed. After this time, the biologist will designate a person to monitor on-site compliance with all minimization measures and any future staff training. The USFWS-approved biologist will ensure that this individual receives training outlined in measure WPT-2 and in the identification of CRF. The monitor and the USFWS-approved biologist will have the authority to stop work if CRF are in harm’s way.

CRF-5. The number of access routes, number and size of staging areas, and the total area of the activity will be limited to the minimum necessary to achieve the project goal. Routes and boundaries will be clearly demarcated, and these areas will be outside of riparian and wetland areas to the extent practicable.

CRF-6. Work Construction and maintenance activities will be completed between April 1 and November 1 to the extent practicable. Should the Agency demonstrate a need to conduct activities outside this period, the Agency may conduct such activities after obtaining the Service’s USFWS approval.

CRF-7. If a construction or maintenance work site is to be temporarily dewatered by pumping, and would take place within or adjacent to suitable CRF habitat, intakes will be completely screened with wire mesh not larger than five millimeters (mm) to prevent CRF from entering the pump system where applicable. Water will be released or pumped downstream at an appropriate rate to maintain downstream flows during construction. Upon completion of construction or maintenance activities, any barriers to flow will be removed in a manner that would allow flow to resume with the least disturbance to the substrate.

CRF-8. The Declining Amphibian Populations Task Force’s Fieldwork Code of Practice will be followed to minimize the possible spread of chytrid fungus or other amphibian pathogens and parasites.

**Mitigation Measure BIO-2k: WPT (Revised):**

The following measures for avoidance and minimization of adverse impacts on western pond turtle (*Actinemys marmorata*) (WPT) during construction and maintenance of the Project BMP project elements are those typically employed for construction activities that may result in short-term impacts on individuals and their habitat. The focus of these measures is on keeping the disturbance footprint to a minimum and aggressive monitoring of WPTs before vegetation removal and during the construction and revegetation phase.

**WPT-1. PV Water** The Agency will annually submit the name(s) and credentials of biologists who would conduct activities specified in the following measures. No project activities will begin until proponents have received approval from CDFW that the biologist(s) is qualified to conduct the work.

**WPT-2. A CDFW-approved biologist will survey the work site 48 hours prior to the onset of construction or maintenance activities.** If WPT adults, juveniles or eggs are found, the approved biologist will determine the closest appropriate relocation site. The approved biologist will be allowed sufficient time to move them from the work site before work activities begin. Only CDFW-approved biologists will participate in activities associated with the capture, handling, and moving of WPT.

**WPT-3. Before any construction or maintenance activities begin on a project, a CDFW-approved biologist will conduct a training session for all construction personnel.** At a minimum, the training will include a description of the WPT and its habitat, the importance of the WPT and its habitat, general measures that are being implemented to conserve the WPT as they relate to the project, and the boundaries within which the project may be accomplished. Brochures, books and briefings may be used in the training session, provided that a qualified person is on hand to answer any questions.

**WPT-4. A CDFW-approved biologist will be present at the construction or maintenance work site until such time as all removal of WPT, instruction of workers, and disturbance of habitat have been completed.**

**WPT-5. The number of access routes, number and size of staging areas, and the total area of the activity will be limited to the project plans. Routes and boundaries will be clearly demarcated.** Where impacts occur in these staging areas and access routes, restoration will occur as identified in the general best management practices BMP measures above.

**Impact BR-6: Project operations could result in a substantial adverse effect on special-status fish species. (Less than Significant with Mitigation)**

**College Lake Rearing Habitat**

As described in Impact BR-4, the Project would change the seasonal inundation patterns of habitats within the lake basin. The proposed weir structure would not be raised until spring; therefore, the maximum water surface elevation and inundation extent of College Lake during the
wet season would not change with the Project. The results of a steelhead smolt outmigration study suggest that the existing winter inundation patterns in College Lake provide highly productive rearing habitat for juvenile steelhead prior to their outmigration to the ocean, and those results are consistent with the finding of studies conducted in similar juvenile steelhead rearing habitats such as agricultural ponds, estuaries, inundated floodplains, and rice fields. During Project operations, no water would be diverted from College Lake after December 15 while it is filling. Water supply diversions would only occur when the water surface elevation in College Lake exceeds the level (59.5 feet NAVD88 between December 15 and March 31, and 59.3 feet NAVD88 between April 1 and May 31) at which passable conditions for fish would have occurred naturally (i.e., without any weir in place) in Salsipuedes Creek above Corralitos Creek; and, for the period December 15 through May 31, only when College Lake inflows exceed the proposed fish bypass flows described below. As such, productive winter rearing habitat conditions are expected to remain unchanged, and the duration of rearing habitat availability would be extended through May 31, at a minimum, compared to existing conditions under which RD 2049 pumping operations to drain College Lake typically commences in March or April.

The proposed weir would be raised to 62.5 feet NAVD88 following the last large anticipated precipitation event of the season. As such, lake water surface elevations in the spring are expected to rise above existing elevations (see Table 3.4-4). Potential changes to steelhead winter/spring rearing habitat resulting from increased water surface elevations were evaluated previously by cbec inc eco engineering. The estimated changes in proportional surface areas for a variety of depth categories (0 to 0.5 feet, 0.5 to 1 feet, 1 to 2 feet, 2 to 4 feet, 4 to 6 feet, and greater than 6 feet) across a wide range of water surface elevations were found to be relatively minor between storage elevations of 60 feet NAVD88 and 65 feet NAVD88, suggesting that raising the lake level with a taller weir would result in similar distributions of habitat availability at different depths. Based on these data, the Project is not expected to change the suitability of College Lake for winter/spring juvenile steelhead rearing in response to the raising of the weir elevation.

Water temperature data collected by PV Water at the College Lake pump house confirm previous assumptions (e.g., Smith, 2010) that water temperatures in the lake are too warm in the summer to allow summer rearing by juvenile steelhead, especially in the presence of warm water predatory fishes. It should be noted that the available summer water temperature data represent existing

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85 Podlech, M., College Lake Smolt Outmigrant Study. Prepared for Resource Conservation District of Santa Cruz County, Spring 2011.
92 Ibid.
drawn-down lake conditions (i.e., surface water confined to the drainage channels of the lake), and that higher summer water surface elevations under future with-Project conditions may provide a different temperature regime (cooler or warmer). However, water temperature data collected in Casserly Creek immediately upstream of College Lake in 2013 indicates that daily average inflow temperatures to the lake may reach stressful levels for steelhead (greater than 18 degrees Celsius) by mid-June before these waters even reach the open lake. Therefore, it appears unlikely that suitable conditions for summer juvenile rearing could be achieved in College Lake.

College Lake currently supports non-native fish species known to prey on juvenile steelhead and other native fish species. Under current RD 2049 operations, water from College Lake is pumped out in spring and wetted habitat in the summer and fall is restricted to the drainage ditches within the lake. While this practice does not entirely eliminate populations of non-native predatory species, it likely helps to control and reduce populations annually. With implementation of the Project, water would be retained in College Lake for a longer period of time in the spring, summer, and fall compared to existing conditions. An extended inundation season in College Lake could allow populations of non-native predatory species to increase. This would be a significant impact on S-CCC steelhead. Implementation of Mitigation Measure BR-2 would reduce this impact to less than significant by requiring development and implementation of an invasive fish species control plan that would reduce potential predation upon steelhead.

**Fish Passage**

The proposed bypass flows for the Project were developed through assessments of fish passage flow requirements for adult (December 15 to March 31) and smolt (April 1 to May 31) S-CCC steelhead within three distinct hydraulic regions:

- **Salsipuedes Creek between Corralitos Creek and the Pajaro River.** Fish passage flow needs within this reach were assessed through a Critical Riffle Analysis. The Critical Riffle Analysis evaluated flows necessary to provide sufficiently wide passage corridors meeting or exceeding minimum passage depths of 0.6 feet for adults and 0.4 feet for smolts across the most limiting (i.e., shallow) riffles identified as potential impediments to steelhead. Based on the CRA, this reach is considered passable when the combined flow from Corralitos Creek and College Lake outflow is 21 cubic feet per second (cfs) for adult fish and 8 cfs for smolts.

- **Salsipuedes Creek between the Proposed Weir Structure and Corralitos Creek.** This reach of Salsipuedes Creek does not contain typical riffle habitat and, at times (i.e., during high flow events) receives reverse flow from Corralitos Creek toward College Lake. Fish passage through this reach was evaluated by cbec using hydraulic modeling to identify flows necessary to meet the same minimum passage depths described above. The analysis

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93 Ibid.
94 Podlech, M., College Lake Smolt Outmigrant Study. Prepared for Resource Conservation District of Santa Cruz County, Spring 2011.
95 Refinements to fish passage assumptions and modeling may occur during permitting based on agency consultations.
96 Podlech, M., College Lake Integrated Resource Management Project, Fish Passage Assessment, March 2019.
concluded that flows of 1.8 cfs and 1.0 cfs from College Lake would provide suitable passage conditions for adults and smolts, respectively, through this reach.

- **Proposed Weir Structure.** The weir passage flow rates would be refined during the design phase of the fish passage structure, but for modeling and evaluation, these were assumed to be the same as those for Salsipuedes Creek between the weir and the Corralitos Creek confluence.  

Bypass flows for fish passage would be provided between December 15 and May 31 after the water surface elevation in College Lake has surpassed the level at which passable conditions for fish would have occurred naturally (i.e., without the weir in place) on Salsipuedes Creek above Corralitos Creek. Water supply extractions from December 15 to May 31 would only occur when College Lake inflows exceed the proposed fish bypass flows. As such, fish passage conditions at the proposed weir and in Salsipuedes Creek would improve over existing conditions under which fish passage is not actively managed or considered. The current practice of pumping College Lake out beginning in March or April artificially increases downstream flows by up to 22 cfs over natural flow rates for 30 to 40 days. Although these artificial flows create favorable fish passage conditions in Salsipuedes Creek during the smolt outmigration season, these artificially favorable conditions cannot be taken advantage of by smolts trapped in College Lake by the pumping activities that create the artificially high flows.

The mainstem Pajaro River channel downstream of the Salsipuedes Creek confluence is dominated by sand and small gravel substrates. Such substrates are easily mobilized and shifted by moderate and high flows. As such, riffles in lower Salsipuedes Creek are highly transient features. Fish passage needs evaluations such as CDFW’s Critical Riffle Analysis method used on Salsipuedes Creek between the Corralitos Creek and Pajaro River confluences are only applicable to channels dominated by gravel and cobble substrates, and therefore are not an appropriate analysis methodology for the lower Pajaro River. To evaluate the potential for the Project to adversely affect fish passage conditions in the lower Pajaro River, a hydrologic analysis of the relative contributions of the College Lake watershed to the Pajaro River below the Salsipuedes Creek confluence was prepared by cbec. The 17-square-mile College Lake watershed accounts for approximately 1.3 percent of the approximately 1,300 square mile Pajaro River watershed. Accordingly, flows from College Lake under existing and future with-Project conditions account for a minor portion of lower Pajaro River flows during the wet season. However, as natural flows throughout the watershed recede in the spring, the existing RD 2049 practice of pumping water to drain College Lake artificially increases the relative contribution of flows to the lower Pajaro River. As these discharges recede in the late spring, reaches of Corralitos Creek and the Pajaro River immediately upstream of their respective confluences with Salsipuedes regularly dry up. When surface flow contributions from Corralitos Creek and the Pajaro River cease, pumping of College Lake may account for nearly 100 percent of the flows in the lower Pajaro River, and the elimination of artificial pumping under the Project would result in more normative hydrographs throughout the study area. As such, the frequency and duration of steelhead migration passage opportunities in the lower Pajaro River are not expected to be significantly modified by the Project because such opportunities only exist naturally at times when Pajaro River and Corralitos

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98 Ibid.
99 Ibid.
Creek flows are sufficiently high to allow for migration, and at those times, bypass flows would also be provided from College Lake. Specifically, linear regression ($R^2 = 0.7481$) of modelled flows in the study area indicates that a 21 cfs adult passage flow in Salsipuedes Creek corresponds to an estimated flow of 115 cfs (range is 29 to 144 cfs) in the Pajaro River downstream of the Salsipuedes Creek confluence, and an 8 cfs smolt passage flow in Salsipuedes Creek corresponds to an estimated flow of 38 cfs (range is 11 to 63 cfs) in the Pajaro River downstream of the Salsipuedes Creek confluence.

Overall, the potential effects of the Project on steelhead passage conditions would range from unchanged to improved in Salsipuedes Creek and at the proposed weir, and are expected to remain largely unchanged in the lower Pajaro River.

**Salsipuedes Creek**

As shown in Table 3.4-5, the Project would essentially eliminate summer and fall pumping discharges from College Lake into Salsipuedes Creek. Salsipuedes Creek does not provide summer/fall rearing habitat for juvenile steelhead and the species is not expected to be affected by the Project’s change in flows. Moreover, cbec estimated that summer evapotranspiration rates from College Lake would likely have exceeded summer inflow rates under pre-reclamation conditions (i.e., in the absence of the existing weir and associated summer maintenance pumping) and that outflows from the natural lake configuration therefore would likely have ceased at some point in the dry season. As such, Project conditions are expected to result in a more normative summer/fall hydrologic regime in Salsipuedes Creek in the absence of artificial pumping, resulting in no impact and potentially beneficial effects to fish passage at this location.

**Pajaro River Lagoon**

Beach berm-built estuaries such as Pajaro River Lagoon typically support a wide diversity of habitats and microhabitats and are known to be highly productive. Juvenile steelhead in particular have been shown to benefit from significant growth rates when rearing in estuaries and lagoons. However, juvenile steelhead are currently not known to utilize Pajaro River Lagoon for rearing, and the estuary is assumed to function largely as a migratory corridor for adult and smolt steelhead when the sandbar is open. As described in Section 3.3, Surface Water, Groundwater, and Water Quality, the Project would affect freshwater inflows to the Pajaro River Lagoon. Based on the results of a quantified conceptual model for the study area (Appendix HYD), the Project could increase the chance of the lagoon mouth being closed during spring, but otherwise would not alter the likelihood of breaching the lagoon. The effects of the Project on lagoon closure depend largely on the relative annual wetness of conditions. Differences in closure timing and water levels were negligible in the above-normal water years of 2016 and 2017. In 2014, a very dry water year, seasonal closure also occurred at roughly the same time for existing and future with-Project conditions, which is likely due to the fact that wave conditions were conducive to mouth closure at that time, regardless of inflows. However, in the spring of below-average water year 2015, reduced flows to the lagoon during the last rainstorm of the year under future with-Project conditions allowed waves to close the lagoon earlier by about five to six weeks. Given the small sample size (2014 to 2017), it is unclear how relevant these results are. While the predicted

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changes in closure timing in 2015 are within the expected uncertainty of model predictions for number of closure days per month (10 to 20 percent), it may be possible that during especially dry years, lower inflows could allow waves to close the mouth sooner in the year than would occur under the existing conditions of artificial pumping to drain College Lake. While earlier closure of the lagoon in the spring may reduce smolt ocean entry opportunities in some years, Project conditions would result in a more normative hydrologic regime in the lagoon in the absence of artificial pumping at College Lake. Sandbar closure timing varies greatly from year to year at most central California lagoons, and the potential Project-related shift to an earlier closure in some years in the absence of artificially elevated lagoon inflows is a less-than-significant impact on steelhead smolts.

**Impact Conclusion**

Implementation of Mitigation Measure BR-2 would effectively reduce impacts on special-status fish species from Project operations to less-than-significant levels. Thus impacts would be *less than significant with mitigation*.

**Mitigation Measure BR-2: Invasive Fish Species Control Plan.**

PV Water shall develop an Invasive Fish Species Control Plan. PV Water would submit the plan to the appropriate resource agencies (CDFW, USFWS, and NMFS) for approval within one year of Project implementation. The Fish Species Control Plan shall be implemented at College Lake within two years of Project implementation. The Fish Species Control Plan shall include, at a minimum:

1. Measures describing PV Water’s methods of draining College Lake to the greatest extent feasible;

2. Measures describing PV Water’s methods, equipment, and timing of invasive species eradication efforts to be conducted in association with lake drawdown efforts;

3. Measures describing the frequency at which invasive species control efforts are to be implemented.

**Impact BR-7: Project operations could interfere substantially with the movement of native resident or migratory wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. (Less than Significant)**

As described in Impact BR-4, Project operations would change the seasonal inundation patterns within the College Lake basin by holding water in the lake for a longer period annually, shifting the annual draining from April-May to July-September. As proposed, College Lake would likely be drained annually for water supply and management of non-native fish. No decrease in waterfowl habitat is anticipated. Changes in inundation period may result in changes in vegetation composition as farming below 59 feet NAVD88 ceases. Management of those habitat areas to maintain open water during the wet season would be accomplished through vegetation management, as described in Section 2.7 in Chapter 2, *Project Description*, and in consultation with state and federal resource agencies and local experts.
The filling of College Lake in late fall and winter is dependent on rainfall runoff, and would remain unchanged from current conditions. Effects on the arrival timing for wintering waterfowl that use the flooded basin are, therefore, not expected. Departure times of wintering waterfowl vary by species, but data from the 2014 to 2018 College Lake Waterfowl Studies indicates that the majority of wintering ducks leave the lake by late April-early May, just prior to, or concurrent with, the rapid drawdown.

The largest effects of the proposed operations would be at the lowest elevations within the basin (50 to 57 feet NAVD88). Under the Project, these elevations would stay inundated through the summer, providing open water and emergent marsh waterfowl habitat in areas that are currently drained by RD 2049 and converted to agriculture by June.

Spring season mudflat conditions that occur during April and May under current conditions are a result of rapid draining of active farm fields. Tile drains underlie portions of the active farm fields and are operated throughout the spring drawdown period. The resulting transitory mudflat habitat conditions are utilized by migrating shorebirds and waterbirds, often in great numbers. Under the Project, the spring-period mudflat habitat below elevation 59 feet NAVD88 would be reduced in acreage, but those mudflat conditions would instead be present during fall migration. Comparable fall migration-period mudflat habitat conditions could exist either through natural suppression of emergent vegetation caused by the increased inundation period, or by seasonal management of soils and vegetation according to vegetation management described in Section 2.7 in Chapter 2, Project Description.

Lands at higher elevations within the lake basin (about 59 to 62 feet NAVD88) are likely to experience relatively little change as a result of the Project, for all water year types. Under proposed operations, mudflat conditions and seasonal wetland habitat could be present in these higher elevations during spring migration, either through the continuation of active farming, where feasible, or by seasonal management of soils and vegetation according to vegetation management described in Section 2.7.

Under Project operations, the weir would be raised to 62.5 feet NAVD88 following the last large anticipated storm event of the season. As such, College Lake water surface elevations in the spring are expected to rise above existing elevations. Late wintering and late spring migrant waterfowl species like northern shovelers, gadwalls, and ruddy ducks may benefit from the persistent late spring-early summer foraging habitat.

Waterfowl, wading bird, and shorebird nesting is limited at College Lake, under current operation conditions. During the 2014 to 2018 College Lake Waterfowl Survey study period, Canada goose, mallard, pie-billed grebe, killdeer, and American avocet have been documented attempting to nest within College Lake’s storage area. All of these species make nests on the ground along the upland margins of the inundated lake and on elevated areas along the ditch lines caused by dredge spoils. All of these species have been found to suffer nest mortality by predators during rapid drawdown conditions, when coyote, grey fox, crows, ravens and other predators gain access to nest sites. Under the proposed late season adjustable weir operations, higher late spring water surface elevation may decrease predation on ground nesting bird species by reducing predator access.
As stated in Impact BR-4, existing riparian and wetland habitats are expected to remain the same following Project implementation, with the following exceptions:

- Existing farmed wetlands below 59 feet NAVD88 would change to open water habitat during the spring followed by a combination of mudflat and seasonal wetland vegetation in the late summer or fall. These areas would be characterized as managed seasonal wetlands, and in the absence of farming would provide longer periods of available foraging habitat for waterfowl, wading birds, and shorebirds;
- Existing annual grassland between 62.5 feet NAVD88 and 63.5 feet NAVD88 would likely convert to seasonal wetland; and
- Existing agricultural areas between 62.5 feet NAVD88 and 63.5 feet NAVD88 would convert to farmed wetland.

Therefore, impacts on Wildlife Corridors or Nursery Sites within College Lake would be minimal and beneficial because they would result in improved wetland habitat conditions, would increase the period of inundation during spring breeding season, and increase the overall extent of wetland habitat. The impact would be less than significant.

Comments received on the Notice of Preparation requested that an assessment of impacts on waterfowl food supply be included in the EIR analysis. It would be speculative to predict which annual plants would grow in which areas, based on fluctuating water levels and different water year types. With the Project, College Lake would be inundated at slightly higher elevations, and would stay inundated longer for all water year types. Farming would continue at upper elevations, and lower elevations would receive regular vegetation management (mowing, disking) which has a similar effect as the current farm practices. Because of these slightly different but mostly similar conditions, the exposed wet substrate area at the receding water line would be expected to support nearly the same suite of species that currently establish as the water is drawn down. At lower elevations there would likely be less vegetation (open mudflat) as discussed in Impact BR-4. The species that are expected to be dominant after the project is implemented are discussed in general terms in Impact BR-4. In addition, because the lower elevations would not be farmed, any food that grows there would be able to complete its life cycle (unlike existing conditions, when the plants all get tilled under on June 1). Even if there was a reduction in waterfowl food supply at College Lake (which is speculative to quantify), other local food sources are available for waterfowl, and the impact would be less than significant.

Mitigation: None required.

Impact BR-8: Implementation of the Project could conflict with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. (Less than Significant)

Construction of the proposed weir and intake pump station would occur, and installation of the pipelines adjacent to the Pinto Creek and West Beach Street ditches may occur, within sensitive habitat and the riparian corridor as defined in Santa Cruz County Municipal Code, Chapter 16.30
Riparian Corridor and Wetland Protection. As discussed in Section 3.4.2.3, California Government Code Section 53091 exempts agencies like PV Water from complying with local building and zoning ordinances when locating or constructing facilities for the production, generation, storage, treatment, or transmission of water. This discussion is intended to support City and County consideration of Project consistency with general plans as well as issuance of a Coastal Development Permit for the College Lake pipeline.

Implementation of mitigation measures discussed in Impacts BR-1 through BR-7 would limit the Project’s potential conflicts with local policies or ordinances by reducing the Project’s impacts on biological resources. Implementation of revised adopted Mitigation Measures BIO-1b, 1c, and 1d, and adopted Mitigation Measure BIO-1e, would reduce impacts on sensitive habitats and riparian corridors, and potential conflict with local policies and codes to less than significant. In accordance with revised adopted Mitigation Measure BIO-1b, PV Water would implement measures to maintain water quality and to control erosion and sedimentation such as restricting trenching across all waterways to low-flow periods, diverting water around work areas, and placing sediment curtains downstream of the construction zone. In accordance with revised adopted Mitigation Measures BIO-1c and BIO-1d, PV Water would ensure that temporarily impacted sensitive natural communities are restored to pre-construction conditions and provide compensation for permanent loss of sensitive natural communities. In accordance with adopted Mitigation Measure BIO-1e, PV Water would ensure that, where construction and/or facilities are placed within a riparian or wetland development setback area, indirect impacts on adjacent riparian and wetland vegetation would be reduced.

There is a potential conflict with Santa Cruz County General Plan/Local Coastal Plan Policy 5.6.1, which states, “pending a determination based on a biological assessment, preserve perennial stream flows at 95 percent of normal levels during summer months and at 70 percent of the normal winter baseflow levels. Oppose new water rights which would diminish the instream flows necessary to maintain anadromous fish runs and riparian vegetation below the 97 percent/70 percent standard.” Project operations may conflict with this policy. Biological Assessments would be prepared to support federal consultation under Section 7 of FESA. The Project would comply with any conditions of the Section 7 consultation and would ensure consistency with FESA requirements for the protection of federally listed threatened and endangered species and critical habitat.

Chapter 16.34 of the Santa Cruz Municipal Code restricts actions that would cause adverse effects to significant trees within the Coastal Zone.101 No significant trees within the Coastal

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101 Significant trees are defined in the Municipal Code as any tree, sprout clump, or group of trees that is (A) Within the urban services line or rural services line, any tree which is equal to or greater than 20 inches diameter at breast height (d.b.h.) (approximately five feet in circumference); any sprout clump of five or more stems each of which is greater than 12 inches d.b.h. (approximately three feet in circumference); or any group consisting of five or more trees on one parcel, each of which is greater than 12 inches d.b.h. (approximately three feet in circumference); or (B) outside the urban services line or rural services line, where visible from a scenic road, any beach, or within a designated scenic resource area, any tree which is equal to or greater than 40 inches d.b.h. (approximately 10 feet in circumference); any sprout clump of five or more stems, each of which is greater than 20 inches d.b.h. (approximately five feet in circumference); or, any group consisting of 10 or more trees on one parcel, each greater than 20 inches d.b.h. (approximately five feet in circumference).
Zone would be removed, therefore the Project would not conflict with the Santa Cruz County Municipal Code protecting significant trees, and the impact would be *less than significant*.

**Mitigation:** None required.

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**Cumulative Impacts**

Impact C-BR-1: The Project, in combination with past, present, and probable future projects in the Project area, could result in significant adverse impacts on special-status species, sensitive natural communities and wetlands, wildlife corridors or nursery sites, or conflicts with local plans and policies. (*Less than Significant*)

The geographic scope of analysis for cumulative impacts on sensitive biological resources includes the Project sites, as well as biologically linked terrestrial and aquatic areas within approximately five miles of these sites. This includes Salsipuedes Creek, Pajaro River, and the Pajaro Lagoon. The cumulative impact analysis considers whether the incremental effects of the Project, when combined with the effects of past, present, and reasonably foreseeable projects (as listed in Table 3.3-1 and shown on Figure 3.1-1 in Section 3.1, Overview), would result in cumulatively considerable impacts on special-status species and sensitive natural communities, including wetlands or other waters of the U.S. or state, or on wildlife movement corridors or nursery sites.

**Special-Status Species**

**Construction**

Construction activities may impact special-status species in the College Lake Basin including CRF, WPT, S-CCC steelhead, Monterey roach, Monterey hitch, and nesting birds during demolition of the existing weir structure and intake pump station and installation of the proposed weir structure and intake pump station at College Lake. Installation of the new pipeline through Pinto Creek would also affect these species. Species would be affected by water quality impacts associated with this work and general habitat degradation during the construction period as well.

As with the Project, the following other projects may similarly impact these special-status species during construction:

- PV Water’s Harkins Slough Recharge Facilities Upgrades Project (CRF, WPT, waterfowl, nesting birds),
- PV Water’s Watsonville Slough with Recharge Basins Project (CRF, WPT, waterfowl and nesting birds),
- PV Water’s Murphy Crossing with Recharge Basins Project (CRF, WPT, nesting birds, steelhead),
- Recharge Net Metering Pilot Program (CRF),
- USACE Pajaro River Flood Risk Management Study Project (CRF and steelhead), and
- City of Watsonville Lee Road Trail Connector (possible impacts on CRF).
The combined effects of the Project and the cumulative projects listed above could result in a cumulatively significant impact on special-status species.

These cumulative projects would be required to comply with applicable regulatory requirements protecting biological resources and project-specific mitigation measures (where applicable) similar to those of the Project.

As discussed in Impact BR-1, implementation of the adopted Mitigation Measures BIO-1b, 2a through 2l, and 2n which address most of these potential impacts on fish, CRF, and WPT, and supplemented by new Mitigation Measures BR-1a and BR-1b and revised Mitigation Measures BIO-1c and BIO-1d would reduce, avoid or minimize the project’s impacts on these special-status species. Further, the Project would implement the adopted Mitigation Measure BIO-2i and new Mitigation Measures BR-1c and BR-1d, which would reduce the project’s impacts on nesting birds, roosting bats, and San Francisco dusky-footed woodrat. Additional avoidance and minimization measures would be implemented for active roosts and woodrat nests that cannot be avoided by the project. These protective requirements would avoid or minimize the project’s contribution to significant cumulative impacts on special-status species and their habitat such that the Project’s contribution to cumulative impacts would not be cumulatively considerable.

Operational Impacts on Fish

Fish Passage
Flood control and water supply projects throughout the Pajaro Valley Groundwater Basin could affect fish passage conditions in the Pajaro River and Salsipuedes Creek. The USACE Pajaro River Flood Risk Management Study project (USACE project) would alter patterns of discharge in Salsipuedes Creek and Pajaro River by installing flood control or reduction infrastructure. The USACE project would construct new levees along Corralitos Creek, set back from the existing natural streambanks. The USACE project would also replace existing levees with setback levees along Salsipuedes Creek. Setback levees would expand the meander belt for Salsipuedes Creek and the Pajaro River, and thus provide more natural channel processes, riparian cover, habitat complexity, and potentially more stream shading. The Project proposes to provide suitable fish passage conditions during the December 15-May 31 steelhead migratory period with project-specific bypass flows. Although the channel morphology resulting from implementation of the USACE project cannot be predicted at this time, the cumulative effects of bypass flows and more natural channel processes are not expected to adversely affect fish passage conditions in Salsipuedes Creek and the Pajaro River. Moreover, fish bypass requirements anticipated for the proposed Murphy Crossing project would ensure no cumulative effects to fish passage would occur in the Pajaro River below the Salsipuedes Creek confluence. There would be no significant cumulative impacts related to fish passage to which the Project would contribute.

Pajaro Lagoon
Implementation of the Project may result in a shift to slightly earlier lagoon mouth closure in some years in the absence of artificially elevated lagoon inflows resulting from the existing practice of draining College Lake. Flood control and water supply projects throughout the Pajaro Valley Groundwater Basin could affect water levels and mouth closure timing in the Pajaro Lagoon. Modeling of the cumulative project conditions resulted in similar results as the with-
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3.4 Biological Resources

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Project condition (refer to Appendix HYD). Characteristics of the cumulative projects contribute to this result. First, the flow bypass requirements of the proposed Murphy Crossing project would counteract the reduction in flows for water supply diversion. Second, the Harkins and Watsonville Slough projects, conservatively assumed to divert nearly all water available for water supply, contributes a relatively small proportion of wet season discharge to Pajaro Lagoon. As a result, the modeled cumulative conditions closely mirror with-Project conditions in Pajaro Lagoon, and cumulative impacts on fish in the lagoon would be less than significant.

Operational Impacts on Special-Status Terrestrial Species

College Lake Inundation

Proposed College Lake water management operations would change the seasonal inundation patterns of habitats within the lake basin, with the largest effects at the lowest elevations within the basin (which would stay inundated through the summer). The longer inundation period and vegetation management activities would maintain seasonally-inundated areas as wildlife habitat, such as open water habitat in the winter and spring for aquatic species, and mudflat with seasonal wetland vegetation in the summer through fall for shorebirds and migratory waterfowl. Although some habitat conversion is expected under Project operations it was determined to result in less-than-significant impacts on special-status species (CRF, WPT, special-status and nesting birds, western red bat, and San Francisco dusky-footed woodrat) due to the similar function and value the converted habitats provide compared with baseline conditions.

College Lake Maintenance

Maintenance activities at College Lake on annual/semi-annual basis (e.g., disking, tilling, vegetation removal) could injure or kill individual CRF, WPT, nesting birds, or cause nest abandonment within these work areas, which would be a significant impact. As with the Project, operation of the following other projects may impact these special-status terrestrial species through maintenance activities or habitat conversion:

- PV Water’s Harkins Slough Recharge Facilities Upgrades Project (CRF breeding and waterfowl nesting, and WPT from changes or decreases in water levels from water diversion), and
- PV Water’s Watsonville Slough with Recharge Basins Project (CRF breeding and waterfowl nesting, and WPT from changes or decreases in water levels from water diversion and pumping noise).

These cumulative projects would be required to comply with applicable regulatory requirements protecting biological resources and project-specific mitigation measures (where applicable) similar to those of the Project.

These combined operational effects, of the Project and the cumulative projects that offer similar opportunity for CRF, WPT, or nesting birds, would result in a cumulatively significant impact. As discussed in Impact BR-5, the Project would implement revised adopted Mitigation Measure BIO-2i, 2j, and 2k to reduce impacts on terrestrial special-status species by conducting surveys prior to maintenance activities for nesting birds, CRF, and WPT, monitoring during maintenance activities if species presence warrants it, and otherwise protecting these species from adverse...
effects of maintenance activities through staff education, no-work buffers, and modification of maintenance approaches. These protective requirements would avoid or minimize the Project’s operational impacts on CRF, WPT, and nesting birds such that the Project’s contribution to the cumulative impacts would not be cumulatively considerable.

*Habitats Downstream of College Lake*

While discharge downstream of College Lake would be reduced in some months compared to pre-project conditions, the general seasonality of discharge would remain and is not anticipated to change the composition or extent of wetland or riparian vegetation used by CRF and WPT within either the Lower Salsipuedes Creek or Pajaro River under Project conditions. Similarly, upland riparian habitat along these waterways hosting special-status and nesting birds, western red bat, and San Francisco dusky-footed woodrat would not change as a result of Project operation. The USACE Pajaro River Flood Risk Management Study project would affect patterns of discharge in Salsipuedes Creek and Pajaro River, resulting in more natural channel processes in these streams. In addition, several wetland restoration projects in the cumulative scenario would expand wetland and adjacent upland habitat used by these special-status terrestrial species which include the Watsonville Wetlands Watch West Struve Slough Habitat Enhancement and Climate Change Adaptation Pilot Project, Upper Struve Slough Habitat Enhancement Project, Middle Watsonville Slough Upland Enhancement Project, Lower Harkins Slough Habitat Restoration Project, and Bryant Habert Ecological Restoration Project. The cumulative impacts of these projects on special-status terrestrial species during project operations would be *less than significant*.

*Sensitive Natural Communities and Potentially Jurisdictional Wetlands and Waters*

Construction activities would affect sensitive natural communities and wetlands within Salsipuedes Creek, Pinto Creek, and West Beach Street drainage ditch through direct habitat removal, habitat conversion, or degradation of water quality. Removal of the existing weir structure and intake pump station and installation of the proposed weir structure and intake pump station, including installation of temporary sheetpiles and or a cofferdam and dewatering, would result in temporary and permanent impacts on the Salsipuedes Creek open water channel, riparian forest, seasonal wetland, and farmed wetland. Temporary direct impacts on Pinto Creek open water channel would occur during pipeline installation and indirect impacts associated water quality of Salsipuedes Creek, Pinto Creek, and West Beach Street drainage ditch may also occur during construction.

Other projects may affect sensitive natural communities and wetlands and waters in the same area which include:

- PV Water’s Harkins Slough Recharge Facilities Upgrades Project (temporary impacts on wetlands in Harkins Slough and riparian habitat along access roads),
- PV Water’s Watsonville Slough with Recharge Basins Project (construction impacts on Watsonville Slough wetlands and riparian habitat along access roads),
- PV Water’s Murphy Crossing with Recharge Basins Project (construction impacts on riparian habitat), and
- USACE Pajaro River Flood Risk Management Study Project (possible impacts on riparian habitat)
As with the Project, these impacts are primarily related to the construction phases, which are temporary. Cumulative projects would be required to comply with applicable regulatory requirements protecting biological resources and project-specific mitigation measures (where applicable) similar to those of the Project.

Project construction along with construction of the cumulative projects would result in a cumulatively significant impact. Implementation of the adopted Mitigation Measure BIO-1b and revised adopted Mitigation Measures BIO-1c, 1d, and 1e would reduce the project’s contribution to cumulative impacts on sensitive natural communities through standard measures to maintain water quality and to control erosion and sedimentation during construction, protection and avoidance of existing riparian and wetland vegetation from indirect impacts during construction, and compensatory revegetation of impacted riparian habitat and wetlands and waters at a 3:1 ratio. These protective requirements and compensatory revegetation would avoid or minimize the project’s contribution to cumulative impacts on sensitive natural communities and wetlands and waters.

As discussed in Impact BR-4, project operation would result in some habitat conversion at College Lake with the overall quantity of seasonal and farmed wetland habitat anticipated to nominally increase compared to existing conditions. Operational impacts on sensitive natural communities and potentially jurisdictional wetlands and waters within College Lake would be minimal with the total area of wetland habitat increasing as a result of the project.

The cumulative projects would not alter discharge volumes within Salsipuedes Creek, but would alter discharge in Pajaro River. The flow regime within the Pajaro River downstream of College Lake would be similar under Project operations compared to existing conditions (high discharge during winter and early spring months, followed by lower discharge during the spring and summer growing season). In addition, the Murphy Crossing with Recharge Basins Project would include fish bypass requirements.

Further, Watsonville Wetlands Watch West Struve Slough Habitat Enhancement and Climate Change Adaptation Pilot Project, Upper Struve Slough Habitat Enhancement Project, Middle Watsonville Slough Upland Enhancement Project, Lower Harkins Slough Habitat Restoration Project, and Bryant Habert Ecological Restoration Project are wetland restoration projects which would provide a cumulative benefit on sensitive natural communities and wetlands and waters in the study area by expanding and improving the function and value of these resources through restoration.

Cumulative operational impacts on sensitive natural communities, including wetlands and waters, would be less than significant.

**Wildlife Corridors or Nursery Sites**

College Lake supports a variety of waterfowl when filled in winter and spring and provides wintering habitat for many migratory bird species. Other projects that may impact wildlife corridors or nursery sites in the same geographic scope include the several Watsonville Wetlands Watch restoration projects (West Struve Slough Habitat Enhancement and Climate Change
Adaptation Pilot Project, Upper Struve Slough Habitat Enhancement Project, Middle Watsonville Slough Upland Enhancement Project, Lower Harkins Slough Habitat Restoration Project, and Bryant Habert Ecological Restoration Project) which would restore or enhance wetlands that could support migrating waterfowl. Impact BR-7 evaluates the Project’s impacts on wildlife corridors and nursery sites; as discussed there, while wildlife movement would be temporarily affected during construction, no significant adverse effects to wildlife corridors and nursery sites are anticipated during operations. In particular, a function of the longer inundation period would be the larger area of mudflat habitat present during the fall migration period, which is beneficial to migratory waterfowl. The Project in combination with the cumulative projects could result in a beneficial cumulative impact on wildlife movement corridors and available foraging and breeding habitat through habitat expansion.

The project’s incremental contribution to potential impacts on wildlife corridors and nursery sites, in combination with other past, present and future projects *would not be cumulatively considerable.*

**Mitigation:** None required.
3.5 Air Quality and Greenhouse Gases

This section presents an analysis of potential impacts related to air quality and greenhouse gases that would result from implementation of the proposed College Lake Integrated Resources Management Project (Project). The analysis includes both site options (preferred and optional) for the water treatment plant (WTP) as well as preferred and optional pipeline alignments for the College Lake pipeline. Information from the 2014 Basin Management Plan Update Program Environmental Impact Report (2014 BMP Update PEIR) that remains relevant and accurate for the purposes of describing the physical or regulatory setting of air quality and greenhouse gases has been incorporated as appropriate. The Project includes mitigation measures adopted by the Board of Directors to reduce the severity and magnitude of potential environmental effects.

3.5.1 Setting

3.5.1.1 Background

Criteria Air Pollutants

The United States Environmental Protection Agency (USEPA) has identified six criteria air pollutants that are a threat to public health and welfare. These pollutants are called “criteria” air pollutants because standards have been established for each of them to meet specific public health and welfare criteria (see Regulatory Framework, below). The following criteria pollutants are a concern in the Project area.

Ozone

Ozone is a respiratory irritant and an oxidant that increases susceptibility to respiratory infections and can also cause substantial damage to vegetation and other materials. Ozone is not emitted directly into the atmosphere, but is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving reactive organic gases (ROG) and nitrogen oxides (NOX). ROG and NOX are known as precursor compounds for ozone. Significant ozone production generally requires ozone precursors to be present in a stable atmosphere with strong sunlight for approximately three hours.

Ozone is a regional air pollutant because it is not emitted directly by sources, but is formed downwind of sources of ROG and NOX under the influence of wind and sunlight. Ozone concentrations tend to be higher in the late spring, summer, and fall, when the long sunny days combine with regional subsidence inversions to create conditions conducive to the formation and accumulation of secondary photochemical compounds like ozone.

Ozone poses a health threat to those who already suffer from respiratory diseases as well as to healthy people. It is a respiratory irritant that can cause severe ear, nose, and throat irritation and increased susceptibility to respiratory infections. According to USEPA, ozone can cause the muscles in the airways to constrict, potentially leading to wheezing and shortness of breath.

Ozone can make it more difficult to breathe deeply and vigorously; cause shortness of breath and pain when taking a deep breath; cause coughing and sore or scratchy throat; inflame and damage the airways; aggravate lung diseases such as asthma, emphysema, and chronic bronchitis; increase the frequency of asthma attacks; make the lungs more susceptible to infection; continue to damage the lungs even when the symptoms have disappeared; and cause chronic obstructive pulmonary disease. Long-term exposure to ozone is linked to aggravation of asthma, and is likely to be one of many causes of asthma development, and long-term exposures to higher concentrations of ozone may also be linked to permanent lung damage, such as abnormal lung development in children. According to the California Air Resources Board (CARB), exposure to ozone is “associated with symptoms such as coughing, chest tightness, shortness of breath, and the worsening of asthma symptoms. The greatest risk for harmful health effects belongs to outdoor workers, athletes, children and others who spend greater amounts of time outdoors during smoggy periods”. Inhalation of ozone causes inflammation and irritation of the tissues lining human airways, causing and worsening a variety of symptoms, and exposure to ozone can reduce the volume of air that the lungs breathe in and cause shortness of breath. USEPA states that people most at risk from breathing air containing ozone include people with asthma, children, older adults, and people who are active outdoors, especially outdoor workers. Children are at greatest risk from exposure to ozone because their lungs are still developing and they are more likely to be active outdoors when ozone levels are high, which increases their exposure. According to CARB, studies show that children are no more or less likely to suffer harmful effects than adults; however, children and teens may be more susceptible to ozone and other pollutants because they spend nearly twice as much time outdoors and engaged in vigorous activities compared to adults. Children breathe more rapidly than adults and inhale more pollution per pound of their body weight than adults and are less likely than adults to notice their own symptoms and avoid harmful exposures. Further research may be able to better distinguish between health effects in children and adults.

Nitrogen Dioxide

Nitrogen dioxide (NO₂) is an air quality pollutant of concern because it acts as a respiratory irritant. NO₂ is a major component of the group of gaseous nitrogen compounds commonly referred to as NOₓ. A precursor to ozone formation, NOₓ is produced by fuel combustion in motor vehicles, industrial stationary sources (such as refineries, power plants, and chemical

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2 Ibid.
3 Ibid.
7 Ibid.
8 Ibid.
9 Ibid.
manufacturing facilities), ships, aircraft, and rail transit. Typically, NO\textsubscript{X} emitted from fuel combustion is in the form of nitric oxide (NO) and NO\textsubscript{2}, with the vast majority (95 percent) of the NO\textsubscript{X} emissions being comprised of NO. NO is converted to NO\textsubscript{2} in the atmosphere when it reacts with ozone or undergoes photochemical reactions.

NO\textsubscript{X} acts as an acute respiratory irritant and increases susceptibility to respiratory pathogens.\textsuperscript{10} According to USEPA, short-term exposures to NO\textsubscript{2} can potentially aggravate respiratory diseases, particularly asthma, leading to respiratory symptoms (such as coughing, wheezing, or difficulty breathing), hospital admissions, and visits to emergency rooms, while longer exposures to elevated concentrations of NO\textsubscript{2} may contribute to the development of asthma and potentially increase susceptibility to respiratory infections.\textsuperscript{11} According to CARB, controlled human exposure studies show that NO\textsubscript{2} exposure can intensify responses to allergens in allergic asthmatics.\textsuperscript{12} In addition, a number of epidemiological studies have demonstrated associations between NO\textsubscript{2} exposure and premature death, cardiopulmonary effects, decreased lung function growth in children, respiratory symptoms, emergency room visits for asthma, and intensified allergic responses.\textsuperscript{13} Infants and children are particularly at risk from exposure to NO\textsubscript{2} because they have disproportionately higher exposure to NO\textsubscript{2} than adults due to their greater breathing rate for their body weight and their typically greater outdoor exposure duration; in adults, the greatest risk is to people who have chronic respiratory diseases, such as asthma and chronic obstructive pulmonary disease.\textsuperscript{14} CARB states that much of the information on distribution in air, human exposure and dose, and health effects is specifically for NO\textsubscript{2}, and there is only limited information for NO and NO\textsubscript{X}, as well as large uncertainty in relating health effects to NO or NO\textsubscript{X} exposure.\textsuperscript{15}

**Carbon Monoxide**

Carbon monoxide (CO) is a non-reactive pollutant that is a product of incomplete combustion and is mostly associated with motor vehicle traffic. High CO concentrations develop primarily during winter when periods of light winds combine with the formation of ground-level temperature inversions (typically from the evening through early morning). These conditions result in reduced dispersion of vehicle emissions. Motor vehicles also exhibit increased CO emission rates at low air temperatures.

The primary adverse health effect associated with CO is interference with normal oxygen transfer to the blood, which may result in tissue oxygen deprivation.\textsuperscript{16} According to USEPA, breathing air with a high concentration of CO reduces the amount of oxygen that can be transported in the blood stream to critical organs like the heart and brain, and at very high levels, which are possible


\textsuperscript{13} Ibid.

\textsuperscript{14} Ibid.

\textsuperscript{15} Ibid.

indoors or in other enclosed environments, CO can cause dizziness, confusion, unconsciousness, and death.\textsuperscript{17} Very high levels of CO are not likely to occur outdoors; however, when CO levels are elevated outdoors, they can be of particular concern for people with cardiovascular diseases, chronic lung disease, or anemia since these people already have a reduced ability for getting oxygenated blood to their hearts and are especially vulnerable to the effects of CO when exercising or under increased stress.\textsuperscript{18} According to CARB, the most-common effects of CO exposure are fatigue, headaches, confusion, and dizziness due to inadequate oxygen delivery to the brain.\textsuperscript{19} For people with cardiovascular disease, short-term CO exposure can further reduce their body’s already compromised ability to respond to the increased oxygen demands of exercise, exertion, or stress; inadequate oxygen delivery to the heart muscle leads to chest pain and decreased exercise tolerance.\textsuperscript{20} Unborn babies, infants, elderly people, and people with anemia or with a history of heart or respiratory disease are most likely to experience health effects with exposure to elevated levels of CO.\textsuperscript{21}

**Particulate Matter**

Particulate matter less than 10 microns in diameter (PM\textsubscript{10}) and particulate matter less than 2.5 microns in diameter (PM\textsubscript{2.5}) represent fractions of particulate matter that can be inhaled into air passages and the lungs and can cause adverse health effects. Particulate matter in the atmosphere results from many kinds of dust- and fume-producing industrial and agricultural operations, fuel combustion, and atmospheric photochemical reactions. Some sources of particulate matter, such as demolition and construction activities, are more local in nature, while others, such as vehicular traffic, have a more regional effect.

Very small particles of certain substances (e.g., sulfates and nitrates) can cause lung damage directly, or can contain adsorbed gases (e.g., chlorides or ammonium) that may be injurious to health. Particulate matter also can damage materials and reduce visibility.

Both PM\textsubscript{10} and PM\textsubscript{2.5} may adversely affect the human respiratory system, especially in people who are naturally sensitive or susceptible to breathing problems.\textsuperscript{22} According to CARB, both PM\textsubscript{10} and PM\textsubscript{2.5} can be inhaled, with some depositing throughout the airways; PM\textsubscript{10} is more likely to deposit on the surfaces of the larger airways of the upper region of the lung while PM\textsubscript{2.5} is more likely to travel into and deposit on the surface of the deeper parts of the lung, which can induce tissue damage and lung inflammation.\textsuperscript{23}


\textsuperscript{18} Ibid.


\textsuperscript{20} Ibid.

\textsuperscript{21} Ibid.


\textsuperscript{23} CARB, Inhalable Particulate Matter and Health (PM\textsubscript{2.5} and PM\textsubscript{10}), last reviewed August 10, 2017. Available online at https://www.arb.ca.gov/research/aaqs/common-pollutants/pm/pm.htm. Accessed January 2019.
Particulate matter generally is “associated with increased risk of hospitalization for lung and heart-related respiratory illness, including emergency room visits for asthma. Particulate matter exposure is also associated with increased risk of premature deaths, especially in the elderly and people with pre-existing cardiopulmonary disease. In children, studies have shown associations between particulate matter exposure and reduced lung function and increased respiratory symptoms and illnesses”.

Short-term (up to 24 hours) exposure to PM$_{10}$ has been associated primarily with worsening of respiratory diseases, including asthma and chronic obstructive pulmonary disease, leading to hospitalization and emergency department visits. The effects of long-term (months or years) exposure to PM$_{10}$ are less clear, although studies suggest a link between long-term PM$_{10}$ exposure and respiratory mortality. The International Agency for Research on Cancer published a review in 2015 that concluded that particulate matter in outdoor air pollution causes lung cancer.

Short-term exposure to PM$_{2.5}$ has been associated with premature mortality, increased hospital admissions for heart or lung causes, acute and chronic bronchitis, asthma attacks, emergency room visits, respiratory symptoms, and restricted activity days; long-term exposure to PM$_{2.5}$ has been linked to premature death, particularly in people who have chronic heart or lung diseases, and reduced lung function growth in children. According to CARB, populations most likely to experience adverse health effects with exposure to PM$_{10}$ and PM$_{2.5}$ include older adults with chronic heart or lung disease, children, and asthmatics, and children and infants are more susceptible to harm from inhaling pollutants such as PM$_{10}$ and PM$_{2.5}$ compared to healthy adults because they inhale more air per pound of body weight than do adults, spend more time outdoors, and have developing immune systems. According to a study prepared by the CARB, exposure to ambient PM$_{2.5}$, particularly diesel particulate matter (DPM), can be associated with approximately 14,000 to 24,000 premature annual deaths statewide.

Other Criteria Pollutants

Sulfur dioxide (SO$_2$) is produced through combustion of sulfur or sulfur-containing fuels such as coal. SO$_2$ is also a precursor to the formation of atmospheric sulfate and particulate matter (both PM$_{10}$ and PM$_{2.5}$) and can contribute to sulfuric acid formation in the atmosphere that could precipitate downwind as acid rain. Lead has a range of adverse neurotoxin health effects, and was formerly released into the atmosphere primarily via leaded gasoline. The phase-out of leaded gasoline in California resulted in decreasing levels of atmospheric lead.

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26 Ibid.

27 Ibid.

28 Ibid.

**Toxic Air Contaminants**

Toxic Air Contaminants (TACs) are airborne substances that are capable of causing short-term (acute) and/or long-term (chronic or carcinogenic, i.e., cancer-causing) adverse human health effects (i.e., injury or illness). TACs include both organic and inorganic chemical substances. They may be emitted from a variety of common sources including gasoline stations, automobiles, dry cleaners, industrial operations, and painting operations. The current California list of TACs includes approximately 200 compounds, including DPM emissions from diesel-fueled engines which was identified as a TAC by CARB in 1998.30

**Climate Change**

According to the USEPA, the term “climate change” refers to any significant change in measures of climate (such as temperature, precipitation, or wind) lasting for an extended period (over several decades or longer). There is scientific consensus that climate change is occurring and that human activity contributes in some measure (perhaps substantially) to that change. Gases that trap heat in the atmosphere are often called greenhouse gases (GHGs). Emissions of GHGs, if not sufficiently curtailed, are likely to contribute further to increases in global temperatures. The potential effects of climate change in California include sea level rise and reductions in snowpack, as well as an increased number of extreme-heat days per year, high ozone days, large forest fires, and drought years.31 Globally, climate change could affect numerous environmental resources through potential, though uncertain, changes in future air temperatures and precipitation patterns. According to the International Panel on Climate Change, the projected effects of climate change are likely to vary regionally, but are expected to include the following direct effects32:

- Higher maximum temperatures and more hot days over nearly all land areas;
- Higher minimum temperatures (fewer cold days and frost days over nearly all land areas);
- Reduced diurnal temperature range over most land areas;
- Increase in heat index over most land areas; and
- More intense precipitation events.

In addition, many secondary effects are projected to result from climate change, including a global rise in sea level, ocean acidification, changes in disease vectors, and changes in habitat and biodiversity. The possible outcomes and feedback mechanisms involved are not fully understood, and much research remains to be done; however, over the long term, the potential exists for substantial environmental, social, and economic consequences.

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Greenhouse Gas Emissions

GHG emissions that result from human activities primarily include carbon dioxide (CO₂), with much smaller amounts of nitrous oxide (N₂O), methane (CH₄, often from unburned natural gas), sulfur hexafluoride (SF₆) from high-voltage power equipment, and hydrofluorocarbons and perfluorocarbons from refrigeration/chiller equipment. Because these GHGs have different warming potentials (i.e., the amount of heat trapped in the atmosphere by a certain mass of the gas), and CO₂ is the most common reference gas for climate change, GHG emissions are often quantified and reported as CO₂-equivalent (CO₂e) emissions. For example, while SF₆ represents a small fraction of the total annual GHGs emitted worldwide, this gas is very potent, with 23,900 times the global warming potential of CO₂. Therefore, an emission of 1 metric ton of SF₆ would be reported as 23,900 metric tons CO₂e. The global warming potential of CH₄ and N₂O are 25 times and 298 times that of CO₂, respectively. The principal GHGs resulting from human activity that enter and accumulate in the atmosphere are described below.

Carbon Dioxide

CO₂ is a naturally occurring gas that enters the atmosphere through natural as well as anthropogenic (human) sources. Key anthropogenic sources include the burning of fossil fuels (e.g., oil, natural gas, and coal), solid waste, trees, wood products, and other biomass, as well as industrially relevant chemical reactions such as those associated with manufacturing cement. CO₂ is removed from the atmosphere when it is absorbed by plants as part of the biological carbon cycle.

Methane

Like CO₂, CH₄ is emitted from both natural and anthropogenic sources. Key anthropogenic sources of CH₄ include gaseous emissions from landfills, releases associated with mining and materials extraction industries (in particular coal mining), and fugitive releases associated with the extraction and transport of natural gas and crude oil. CH₄ emissions also result from livestock and agricultural practices. Small quantities of CH₄ are released during fossil fuel combustion.

Nitrous Oxide

N₂O is also emitted from both natural and anthropogenic sources. Key anthropogenic sources include industrial activities, agricultural activities (primarily the application of nitrogen fertilizer), the use of explosives, combustion of fossil fuels, and decay of solid waste.

Fluorinated Gases

Hydrofluorocarbons, perfluorocarbons, and SF₆ are synthetic gases emitted from a variety of industrial processes, and they contribute substantially more to the greenhouse effect on a pound for pound basis than the GHGs described previously. Fluorinated gases are often used as substitutes for ozone-depleting substances (i.e., chlorofluorocarbons, hydrochlorofluorocarbons, and halons). These gases are typically emitted in small quantities, but because of their potency they are sometimes referred to as “high global warming potential gases.”

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3.5.1.2 Regional Topography, Meteorology, and Climate

The Project is located within the North Central Coast Air Basin (NCCAB). The NCCAB is comprised of Monterey, Santa Cruz, and San Benito counties and covers 5,159 square miles along the central coast of California. It is generally bounded by the Monterey Bay to the west, the Santa Cruz Mountains to the northwest, the Diablo Range on the northeast, with the Santa Clara Valley between them. Pajaro Valley Water Management Agency (PV Water) lies within the northern portion of the NCCAB. The PV Water service area is bounded by the Santa Cruz range to the north and northeast, the Monterey Bay to the west, and the Salinas Valley to the south.

The potential for high pollutant concentrations developing at a given location depends upon the quantity of pollutants emitted into the atmosphere in the surrounding area and/or upwind, the capacity of the atmosphere to disperse the contaminated air, and the presence / intensity of sunlight. The atmospheric pollution potential is independent of the location of emission sources and is instead a function of factors such as topography and meteorology. Atmospheric conditions such as wind speed, wind direction, and air temperature gradients interact with the physical features of the landscape to determine the movement and dispersal of air pollutants.

The semi-permanent high-pressure cell over the eastern Pacific Ocean is the basic controlling factor in the climate of the NCCAB. In the summer, the high pressure cell is dominant and causes persistent west and northwest winds over the entire California coast. The onshore air currents pass over cool ocean waters and bring fog and relatively cool air into the coastal valleys. The warmer air acts as a lid, inhibiting vertical air movement. The generally northwest-southeast orientation of mountainous ridges tends to restrict the summer onshore air currents. Typically, during the fall, when surface winds become weak, north or east winds develop and can transport pollutants from either the San Francisco Bay Area or the Central Valley into the NCCAB.

During the winter, the Pacific high-pressure area has less influence on the NCCAB. Air frequently flows in a southeasterly direction out of the Salinas and San Benito valleys, especially during night and morning hours. Northwest winds are still dominant in the winter, but easterly flow is more frequent. The absence of deep, persistent inversions and the occasional storm systems usually result in good air quality for the basin as a whole in winter and early spring.

The presence and intensity of sunlight is another important factor that affects air pollution as ozone is formed at higher temperatures. Since temperatures in many of the NCCAB inland valleys are so much higher than near the coast, these inland areas are much more prone to photochemical air pollution.

The climate in the NCCAB is characterized by cool, wet winters and warm, dry summers. Over 90 percent of the yearly precipitation falls from November through April, and coastal fog is common in the summer and fall months. The mean annual temperature is 57 degrees Fahrenheit; the mean monthly maximum temperature is 74 degrees Fahrenheit in September; and the mean monthly minimum temperature is 39 degrees Fahrenheit in January.
3.5.1.3 Existing Air Quality

**Criteria Air Pollutants**

The Monterey Bay Air Resources District (MBARD) operates seven air quality monitoring stations in the NCCAB that provide information on ambient concentrations of criteria air pollutants. The Santa Cruz station is located at 2544 Soquel Avenue in Santa Cruz (approximately 15 miles from College Lake) and measures concentrations of ozone and PM$_{2.5}$. The Salinas station is located at East Laurel Drive in Salinas (approximately 26 miles from College Lake) and measures ozone, PM$_{2.5}$, and NO$_2$. **Table 3.5-1** shows a five-year (2013 through 2017) summary of air quality data from these stations. The table also compares the data to the California Ambient Air Quality Standards (CAAQS) and National Ambient Air Quality Standards (NAAQS). As indicated in Table 3.5-1, there were no recorded violations of the state or federal standards from 2013 through 2016. However, there was one exceedance of the state and national 8-hour ozone standard and two exceedances of the 24-hour average PM$_{2.5}$ standard in 2017. There were no measured exceedances of the NO$_2$ standards from 2013 through 2017. CO was not monitored at either station over the five-year study period; however, CO concentrations have continued to decline all over the County and are expected to be well below standards in the project area.

3.5.1.4 Greenhouse Gas Sources

Anthropogenic GHG emissions in the United States are derived mostly from the combustion of fossil fuels for transportation and power production. Energy-related CO$_2$ emissions resulting from fossil fuel exploration and use account for approximately three-quarters of the human-generated GHG emissions in the United States, primarily in the form of CO$_2$ emissions from burning fossil fuels. More than half of the energy-related emissions come from large stationary sources, such as power plants; over one-quarter derive from transportation; and a majority of the remaining sources include: industrial and agricultural activities, and commercial and residential sources.

Statewide emissions of GHG from relevant source categories for 2010 through 2016 are summarized in **Table 3.5-2**. Specific contributions from individual air basins, such as the NCCAB, which encompasses the Project area, are included in the emissions inventory but are not itemized by air basin. In 2015, California produced 440 million gross metric tons of CO$_2$e emissions. Transportation was the source of 39 percent of the state’s GHG emissions, followed by industrial sources at 23 percent, electricity generation at 19 percent, commercial and residential sources at 11 percent, and agricultural and forestry related sources comprised the remaining 8 percent.

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### TABLE 3.5-1
AMBIENT AIR QUALITY MONITORING SUMMARY FOR THE PROJECT AREA (2013–2017)

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Standard</th>
<th>Monitoring Data by Year</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>2013</td>
<td>2014</td>
<td>2015</td>
<td>2016</td>
<td>2017</td>
<td></td>
</tr>
<tr>
<td><strong>Ozone</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum 1-hour concentration (ppm)</td>
<td>0.09 ppm</td>
<td>0.069</td>
<td>0.076</td>
<td>0.076</td>
<td>0.064</td>
<td>0.082</td>
<td></td>
</tr>
<tr>
<td>Days over State Standard</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Maximum 8-Hour Average (ppm)</td>
<td>0.070 ppm</td>
<td>0.055</td>
<td>0.068</td>
<td>0.060</td>
<td>0.057</td>
<td>0.075</td>
<td></td>
</tr>
<tr>
<td>Days over State Standard</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Days over National Standard</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Fine Particulate Matter (PM$_{2.5}$)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum 24-Hour Average (µg/m$^3$)</td>
<td>35 µg/m$^3$</td>
<td>19.0</td>
<td>15.7</td>
<td>20.5</td>
<td>12.7</td>
<td>47.3</td>
<td></td>
</tr>
<tr>
<td>Estimated Days over National Standard</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>State Annual Average (µg/m$^3$)</td>
<td>12 µg/m$^3$</td>
<td>6.8</td>
<td>5.7</td>
<td>5.3</td>
<td>5.6</td>
<td>NA</td>
<td></td>
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<tr>
<td><strong>Nitrogen Dioxide (NO$_2$)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum 1-Hour Average (µg/m$^3$)</td>
<td>0.18 ppm</td>
<td>0.042</td>
<td>0.038</td>
<td>0.033</td>
<td>0.033</td>
<td>0.034</td>
<td></td>
</tr>
<tr>
<td>Estimated Days over National Standard</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

NOTES:
- NA = Not Available
- ppm = parts per million; µg/m$^3$ = micrograms per cubic meter.
- a Emissions data collected at the Santa Cruz-2544 Soquel Avenue Monitoring Station.
- b Emissions data collected at the Salinas-East Laurel Drive Monitoring Station.


### TABLE 3.5-2
CALIFORNIA GHG EMISSIONS (MILLION METRIC TONS CO$_2$E)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Transportation</td>
<td>163.01</td>
<td>159.68</td>
<td>159.44</td>
<td>158.14</td>
<td>160.03</td>
<td>164.63</td>
<td>169.38</td>
</tr>
<tr>
<td>Electric Power</td>
<td>90.34</td>
<td>88.06</td>
<td>95.09</td>
<td>89.65</td>
<td>88.24</td>
<td>83.67</td>
<td>68.58</td>
</tr>
<tr>
<td>Commercial and Residential</td>
<td>45.05</td>
<td>45.50</td>
<td>42.89</td>
<td>43.54</td>
<td>37.37</td>
<td>37.92</td>
<td>39.36</td>
</tr>
<tr>
<td>Industrial</td>
<td>91.01</td>
<td>90.65</td>
<td>90.90</td>
<td>93.48</td>
<td>93.77</td>
<td>91.71</td>
<td>89.61</td>
</tr>
<tr>
<td>Recycling and Waste</td>
<td>8.37</td>
<td>8.47</td>
<td>8.49</td>
<td>8.52</td>
<td>8.59</td>
<td>8.73</td>
<td>8.81</td>
</tr>
<tr>
<td>High Global Warming Potential Gases</td>
<td>13.64</td>
<td>14.74</td>
<td>15.74</td>
<td>16.82</td>
<td>17.82</td>
<td>19.05</td>
<td>19.78</td>
</tr>
<tr>
<td>Agriculture</td>
<td>34.64</td>
<td>35.28</td>
<td>36.42</td>
<td>34.93</td>
<td>36.03</td>
<td>34.65</td>
<td>33.84</td>
</tr>
<tr>
<td><strong>Total Gross Emissions</strong></td>
<td><strong>446.06</strong></td>
<td><strong>442.38</strong></td>
<td><strong>448.97</strong></td>
<td><strong>445.08</strong></td>
<td><strong>441.85</strong></td>
<td><strong>440.36</strong></td>
<td><strong>429.36</strong></td>
</tr>
</tbody>
</table>

3.5.1.5 Sensitive Receptors

For the purposes of air quality analyses, sensitive receptors are defined as facilities and land uses where people spend extended amounts of time or that include members of the population that are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with respiratory medical conditions and other illnesses. Examples of sensitive uses include residences, schools, hospitals, and daycare centers. The reasons for greater than average sensitivity include pre-existing health conditions, proximity to emissions sources, and/or duration of exposure to air pollutants. Schools, hospitals, and convalescent homes are considered to be relatively sensitive to poor air quality because children, elderly people, and the infirm are more susceptible to respiratory distress and other air quality-related health problems than the general public. Residential areas are considered sensitive to poor air quality because people usually stay home for extended periods of time, which results in greater exposure to ambient air quality. Sensitive receptors located within the vicinity of the various Project components are discussed below.

Weir Structure and Intake Pump Station

Sensitive receptors near the proposed weir structure and intake pump station consist of the Our Lady Help of Christians church, St. Francis Catholic High School, Lakeview Middle School and single-family residences. The closest institutional use (e.g., church, school) is the Our Lady Help of Christians church, which is located approximately 340 feet east of the proposed weir structure boundary. A residential community is located approximately 710 feet southwest of the proposed intake pump station boundary.

Preferred Water Treatment Plant Site

Sensitive receptors near the preferred WTP site consist of single-family residences. The closest residence is located 40 feet southeast of the preferred WTP site boundary. A residential community is located approximately 630 feet east of the preferred WTP site boundary.

Optional Water Treatment Plant Site

Sensitive receptors near the optional WTP site include the Our Lady Help of Christians church, St. Francis Catholic High School, Lakeview Middle School, and single-family residences. The closest institutional use (e.g., church, school) is the church, which is located approximately 470 feet east of the optional WTP site boundary. A residential community is located approximately 330 feet south of the optional WTP site boundary.

College Lake Pipeline

The Project would include an approximately 5.5-mile-long pipeline from the proposed WTP to the existing Watsonville Wastewater Treatment Facility. Figures 2-3a through 2-3e in Chapter 2, Project Description, show the proposed pipeline alternatives, which generally follow either existing road rights-of-way or are within agricultural fields. Sensitive receptors along the alignments consist of single- and multi-family residences and Watsonville High School. The nearest sensitive receptors to pipeline construction are approximately 25 feet away.
3.5.2 Regulatory Framework

3.5.2.1 Federal and State

Federal, state, and regional regulations provide the framework for analyzing and controlling air pollutant emissions and thus general air quality. The USEPA is responsible for implementing the programs established under the federal Clean Air Act, such as establishing and reviewing the NAAQS and reviewing State Implementation Plans (SIPs), described further below. However, the USEPA has delegated the authority to implement many of the federal programs to the states while retaining an oversight role to ensure that the programs continue to be implemented.

In California, CARB is responsible for establishing and reviewing the state ambient air quality standards, developing and managing the California SIP, securing approval of this plan from the USEPA, and identifying TACs. CARB also regulates mobile emissions sources in California, such as construction equipment, trucks, and automobiles, and oversees the activities of air quality management districts, which are organized at the county or regional level. The MBARD is the regional agency primarily responsible for regulating stationary emission sources at facilities within its geographic area (i.e., Monterey, Santa Cruz, and San Benito counties) and for preparing the air quality plans that are required under the Federal Clean Air Act and the California Clean Air Act.

The Federal Clean Air Act Amendments of 1977 established the NAAQS, and individual states retained the option to adopt more stringent standards and to include other pollution sources. California had already established its own air quality standards when federal standards were established, and because of the unique meteorological problems in California, there are considerable differences between some of the state and federal standards. As shown in Table 3.5-3, the CAAQS standards tend to be at least as protective as NAAQS, and are often more stringent.

Federal ambient air quality standards (federal standards) exist for seven criteria air pollutants: ozone, CO, NO₂, SO₂, PM₁₀, PM₂.₅, and lead. In addition, California has established State standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. The ambient air quality standards are intended to protect public health and welfare, and they specify the concentration of pollutants (with an adequate margin of safety) to which the public can be exposed without adverse health effects. They are designed to protect those segments of the public most susceptible to respiratory distress, referred to as sensitive receptors, including people with asthma, the very young, elderly, people weak from other illness or disease, and/or people engaged in strenuous work or exercise. Healthy adults can tolerate occasional short term exposure to air pollution levels that are somewhat above the ambient air quality standards before adverse health effects are observed.

Areas with air quality that exceed federal or state air quality standards are designated as “non-attainment” areas for the relevant air pollutants. Designations are made for each criteria pollutant according to the categories listed below. Designations in relation to state standards are made by the CARB, while designations in relation to national standards are made by the USEPA. State designations are updated annually, while the national designations are updated either when the standards change or when an area requests re-designation due to changes in air quality. Non-attainment designations are of most concern because they indicate that unhealthy levels of the
pollutant exist in the area, which typically triggers a need to develop a plan to achieve the applicable standards. The NCCAB as a whole is considered by the USEPA as attainment or unclassified for all regulated criteria pollutants relative to the NAAQS. At the state level, the region is designated as non-attainment-transitional for ozone and non-attainment for PM$_{10}$. Non-attainment-transitional is designated when, during a single calendar year, the CAAQS is not exceeded more than three times at any one monitoring location within the NCCAB. The region is attainment for all other CAAQS.36

### Table 3.5-3

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ozone</td>
<td>8 Hour</td>
<td>0.070 ppm</td>
<td>Non-attainment - Transitional</td>
<td>0.070 ppm</td>
<td>Attainment</td>
</tr>
<tr>
<td></td>
<td>1 Hour</td>
<td>0.09 ppm</td>
<td>Attainment</td>
<td></td>
<td>---</td>
</tr>
<tr>
<td>Carbon Monoxide</td>
<td>8 Hour</td>
<td>0.09 ppm</td>
<td>Attainment</td>
<td>9 ppm</td>
<td>Attainment</td>
</tr>
<tr>
<td></td>
<td>1 Hour</td>
<td>0.18 ppm</td>
<td>Attainment</td>
<td>35 ppm</td>
<td>Attainment</td>
</tr>
<tr>
<td>Nitrogen Dioxide</td>
<td>Annual Average</td>
<td>0.030 ppm</td>
<td>Attainment</td>
<td>0.053 ppm</td>
<td>Unclassified</td>
</tr>
<tr>
<td></td>
<td>1 Hour</td>
<td>0.18 ppm</td>
<td>Attainment</td>
<td>0.100 ppm</td>
<td>Unclassified</td>
</tr>
<tr>
<td>Sulfur Dioxide</td>
<td>Annual Average</td>
<td>---</td>
<td>Attainment</td>
<td>0.030 ppm</td>
<td>Attainment</td>
</tr>
<tr>
<td></td>
<td>24 Hour</td>
<td>0.04 ppm</td>
<td>Attainment</td>
<td>0.100 ppm</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>1 Hour</td>
<td>0.25 ppm</td>
<td>Attainment</td>
<td>0.075 ppm</td>
<td>Attainment</td>
</tr>
<tr>
<td>Respirable Particulate Matter (PM$_{10}$)</td>
<td>Annual Arithmetic Mean</td>
<td>20 µg/m$^3$</td>
<td>Attainment</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>24 Hour</td>
<td>50 µg/m$^3$</td>
<td>Non-attainment</td>
<td>150 µg/m$^3$</td>
<td>Unclassified</td>
</tr>
<tr>
<td>Fine Particulate Matter (PM$_{2.5}$)</td>
<td>Annual Arithmetic Mean</td>
<td>12 µg/m$^3$</td>
<td>Attainment</td>
<td>12.0 µg/m$^3$</td>
<td>Unclassified/Attainment</td>
</tr>
<tr>
<td></td>
<td>24 Hour</td>
<td>---</td>
<td>Attainment</td>
<td>35 µg/m$^3$</td>
<td>Attainment</td>
</tr>
<tr>
<td>Sulfates</td>
<td>24 Hour</td>
<td>25 µg/m$^3$</td>
<td>Attainment</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Lead</td>
<td>Calendar Quarter</td>
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<td>Attainment</td>
<td>1.5 µg/m$^3$</td>
<td>Attainment</td>
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<tr>
<td></td>
<td>30-Day Average</td>
<td>1.5 µg/m$^3$</td>
<td>Attainment</td>
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<tr>
<td></td>
<td>3-Month Rolling Average</td>
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<td>0.15 µg/m$^3$</td>
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<tr>
<td>Hydrogen Sulfide</td>
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<td>0.03 ppm</td>
<td>Unclassified</td>
<td>No Federal Standard</td>
<td>---</td>
</tr>
<tr>
<td>Vinyl Chloride</td>
<td>24 Hour</td>
<td>0.010 ppm</td>
<td>No information available</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Visibility Reducing Particles</td>
<td>8 Hour</td>
<td>Extinction of 0.23/km; visibility of 10 miles or more</td>
<td>Unclassified</td>
<td>No Federal Standard</td>
<td>---</td>
</tr>
</tbody>
</table>

**NOTES:**

PPM = parts per million; µg/m$^3$ = micrograms per cubic meter; --- = no applicable standard.


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**Federal Clean Air Act**

The 1977 federal Clean Air Act (last amended in 1990; Title 42 United States Code Section 7401 et seq.) requires regional planning and air resource agencies to prepare a regional air quality plan to outline the measures by which both stationary and mobile sources of pollutants will be controlled to achieve all standards within the specified deadlines.

The USEPA is responsible for implementing programs developed under the federal Clean Air Act, such as establishing and reviewing the federal standards for CO, ozone, NO₂, SO₂, PM₁₀, PM₂.₅, and lead. The federal Clean Air Act also requires the USEPA to designate areas (counties or air basins) as attainment or non-attainment with respect to each criteria pollutant, depending on whether the area meets the federal standards. If an area is designated as non-attainment, it does not meet a federal standard and is required to create and maintain a SIP for achieving compliance with the applicable federal standard. Conformity to the SIP is defined under the 1990 Clean Air Act amendments as conformity with the plan’s purpose in eliminating or reducing the severity and number of violations of the federal standards and achieving expeditious attainment of these standards.

The federal Clean Air Act General Conformity Rule helps states improve air quality in areas that do not attain the federal standards by ensuring that federal actions conform to the SIP. If the Project would result in a federal action it would not be subject to the General Conformity Rule because it would be located in an area that meets federal standards and the area is not applicable to a maintenance plan with conformity requirements. ³⁷

On April 2, 2007, in *Massachusetts v. USEPA* (549 US 497), the U.S. Supreme Court found that GHGs are air pollutants covered by the Clean Air Act. The Court held that the USEPA must determine whether emissions of GHGs from new motor vehicles cause or contribute to air pollution that may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision. In making such decisions, the USEPA is required to follow the language of Section 202(a) of the Clean Air Act, which obligates it to prescribe (and from time to time revise) standards applicable to the emission of any air pollutant from any class or classes of new motor vehicles or new motor vehicle engines. The Supreme Court decision resulted from a petition for rulemaking under Section 202(a) filed by more than a dozen states and environmental advocacy organizations such as the Center for Biological Diversity, Greenpeace, the Sierra Club, and the Natural Resources Defense Council, among others.

On April 17, 2009, the USEPA Administrator signed proposed “endangerment” and “cause or contribute” findings for GHGs under Section 202(a) of the Clean Air Act. The USEPA found that

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³⁷ The Phase 1 final rule to implement the 8-hour ozone standard was published on April 30, 2004. The anti-backsliding provisions in that rule set forth specific requirements for areas that are designated attainment for the 8-hour Ozone standard and that were at the time of the 8-hour designations (generally June 15, 2004) either attainment areas with maintenance plans for the 1-hour standard, such as the NCCAB; or nonattainment for the 1-hour standard. Specifically, 40 CFR part 51, section 51.905(a)(3) and (4) requires these areas to submit a maintenance plan under section 110(a)(1) of the Clean Air Act. That maintenance plan must demonstrate maintenance for 10 years post-designation; however, this maintenance plan does not carry with it any conformity obligations (unlike maintenance plans required under Section 175A of the Act).
six GHGs, taken in combination, endanger both the public health and the public welfare of current and future generations. The USEPA also found that the combined emissions of these GHGs from new motor vehicles and new motor vehicle engines contribute to the greenhouse effect as air pollution that endangers public health and welfare under Clean Air Act Section 202(a). Pursuant to 40 CFR Part 52, Proposed Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule, USEPA has mandated that Prevention of Significant Deterioration and Title V requirements apply to facilities whose stationary source CO2e emissions exceed 100,000 tons per year.\(^\text{38}\) The Project would not trigger Prevention of Significant Deterioration or Title V permitting under this regulation because it would generate substantially less than 100,000 tons of CO2e emissions per year.

**California Clean Air Act**

The California Clean Air Act was approved in 1988 and required each local air district in the state to prepare an air quality plan to achieve compliance with the State standards. CARB is the agency delegated responsibility for preparing and submitting the SIP to the USEPA. CARB also oversees air quality policies in California and has established State standards for NO\(_2\), CO, PM\(_{10}\), PM\(_{2.5}\), SO\(_2\), ozone, lead, sulfates, hydrogen sulfide, vinyl chloride, and visibility reducing particles. Similar to the USEPA, CARB designates counties or air basins in California as attainment or non-attainment with respect to the CAAQS.

**Regulations for Mobile Sources of Air Pollutants**

The following air quality regulations apply to mobile sources and are directly relevant to the Project. On-road vehicles with a gross vehicular weight rating of 10,000 pounds or greater shall not idle for longer than five minutes at any location (Title 13 California Code of Regulations Section 2485). This restriction does not apply when vehicles remain motionless during traffic or when vehicles are queuing. Off-road equipment engines shall not idle for longer than five minutes (Title 13 California Code of Regulations Section 2449(d)(3)). Exceptions to this rule include: idling when queuing; idling to verify that the vehicle is in safe operating condition; idling for testing, servicing, repairing or diagnostic purposes; idling necessary to accomplish work for which the vehicle was designed (such as operating a crane); and idling required to bring the machine to operating temperature as specified by the manufacturer.

**Executive Order S-3-05**

Executive Order S-3-05 was established by former Governor Arnold Schwarzenegger in June 2006, and establishes statewide emission reduction targets through the year 2050 as follows:

1. By 2010, reduce GHG emissions to 2000 levels;
2. By 2020, reduce GHG emissions to 1990 levels; and
3. By 2050, reduce GHG emissions to 80 percent below 1990 levels.

This executive order establishes GHG emissions goals only and does not include any specific requirements that pertain to the Project; however, future actions taken by the State to implement these goals may affect the Project, depending on the specific implementation measures that are developed.

**Assembly Bill 32**

California Assembly Bill (AB) 32, the Global Warming Solutions Act of 2006, is the cornerstone of state efforts to reduce GHG emissions. As described below, the law requires CARB to establish a statewide GHG emissions cap for 2020 based on 1990 emission levels, develop a mandatory reporting program of GHG emissions, adopt regulations for discrete early actions to reduce GHG emissions, prepare a scoping plan to identify how emissions reductions will be achieved, and adopt a regulation that establishes a market-based compliance mechanism (also referred to as “Cap and Trade”).

**Statewide GHG Emissions Cap**

In 2007, CARB established the statewide GHG emissions limit that must be achieved by 2020, equivalent to the statewide GHG emissions levels in 1990, at 427 million metric tons of CO₂e. This figure is approximately 30 percent below projected “business-as-usual” emissions of 596 million metric tons of CO₂e for 2020, and about 10 percent below average annual GHG emissions during the period of 2002 through 2004.40

**Climate Change Scoping Plan**

In December 2008, CARB approved the AB 32 Climate Change Scoping Plan (Scoping Plan) outlining the state’s strategy to achieve the 2020 GHG emissions limit. The Scoping Plan estimated a reduction of 174 million metric tons CO₂e from the transportation, energy, agriculture, forestry, and high climate-change-potential sectors, and proposed a comprehensive set of actions designed to reduce overall GHG emissions in California, improve the environment, reduce dependence on oil, diversify California’s energy sources, save energy, create new jobs, and enhance public health. The Scoping Plan must be updated every five years to evaluate the mix of AB 32 policies to ensure that California is on track to achieve the 2020 GHG reduction goal. CARB released the First Update to the Scoping Plan in May 2014.42

Executive Order B-30-15 (see below) and Senate Bill 32 extended the goals of AB 32 and set a 2030 goal of reducing emissions 40 percent from 2020 levels. The recently adopted 2017 Scoping Plan establishes a path that will get California to its 2030 target. The Plan includes economically viable and technologically feasible actions to not just keep California on track to achieve its 2030

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39 AB 32 is codified in California Health and Safety Code Division 25.5, Sections 38500 et seq.
41 Ibid.
42 CARB, First Update to the Climate Change Scoping Plan, Building on the Framework Pursuant to AB 32, the California Global Warming Solutions Act of 2006, May 2014.
target, but to stay on track for a low- to zero-carbon economy by involving every part of the state. The Plan relies on a balanced mix of strategies to economically achieve the GHG target while also improving public health, investing in disadvantaged and low-income communities, protecting consumers, and supporting economic growth, jobs and energy diversity.43

**Senate Bill 97**44

In 2007, the California State Legislature passed Senate Bill 97, which required amendment of the California Environmental Quality Act (CEQA) Guidelines to incorporate analysis of, and mitigation for, GHG emissions from projects subject to CEQA. The amendments took effect March 18, 2010. The amendments add Section 15064.4 to the CEQA Guidelines, specifically addressing the potential significance of GHG emissions. Section 15064.4 neither requires nor recommends a specific analytical methodology or quantitative criteria for determining the significance of GHG emissions. Rather, the section calls for a “good faith effort” to “describe, calculate or estimate” GHG emissions and indicates that the analysis of the significance of any GHG impacts should include consideration of the extent to which the project would:

- Increase or reduce GHG emissions;
- Exceed a locally applicable threshold of significance; or
- Comply with “regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions.”

The CEQA Guidelines also state that a project may be found to have a less-than-significant impact related to GHG emissions if it complies with an adopted plan that includes specific measures to sufficiently reduce GHG emissions (Section 15064(h)(3)).

**Executive Order B-30-15**

In April 2015, former Governor Edmund G. Brown Jr. issued an executive order to establish a California GHG reduction target of 40 percent below 1990 levels by 2030. Reaching this emission reduction target will help make it possible for California to reach its ultimate goal of reducing emissions 80 percent under 1990 levels by 2050, as identified in Executive Order S-3-05. In 2016, the Legislature passed Senate Bill 32, which codifies a 2030 GHG emissions reduction target of 40 percent below 1990 levels. Executive Order B-30-15 also specifically addresses the need for climate adaptation and directs state government to:

- Incorporate climate change impacts into the State's 5-Year Infrastructure Plan;
- Update the Safeguarding California Plan, the state climate adaption strategy to identify how climate change will affect California infrastructure and industry and what actions the state can take to reduce the risks posed by climate change;
- Factor climate change into state agencies' planning and investment decisions; and


44 Codified in Section 15064.4 of the CEQA Guidelines.
3. Environmental Setting, Impacts, and Mitigation Measures

3.5 Air Quality and Greenhouse Gases

- Implement measures under existing agency and departmental authority to reduce GHG emissions.45

Executive Order B-30-15 requires CARB to update the AB 32 Scoping Plan to incorporate the 2030 target. The 2030 Draft Scoping Plan will serve as the framework to define California’s climate change priorities for the next 15 years and beyond. In June 2016, CARB released the 2030 Target Scoping Plan Update Concept Paper to describe potential policy concepts to achieve the 2030 target that can be incorporated in the 2030 Draft Scoping Plan. The concept paper presents four potential high-level concepts for achieving the needed GHG reductions.46

3.5.2.2 Regional and Local

Table 2-10 in Chapter 2, Project Description, identifies the approvals from Santa Cruz County and/or the City of Watsonville required for the Project. Table 3.5-4 presents pertinent local plans and policies regarding air quality and greenhouse gas emissions to support County and City consideration of project consistency with general policies.47 In some cases, local policies are used in this EIR as criteria to determine the significance of physical effects on the environment (e.g., Impact NOI-1 in Section 3.8, Noise and Vibration).

Monterey Bay Air Resources District

The MBARD is the regional agency responsible for air quality regulation within the NCCAB. The MBARD regulates air quality through its planning and review activities. The MBARD has permit authority over most types of stationary emission sources and can require stationary sources to obtain permits, impose emission limits, set fuel or material specifications, and establish operational limits to reduce air emissions. The MBARD regulates new or expanding stationary sources of criteria pollutants and toxic air contaminants.

State law assigns local air districts the primary responsibility for control of air pollution from stationary sources, under CARB’s oversight. The MBARD is responsible for developing regulations governing emissions of air pollution, permitting and inspecting stationary sources of air pollution, monitoring of ambient air quality, and air quality planning activities, including implementation of transportation control measures. The MBARD does not regulate the emissions of dust and other construction emissions, except to require that each project’s relevant CEQA document quantify the emissions of particulate matter and provide mitigation, if the relevant threshold of significance is exceeded.

46 CARB, 2030 Target Scoping Plan Update Concept Paper, June 17, 2016.
47 California Government Code Section 53091 exempts agencies like PV Water from complying with local building and zoning ordinances when locating or constructing facilities for the production, generation, storage, treatment, or transmission of water. California Government Code Section 65402(c) requires that PV Water notify cities and counties of its plans to construct projects or to acquire or dispose of property. The planning agency then has 40 days to determine project consistency with its general plan. If the planning agency disapproves, the disapproval may be overruled by PV Water.
### TABLE 3.5-4
#### LOCAL PLANS AND POLICIES RELEVANT TO THE PROJECT

<table>
<thead>
<tr>
<th>Relevant Goals, Objectives, and Policies</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CITY OF WATSONVILLE PLANS AND POLICIES</strong></td>
</tr>
<tr>
<td>Watsonville General Plan</td>
</tr>
<tr>
<td>Implementation measure 9.C.7, Other Use-based Incentives. The City shall provide incentives to high trip generation uses, such as schools, hospitals, and some commercial uses to develop trip reduction programs.</td>
</tr>
<tr>
<td>Implementation measure 9.C.9, Environmental Review. The City shall use the environmental review process to determine both stationary source and transportation related potential air quality impacts for project proposals.</td>
</tr>
<tr>
<td>Implementation measure 9.C.10, Construction-related Impacts. The City shall require construction contractors to implement a dust abatement program to reduce the effect of construction on local PM10 concentrations.</td>
</tr>
<tr>
<td>Implementation measure 9.C.12, Promotion of Low-Emission Automobiles. Where feasible, the City shall consider replacing its fleet of city automobiles with clean fuel and low-emission vehicles as vehicles wear out.</td>
</tr>
<tr>
<td>Implementation measure 9.C.13, Innovative Programs. The City shall look for ways to work with the private, nonprofit, and public sectors to achieve the implementation of innovative programs to mitigate new air quality impacts and improve existing air quality. Innovative programs may include, but are not limited to, high emission level vehicle buy-back (old vehicle buy-back) programs, incentives to accommodate electric vehicles in new developments, and programs to encourage transit ridership by employees.</td>
</tr>
<tr>
<td>Implementation measure 9.C.14, Trip Reduction. The City shall consider for adoption a trip reduction ordinance.</td>
</tr>
<tr>
<td><strong>SANTA CRUZ COUNTY PLANS AND POLICIES</strong></td>
</tr>
<tr>
<td>Santa Cruz County General Plan/Local Coastal Program</td>
</tr>
<tr>
<td>Objective 5.18, Air Resources. To improve the air quality of Santa Cruz County by meeting or exceeding state and federal ambient air quality standards, protect County residents from the health hazards of air pollution, protect agriculture from air pollution induced crop losses and prevent degradation of the scenic character of the area.</td>
</tr>
<tr>
<td>Policy 5.18.1, New Development. Ensure new development projects are consistent at a minimum with the Monterey Bay Unified Air Pollution Control District Air Quality Management Plan and review such projects for potential impact on air quality.</td>
</tr>
</tbody>
</table>

**SOURCE:** City of Watsonville, Watsonville 2005 General Plan, Adopted May 24, 1994; County of Santa Cruz, 1994 General Plan/Local Coastal Program, Chapter 5 – Conservation and Open Space, Effective December 19, 1994.

### Air Quality Management Plan for the Monterey Bay Region

In 1991, the MBARD adopted the Air Quality Management Plan (AQMP) for the Monterey Bay Region in response to the California Clean Air Act of 1988, which established specific planning requirements to meet the ozone standards. The California Clean Air Act requires that air quality management plans be updated every three years. The MBARD has updated the air quality management plan seven times. The most recent update, the 2012-2015 AQMP was adopted in 2017. The 2012-2015 AQMP relies on a multi-level partnership of federal, State, regional, and local governmental agencies. These agencies, including USEPA, CARB, local governments, Association of Monterey Bay Area Governments and the MBARD, are the primary agencies that implement the air quality management plan programs. The MBARD’s focus continues to be on achieving the 8-hour ozone CAAQS, as the region has already attained the 1-hour standard. The 2012-2015 AQMP builds on information developed in past air quality management plans. Consequently, some sections of the 2008 AQMP and 2012 Triennial Plan are incorporated by reference for those elements that have not been updated; however, due to continued progress toward attaining the 8-
hour ozone standard, the 2012-2015 AQMP recommends that control measures presented in the 2008 AQMP continue not to be implemented.48

**County of Santa Cruz Climate Action Strategy**

The Climate Action Strategy (CAS) serves as a framework for the actions that the unincorporated communities of the County of Santa Cruz can take to both lessen its contribution to climate change and prepare for the impacts when they do occur. In addition to guiding County government actions, the CAS is intended to inspire non-government community organizations in their efforts to address climate change, and to identify opportunities for partnerships with other government agencies and community groups. The CAS outlines a course of action to reduce GHG emissions produced by governmental operations and community activities within unincorporated Santa Cruz County. Implementation of the CAS is intended to build on the fact that Santa Cruz County has already met the 2020 emissions reduction target recommended by the state and will set the County on a path toward reducing emissions to 59 percent below 2009 levels by 2050.49

**City of Watsonville Climate Action Plan**

The City of Watsonville’s Climate Action Plan (CAP) was adopted on February 24, 2015 to guide and reinforce the City’s commitment to reduce GHG emissions and increase its ability to adapt to future climate impacts and protect public health, safety and critical infrastructure.50

The City of Watsonville’s CAP serves to reinforce policy commitments in the General Plan, such as encouraging pedestrian- and bicycle-friendly neighborhoods, increasing transportation options, improving energy efficiency, reducing waste and increasing recycling, and protecting of open space. The CAP also quantifies the estimated greenhouse gas reduction savings of such programs.

**City of Watsonville Carbon Fund Program**

The City’s CAP contains policies to reduce GHG emissions throughout the City over the next 15 to 20 years. Many of these improvements will require funding, and in order to create a revenue source to implement the GHG reducing measures, a new Carbon Fund Ordinance was adopted by the City Council on March 10, 2015.

The Watsonville Carbon Fund Program, adopted by Ordinance 1314-15, is a mechanism to incentivize energy efficient buildings, and on-site renewable energy technologies and to fund greenhouse gas reduction projects throughout the city. The Carbon Fund Ordinance establishes a Carbon Fee to be charged to all development projects except single family residential alterations, temporary buildings, and/or building area that is not used as conditioned space. The money collected from the Carbon Fund Fee is placed in a separate account to be used for citywide greenhouse gas reduction projects. Applicants of development projects can be refunded a portion or all of their Carbon Impact Fee if they reduce their development’s average annual electricity demand

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49 County of Santa Cruz, Climate Action Strategy, approved by the Board of Supervisors on February 26, 2013.
50 City of Watsonville, Climate Action Plan - Final version, April 9, 2015.
through on-site renewable energy and/or energy efficiency. The Carbon Impact Fees collected will be routed to a Carbon Fund from which the City will fund GHG-reducing projects in the City.

### 3.5.3 Impacts and Mitigation Measures

#### 3.5.3.1 Significance Criteria

In accordance with the CEQA, state CEQA Guidelines (including Appendix G), relevant plans, policies, and/or guidelines, and agency standards, the Project could have a significant impact if it were to:

- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard;
- Expose sensitive receptors to substantial pollutant concentrations;
- Conflict with or obstruct implementation of the applicable air quality plan;
- Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people;
- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment; and/or
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions.

#### 3.5.3.2 Methodology

As described in Section 3.1, this EIR provides an independent analysis of the Project’s potential environmental impacts. Table 3.5-5 presents mitigation measures from the 2014 BMP Update PEIR adopted by the Board of Directors (Resolution 2014-05) for the purpose of reducing impacts related to energy, utilities and public services. These adopted mitigation measures are considered part of the Project and thus are considered prior to any significance determinations. Potential impacts are evaluated in the following section. If warranted, additional mitigation is included and takes the form of (1) modifications to update the mitigation measures presented in Table 3.5-5 to reflect current conditions and site-specific impacts; or (2) new mitigation measures to replace or augment an adopted mitigation measure.

*Guidelines and Methodologies Used*

For the purposes of this EIR, the thresholds of significance established by the MBARD in its CEQA Air Quality Guidelines were applied. MBARD has adopted two different sets of guidelines: CEQA Air Quality Guidelines that provide guidance for lead agencies that prepare project-specific CEQA documentation for projects within the air district51 and Guidelines for Implementing the California Environmental Quality Act for the MBARD’s implementation of

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51 MBUAPCD, CEQA Air Quality Guidelines, revised February 2008.
CEQA as a lead or responsible agency. The *Guidelines for Implementing the California Environmental Quality Act* establish criteria pollutant significance thresholds for construction emissions, which were not included in the *CEQA Air Quality Guidelines*.

**Table 3.5-5**

**2014 BMP Update PEIR Mitigation Measures – Air Quality and Greenhouse Gases**

<table>
<thead>
<tr>
<th>AQ-1: The construction contractor shall implement a dust program that includes the following elements:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Water all active construction sites at least twice daily</td>
</tr>
<tr>
<td>• Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard</td>
</tr>
<tr>
<td>• Pave, apply water three times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas and staging areas at construction sites</td>
</tr>
<tr>
<td>• Sweep daily (with water sweepers) all paved access roads, paved parking areas and paved staging areas at construction sites</td>
</tr>
<tr>
<td>• Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets.</td>
</tr>
<tr>
<td>• Hydroseed or apply (non-toxic) soil binders to inactive construction areas. However, do not apply these measures in operating agricultural fields under cultivation unless requested by the grower</td>
</tr>
<tr>
<td>• Enclose, cover, water twice daily or apply (non-toxic) soil binders to exposed stockpiles (dirt, sand, etc.).</td>
</tr>
<tr>
<td>• Limit traffic on unpaved roads to 15 mph</td>
</tr>
<tr>
<td>• Install sandbags or other erosion control measures to prevent silt runoff to public roadways</td>
</tr>
<tr>
<td>• Replant vegetation in disturbed areas as quickly as possible</td>
</tr>
<tr>
<td>• The contractor or builder shall designate a person or persons to monitor the fugitive dust emissions and enhance the implementation of the measures as necessary to minimize dust complaints. The name and telephone number of such persons shall be provided to the [air pollution control district] APCD Compliance Division prior to the start of any grading, earthwork or demolition.</td>
</tr>
</tbody>
</table>


Although the MBARD is not the lead agency for the environmental review of the Project, due to the amount of Project-related construction activities that would occur within the NCCAB, the criteria pollutant mass emissions significance thresholds identified in the MBARD’s *Guidelines for Implementing the California Environmental Quality Act* have been used to evaluate the regional air quality impacts that would be associated with the Project.

The *Guidelines for Implementing the California Environmental Quality Act* state that a project would not have a significant air quality effect on the environment if construction or operation of the project would emit less than 137 pounds per day of NOx and ROG, 82 pounds per day of PM10, 55 pounds per day of PM2.5, and 550 pounds per day of CO.

**Health Risk**

This EIR uses methodology provided by the Office of Environmental Health Hazard Assessment, coupled with a significance threshold from the MBARD, in evaluating the potential for the Project to expose sensitive receptors to substantial levels of toxic air contaminants. The MBARD considers temporary emissions of a carcinogenic TAC that can result in a hazard index greater than 1 for acute

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53 Ibid.
or chronic impacts and/or a cancer risk greater than 10 incidents per population of 1,000,000 to be significant.

**Greenhouse Gases**

MBARD does not have established project-specific thresholds of significance for the analysis of GHG emissions from land use projects or non-stationary source projects. For such projects, the MBARD recommends that lead agencies use either the Bay Area Air Quality Management District (BAAQMD) GHG significance threshold of 1,100 metric tons CO$_2$e per year$^{55}$ or the San Luis Obispo County Air Pollution Control District (SLO APCD) GHG significance threshold of 1,150 CO$_2$e per year.$^{56}$ Since the BAAQMD’s significance threshold is lower and hence, more conservative than the SLO APCD significance threshold, and for the reasons set forth below, this EIR uses the BAAQMD significance threshold of 1,100 metric tons CO$_2$e per year to evaluate whether the Project’s emissions could have a significant impact on the environment.

Use of this threshold results in approximately 59 percent of all non-stationary source projects subject to CEQA review in the Bay Area being above the significance threshold and having to implement feasible mitigation measures to meet their CEQA obligations. These projects account for approximately 92 percent of all GHG emissions anticipated to occur between now and 2020 from new land use development in the Bay Area.$^{57}$ If all land use-project emissions are mitigated to below this threshold, it would represent an overall reduction in new land use project-related emissions of up to 92 percent.

This significance threshold was developed to focus on emissions reductions by 2020; the BAAQMD, MBARD, and CARB have not yet provided guidance or recommendations for significance thresholds to evaluate consistency with emissions reduction goals for years beyond 2020. However, since (a) the Executive Order B-30-15 emissions reductions goal of lowering GHG emissions to 40 percent below 1990 levels by 2030 is roughly equivalent to reducing emissions by 42 percent below current levels and (b) the Executive Order S-3-05 emissions reductions goal of lowering GHG emissions to 80 percent below 1990 levels by 2050 is roughly equivalent to reducing emissions by 81 percent below current levels, the 1,100 metric tons CO$_2$e per year threshold can be used as a rough gauge to determine if the Project would be consistent with these post-2020 goals.

Neither the MBARD or BAAQMD staff have identified a specific significance threshold for short-term construction-related GHG emissions. Therefore, GHG emissions from Project construction activities are evaluated based on guidance developed by the SLO APCD. For construction-related GHGs, the SLO APCD recommends that total emissions from construction be amortized over a period equal to the estimated life of the Project (in this case 50 years) and added to operational emissions, and then compared to the operational significance threshold.$^{58}$

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**Estimating Air Emissions for the Project**

Appendix AIR details all of the emission factors and assumptions used to estimate construction and operational emissions that would be associated with the Project.

The California Emissions Estimator Model (CalEEMod) version 2016.3.2 was used to estimate regional criteria air pollutant emissions associated with project construction. Proposed construction would take place between 2022 and 2023 and would include construction of the following proposed components:

- Weir structure and intake pump station;
- WTP; and
- College Lake pipeline.

Off-road equipment exhaust and vehicle trip emissions (both exhaust and fugitive dust) were estimated using CalEEMod, with assumptions for construction equipment inventories and use rates, haul truck and vehicle trips, and construction phasing developed by MBARD ’s engineering consultant for this EIR analysis. Trip lengths of 12.5 miles and 25.0 miles per worker trips and haul truck trips, respectively, were used to estimate the on-road vehicle emissions. CalEEMod defaults were used where project specific data was not available.

The Project’s construction-related GHG emissions was also derived from CalEEMod, which calculates the emissions of CO₂, CH₄, and N₂O associated with construction-related GHG sources such as off-road construction equipment, material delivery trucks, soil haul trucks, and construction worker vehicles. As recommended by the SLO APCD, estimated total construction GHG emissions were amortized over a 25-year period and added to the Project’s operational emissions estimates.⁵⁹

Sources of operational criteria air pollutant and GHG emissions include vehicle trips made to the WTP and diesel combustion for testing and maintenance of the proposed standby generator. In addition, GHG emissions would be generated by indirect sources such as generation of electricity that is used at the Project.

Operational criteria pollutant emissions are discussed qualitatively given the small number of employee commute and truck trips generated by the Project. Criteria pollutant emissions generated from the testing and maintenance of standby generators are also discussed qualitatively assuming compliance with MBARD Rules and Regulations.

GHG emissions from vehicle trips (employee commute trips and chemical delivery trips) were estimated using Emission Factor 2014 (EMFAC2014) emission factors assuming a one-way trip length of 12.5 miles for employee vehicles and 25 miles for delivery trucks. The EMFAC2014 emissions model is developed and used by CARB to assess emissions from on-road vehicles including cars, trucks, and buses in California, and to support CARB's regulatory and air quality planning efforts to meet the Federal Highway Administration's transportation planning

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3. Environmental Setting, Impacts, and Mitigation Measures

3.5 Air Quality and Greenhouse Gases

requirements. USEPA approves EMFAC2014 for use in State Implementation Plan and transportation conformity analyses. The most recent approved version is EMFAC2014. As EMFAC2014 does not provide emission factors for CH₄ and N₂O, CH₄ and N₂O emission factors for on-road vehicles were derived from The Climate Registry for highway vehicles.⁶⁰ N₂O and CH₄ emission values were multiplied by their respective global warming potentials and added to the CO₂ emissions to obtain CO₂e emissions. For the estimation of GHG emissions from the standby generator, emission factors for CO₂ were derived from the OFFROAD2017 model, while factors for CH₄ and N₂O were obtained from The Climate Registry’s 2017 Default Emission Factors for large utility diesel equipment.⁶¹

Indirect GHG emissions that would be associated with the Project’s electricity use were estimated using emission factors for electricity generation in California from USEPA’s Emissions and Generation Resource Integrated Database summary tables.⁶² GHG emissions were estimated for CO₂, N₂O, and CH₄, the total CO₂e associated with Project power demand was calculated by multiplying the N₂O and CH₄ emissions by their respective global warming potential, and then those values were added to the CO₂ emissions.

3.5.3.3 Impacts and Mitigation Measures

Impact AIR-1: Construction and operational activities associated with the Project could generate criteria air pollutant emissions that would conflict with implementation of the Clean Air Plan. (Less than Significant)

The Project would not lead to an increase in population and would therefore not generate any population-related emissions (e.g., motor vehicles, residential heating and cooling emissions) that would need a consistency determination with the AQMP. Consistency of direct emissions associated with equipment or process operations of a commercial, industrial, or institutional facility subject to MBARD permit authority is determined by assessing whether the emission source complies with all applicable MBARD rules and regulations, including emission offset and emission control requirements, and/or whether or not Project emissions are accommodated in the AQMP. Emissions from sources not subject to MBARD permit authority may be deemed consistent with the AQMP if such emissions are forecasted in the AQMP emission inventory. The Project would not include any stationary sources of emissions other than the emergency standby generator. As described above, the emergency standby generator would be subject to MBARD’s permitting requirements thus ensuring consistency with the MBARD’s Rules and Regulations. Therefore, if the Project would result in emissions less than the quantitative thresholds of significance during both construction and operation, it would be considered to be accounted for in regional air quality planning and would be considered to be consistent with the goals of the AQMP.

Construction

Construction activities are short term and typically result in emissions of ozone precursors (ROG and NOₓ) and PM in the form of dust (fugitive dust) and exhaust (e.g., vehicle tailpipe

⁶¹ Ibid.
⁶² USEPA, eGRID2014v2 Summary Tables, February 27, 2017.
emissions). Emissions of ozone precursors and PM are primarily a result of the combustion of fuel from on-road and off-road vehicles. However, ROGs are also emitted from activities that involve painting, other types of architectural coatings, or asphalt paving.

Pollutant emissions associated with Project construction would be generated from the following general construction activities: (1) grading, excavation, and construction; (2) vehicle trips from workers traveling to and from the construction areas; (3) trips associated with delivery of construction supplies to, and hauling debris from, the construction areas; (4) fuel combustion by on-site construction equipment; and (5) paving and architectural coatings. These construction activities would temporarily generate air pollutant emissions in addition to dust and fumes. The amount of emissions generated on a daily basis would vary, depending on the intensity and types of construction activities occurring simultaneously. Overall, the Project’s construction activities would occur over a period of 18 months between 2022 and 2023.63

Though construction emissions are considered short term and temporary, they have the potential to represent a significant impact with respect to air quality particularly when construction extends over a long period of time and/or when sensitive receptors are located close by. Particulate matter (i.e., PM$_{10}$ and PM$_{2.5}$) are among the pollutants of greatest localized concern with respect to construction activities. Particulate emissions from construction activities can lead to adverse health effects and nuisance concerns, such as reduced visibility and soiling of exposed surfaces. Particulate emissions can result from a variety of construction activities, including excavation, grading, vehicle travel on paved and unpaved surfaces, and vehicle and equipment exhaust. Construction emissions of PM can vary greatly depending on the level of activity, the specific operations taking place, the number and types of equipment operated, local soil conditions, weather conditions, and the amount of earth disturbance.

Emissions of ozone precursors ROG and NO$_x$ are primarily generated from construction equipment exhaust and mobile sources and vary as a function of the number of daily vehicle trips, and the types and number of heavy-duty, off-road equipment used and the intensity and frequency of their operation. Additionally, construction-related ROG emissions would also result from the application of asphalt and architectural coatings and the amount of these emissions would vary depending on the amount of paving or coating that would occur each day.

Construction emissions were estimated using CalEEMod and are presented in Table 3.5-6. The table shows maximum daily emissions by construction year and compares them to the MBARD significance thresholds for construction.

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63 Schedule based on construction of grading and surcharging fill pad for the preferred WTP site. The duration of surcharging for the optional WTP site would be increased by 12 to 18 months to allow for consolidation of fill pad at that site. There would be no construction activity at the site during consolidation. The remainder of the construction phase durations for the WTP would be the same for both site options.
TABLE 3.5-6
PROJECT CONSTRUCTION EMISSIONS

<table>
<thead>
<tr>
<th>Project Construction Activities</th>
<th>Estimated Maximum Daily Construction Emissionsa (pounds/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ROG</td>
</tr>
<tr>
<td>Year 1</td>
<td>10.6</td>
</tr>
<tr>
<td>Year 2</td>
<td>9.6</td>
</tr>
<tr>
<td>MBARD Significance Threshold</td>
<td>137</td>
</tr>
<tr>
<td>Exceed Threshold?</td>
<td>No</td>
</tr>
</tbody>
</table>

a Estimated maximum daily emissions shown are for summer conditions and do not represent emissions throughout the year.

SOURCE: Appendix AIR of this EIR.

As shown in Table 3.5-6, the average daily construction emissions of ROG, NOx, PM_{10} and PM_{2.5} would not exceed the MBARD significance thresholds for construction. The 2014 BMP Update PEIR included Mitigation Measure AQ-1 to reduce fugitive dust emissions from construction activities, which would be implemented as part of the Project and would further reduce fugitive PM emissions by approximately 35 percent. Therefore, this impact is less than significant.

Operation

After Project construction is completed and facilities are commissioned and operational, there would be operational traffic associated with worker commute, chemical deliveries, and maintenance. The Project would require two employees to operate and maintain the new facilities, resulting in four one-way employee commutes per day. In addition, there would be truck trips associated with debris removal from College Lake and the off-haul of solids from the drying beds at the water treatment plant. For purposes of analysis, debris removal was estimated to generate 1,300 annual truck trips with a maximum of 33 one-way truck trips per day. Off-haul of solids from the drying beds would generate another 52 annual truck trips with a maximum of two one-way trips per day. Emissions would also be generated from the testing and maintenance of the proposed diesel fueled standby generator. However, compliance with MBARD Rule 1010 would limit diesel PM emissions to a rate less than or equal to 0.15 grams per brake horsepower-hour and also require that the generator be operated for no more than 50 hours per year for maintenance and testing purposes. NOx emissions would be limited by MBARD’s Best Available Control Technology requirements for new sources. Table 3.5-7 shows the maximum daily operational emissions from employee and trucks trips during operation. As shown in Table 3.5-7, emissions would be well below MBARD’s operational thresholds.

Given that the Project would result in emissions less than the quantitative thresholds of significance during both construction and operation, the Project would be considered to be accounted for in regional air quality planning and would be considered to be consistent with the goals of the AQMP. This impact would be less than significant.

Mitigation: None required.
3. Environmental Setting, Impacts, and Mitigation Measures

3.5 Air Quality and Greenhouse Gases

### TABLE 3.5-7
**PROJECT OPERATIONAL EMISSIONS**

<table>
<thead>
<tr>
<th>Source</th>
<th>Estimated Maximum Daily Operational Emissions&lt;sup&gt;a&lt;/sup&gt; (pounds/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ROG</td>
</tr>
<tr>
<td>Vehicle Emissions</td>
<td>&lt;1</td>
</tr>
<tr>
<td>MBARD Significance Threshold</td>
<td>137</td>
</tr>
<tr>
<td>Exceed Threshold?</td>
<td>No</td>
</tr>
</tbody>
</table>

<sup>a</sup> Estimated maximum daily emissions would occur when the Project is in operation depending on demand and water availability and do not represent emissions throughout the year.

**SOURCE:** Appendix AIR of this EIR.

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**Impact AIR-2: The Project could expose sensitive receptors to substantial levels of pollutants. (Less than Significant)**

**Toxic Air Contaminants**

**Construction**

Construction of the Project would result in the short-term generation of DPM emissions from the use of off-road diesel equipment required to construct the proposed facilities, and from construction material deliveries and debris removal using on-road heavy-duty trucks. DPM is a complex mixture of chemicals and particulate matter that has been identified by the State of California as a TAC with potential cancer and chronic non-cancer effects. The dose to which receptors are exposed is the primary factor affecting health risk from TACs. Dose is a function of the concentration of a substance in the environment and the duration of exposure to the substance. According to the Office of Environmental Health Hazard Assessment, health risk assessments, which determine the exposure of sensitive receptors to TAC emissions, should be based on a 30-year exposure period when assessing TACs (such as DPM) that have only cancer or chronic non-cancer health effects. However, assumed exposure in such health risk assessments should be limited to the duration of the emission-producing activities associated with the Project.

Construction activities associated with the Project would take place over an 18-month period, although the level of activity would vary both temporally and spatially. Construction activities associated with the proposed weir structure and intake pump station are expected to take place over a 16-month period, excluding pre-commissioning, and taking into account a break between November and May when the site would be winterized and no construction would occur within the Salsipuedes Creek channel. Construction of the WTP is expected to last 16 months and construction of the College Lake pipeline is expected to last 13 months. Based on emissions.

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<sup>65</sup> Schedule based on construction of grading and surcharging fill pad for the preferred WTP site. The duration of surcharging for the optional WTP site would be increased by 12 to 18 months to allow for consolidation of fill pad at that site. There would be no construction activity at the site during consolidation. The remainder of the construction phase durations for the WTP would be the same for both site options.
estimates shown in Table 3.5-6, maximum daily emissions of PM$_{10}$ and PM$_{2.5}$ associated with the simultaneous construction of all Project components would be less than 6 pounds per day. Though there would be times when all four Project components are under construction concurrently, the same set of receptors would not be exposed to emissions from all four components. Therefore, sensitive receptors in the vicinity of construction activities would be exposed to a fraction of these total emissions. The closest receptors are located 710 feet southwest of the proposed intake pump station boundary, approximately 40 feet southeast of the preferred WTP site boundary, and approximately 330 feet south of the optional WTP site boundary. Pipeline construction could take place as close as 25 feet from residential and school sensitive receptors; however, pipeline construction would advance at the rate of 150 linear feet per day, so the same set of receptors would not be continually exposed to diesel exhaust from pipeline construction equipment for an extended period.

Given that the pipeline construction activities would be limited to 13 months, exposure of receptors to the low level of DPM emissions shown in Table 3.5-6 would not lead to a significant health risk impact. Because the total emissions and duration of exposure at any one sensitive receptor location would be relatively minor compared to the 30-year exposure used in health risk assessments, the health risk from exposure to short-term DPM emissions associated with construction of Project components would be negligible, and this impact would be less than significant.

Operation

Once operational, the only source of TACs from the Project would be from the testing and maintenance of the emergency standby generator. However, the standby generator would be subject to the requirements of MBARD Rule 1010, which requires all new stationary emergency standby diesel fueled engines greater than 50 horsepower to adhere to a diesel PM standard of less than or equal to 0.15 grams per brake horsepower hour, and restricts the number of hours such generators can be operated for testing and maintenance to a maximum of 50 hours per year.

Testing and maintenance of the proposed standby generator in compliance with MBARD Rule 1010 would generate less than 0.1 pounds per day of diesel PM emissions assuming that testing would be conducted on a monthly basis and for a maximum of 4.2 hours per test day. Though sensitive receptors are located close to both WTP site options, as close as 40 feet from the preferred WTP site and 330 feet from the optional WTP site, this low level of emissions from the occasional operation of the standby generator is not expected to contribute significantly to the health risk at these receptors. Required compliance with MBARD Rules and Regulations, specifically Rule 1010, would ensure that the risk from exposure to TACs generated by the testing and maintenance of the emergency standby generator would be less than significant.

Criteria Air Pollutants

Construction and Operation

The Project would generate criteria pollutant emissions as discussed under Impact AIR-1; however, the impacts of project emissions on sensitive receptors are harder to quantify. Given that ozone formation occurs through a complex photo-chemical reaction between its precursors NO$_X$ and ROG in the atmosphere with the presence of sunlight, the impacts of ozone are typically
considered on a basin-wide or regional basis instead of a localized basis. The health-based ambient air quality standards for ozone therefore are as concentrations of ozone and not as tonnages of their precursor pollutants (i.e., NO\textsubscript{X} and ROG). It is not necessarily the tonnage of precursor pollutants emitted that causes human health effects, but the concentration of resulting ozone or particulate matter. Because of the complexity of ozone formation and the non-linear relationship of ozone concentration with its precursor gases, and given the state of environmental science modeling in use at this time, it is infeasible to convert specific emissions levels of NO\textsubscript{X} or ROG emitted in a particular area to a particular concentration of ozone in that area. Meteorology, the presence of sunlight, seasonal impacts, and other complex chemical factors all combine to determine the ultimate concentration and location of ozone.\textsuperscript{66,67} Since the Project would not exceed the numeric indicator for ROG and NO\textsubscript{X} emissions during either construction or operation, it is not likely that Project ROG and NO\textsubscript{X} emissions could result in an increase in ground-level ozone concentrations in proximity to the Project sites or elsewhere in the air basin and impacts can be considered less than significant.

As expressed in the \textit{amicus curiae} brief submitted for the \textit{Sierra Club v. County of Fresno} case (also known as the \textit{Friant Ranch Case}),\textsuperscript{68,69} the CEQA criteria pollutants significance thresholds from the air district were set at emission levels tied to the region’s attainment status, and are emission levels at which stationary pollution sources permitted by the air district must offset their emissions. The CEQA project must use feasible mitigations in order for the region to attain the health based ambient air quality standards. Therefore, given that the Project would not exceed the mass emissions thresholds established by MBARD, it is not likely that emissions from Project-related activities will cause or contribute to the exposure of sensitive receptors to ground-level concentrations in excess of health-protective levels.

The primary health concern with exposure to NO\textsubscript{X} emissions is the secondary formation of ozone. As the \textit{amicus curiae} briefs submitted for the \textit{Sierra Club v. County of Fresno} case suggested, and as was stated above, because of the complexity of ozone formation, and given the state of environmental science modeling in use at this time, it is infeasible to determine whether, or the extent to which, a single project’s precursor (i.e., NO\textsubscript{X} and VOCs) emissions would potentially result in the formation of secondary ground-level ozone and the geographic and temporal distribution of such secondary formed emissions. Furthermore, available models today are designed to determine regional, population-wide health impacts, and cannot accurately quantify ozone-related health impacts caused by NO\textsubscript{X} or VOCs emissions from local level (project level).

\textsuperscript{66} SCAQMD, Application of the South Coast Air Quality Management District for Leave to File Brief of Amicus Curiae in Support of Neither Party and Brief of Amicus Curiae. In the Supreme Court of California. Sierra Club, Revive the San Joaquin, and League of Women Voters of Fresno v. County of Fresno, 2014.

\textsuperscript{67} SJVAPCD, Application for Leave to File Brief of Amicus Curiae Brief of San Joaquin Valley Unified Air Pollution Control District in Support of Defendant and Respondent, County of Fresno and Real Party In Interest and Respondent, Friant Ranch, L.P. In the Supreme Court of California. Sierra Club, Revive the San Joaquin, and League of Women Voters of Fresno v. County of Fresno, 2014.

\textsuperscript{68} SCAQMD, Application of the South Coast Air Quality Management District for Leave to File Brief of Amicus Curiae in Support of Neither Party and Brief of Amicus Curiae. In the Supreme Court of California. Sierra Club, Revive the San Joaquin, and League of Women Voters of Fresno v. County of Fresno, 2014.

\textsuperscript{69} SJVAPCD, Application for Leave to File Brief of Amicus Curiae Brief of San Joaquin Valley Unified Air Pollution Control District in Support of Defendant and Respondent, County of Fresno and Real Party In Interest and Respondent, Friant Ranch, L.P. In the Supreme Court of California. Sierra Club, Revive the San Joaquin, and League of Women Voters of Fresno v. County of Fresno, 2014.
Notwithstanding these scientific constraints, the disconnect between Project level NOX emissions and ozone-related health impact cannot be bridged at this time.

**Mitigation:** None required.

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**Impact AIR-3:** The Project could create objectionable odors that would affect a substantial number of people. *(Less than Significant)*

**Construction**

Construction activities that would be associated with the Project could result in temporary odors from use of diesel-fueled equipment. These odors would be temporary, would dissipate quickly, and would be unlikely to create objectionable odors that would affect a substantial number of people. The impact would be *less than significant*.

**Operation**

There would be no operational sources of odor associated with the Project. Chemical storage and chemical feed facilities at the WTP would be closed systems that would generate no odorous emissions. Therefore, the Project would not be expected to create objectionable odors that would affect a substantial number of people. The impact would be *less than significant*.

**Mitigation:** None required.

---

**Impact AIR-4:** The Project could lead to an increase of GHG emissions that are associated with global climate change; however, not at a cumulatively considerable level. *(Less than Significant)*

**Construction**

Construction of the Project would generate GHG emissions associated with the use of heavy-duty off-road construction equipment and automobile and truck trips required to transport workers, materials, and debris to and from the Project sites. As described above, construction GHG emissions were derived from the CalEEMod output and are presented in Table 3.5-8.

<table>
<thead>
<tr>
<th>Year</th>
<th>GHG Emissions as metric tons of CO2e</th>
</tr>
</thead>
<tbody>
<tr>
<td>2022</td>
<td>1590.3</td>
</tr>
<tr>
<td>2023</td>
<td>1453.8</td>
</tr>
<tr>
<td>Total</td>
<td>3044.2</td>
</tr>
<tr>
<td>Assumed Project Life (years)</td>
<td>25</td>
</tr>
<tr>
<td>Amortized Annual Construction Emissions</td>
<td>121.8</td>
</tr>
</tbody>
</table>

**SOURCE:** Appendix AIR of this EIR.
As recommended by MBARD and in accordance with the SLO APCD CEQA Guidelines, the amortized annual construction emissions are added to the Project’s operational emissions discussed below and considered in the impact evaluation.

**Operation**

**Table 3.5-9** shows the Project’s operational emissions from both direct and indirect sources. The sum of these emissions and the amortized annual construction emissions is compared to the BAAQMD’s 1,100 MT of CO₂e per year threshold.

<table>
<thead>
<tr>
<th>Source</th>
<th>CO₂e (metric tons/year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standby Generator – Testing and Maintenance</td>
<td>16.3</td>
</tr>
<tr>
<td>Worker Commute and Chemical Delivery Truck Trips</td>
<td>59.5</td>
</tr>
<tr>
<td>Electricity Generation (Indirect)</td>
<td>440.3</td>
</tr>
<tr>
<td>Amortized Annual Construction Emissions</td>
<td>121.8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>637.9</td>
</tr>
<tr>
<td>Significance Threshold</td>
<td>1100</td>
</tr>
<tr>
<td>Significant?</td>
<td>No</td>
</tr>
</tbody>
</table>

**Impact AIR-5: The Project would not conflict with the Executive Order B-30-15 Emissions Reduction Goal. (Less than Significant)**

As noted in Section 3.5.3.2, the threshold of 1,100 metric tons CO₂e per year, which is used to assess the significance of Impact AIR-5 and use of this threshold, effectively requires mitigation for the top 92 percent of emissions generated by new land use projects, which would represent an overall reduction in new land use project-related emissions of up to 92 percent. Since the issuance of Executive Order B-30-15, GHG emissions reductions goals of lowering GHG emissions to 40 percent below 1990 levels by 2030 is roughly equivalent to reducing emissions by 42 percent below current levels. This analysis uses the same significance threshold to determine if the
Project would generally be consistent with Executive Order B-30-15. As discussed under Impact AIR-4, the carbon footprint of the Project and the impact associated with GHG emissions would be less than significant. Therefore, the Project would not conflict with the Executive Order B-30-15 Emissions Reduction Goal, and the associated impact would be *less than significant*.

**Mitigation:** None required.

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**Cumulative Impacts**

**Impact C-AIR-1:** The Project, in combination with past, present, and probable future projects in the Project area, would not result in significant adverse cumulative air quality or greenhouse gas impacts. (*Less than Significant*)

**Air Quality**

The contribution of an individual project's air emissions to regional air quality impacts is, by its nature, a cumulative effect. Emissions from past, present, and reasonably foreseeable future projects in the region also have or will contribute to adverse regional air quality impacts on a cumulative basis, resulting in a potentially significant cumulative air quality impact. No single project by itself would be sufficient in size to result in non-attainment of ambient air quality standards. Instead, a project’s individual emissions contribute to existing cumulative air quality conditions. The project-level thresholds for criteria air pollutants are based on levels at which new sources are not anticipated to contribute to an air quality violation and would be consistent with the assumptions in the regional air quality management plan. Stationary sources such as standby generators would be subject to permit requirements of MBARD and would be considered consistent with regional air quality planning assumptions as the emission source complies with all applicable District rules and regulations, including emission offset and emission control requirements and/or whether or not project emissions are accommodated in the AQMP. The Project would not cause an increase in population-related emissions. Therefore, as the Project’s emissions would not exceed the project-level thresholds as explained under Impact AIR-1, and because the Project would comply with all applicable MBARD permitting requirements, the Project would not result in a considerable contribution to cumulative regional air quality impacts, and the impact would be *less than significant*.

**Greenhouse Gases**

Climate change is a global problem, and GHGs are global pollutants, which are pollutants of regional and local concern. Whereas pollutants with localized air quality effects have relatively short atmospheric lifetimes (about 1 day), GHGs have long atmospheric lifetimes (1 year to several thousand years). GHGs persist in the atmosphere for long enough time periods to be dispersed around the globe. Therefore, the effects of GHGs are also experienced globally. The atmospheric concentration of GHGs determines the intensity of climate change, with current

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levels already leading to increases in global temperatures, sea level rise, severe weather, and other environmental impacts. The continued increase in atmospheric GHG concentrations will only worsen the severity and intensity of climate change, leading to irrevocable environmental changes. Therefore, from the standpoint of CEQA, GHG impacts to global climate change are inherently cumulative. As with criteria air pollutants, no single project could generate enough GHG emissions to contribute noticeably to a change in the global average temperature. However, the combination of GHG emissions from past, present, and future projects contribute substantially to the phenomenon of global climate change and its associated environmental impacts.

As discussed under Impact AIR-4, GHG emissions from the construction and operation of the Project would be less than significant. The Project would also comply with the goals and actions of applicable GHG reduction plans at the local and state levels that aim to achieve the 2030 target established by SB 32 for California to meet a 40 percent reduction in GHG emissions by 2030 compared to 1990 levels. Therefore, Project contribution to the global cumulative impact would be less than significant.

**Mitigation:** None required.
3.6 Geology and Soils

This section presents an analysis of potential impacts related to geology, soils, paleontological resources, and geologic features that would result from implementation of the proposed College Lake Integrated Resources Management Project (Project). The analysis includes both site options (preferred and optional) for the water treatment plant (WTP) as well as preferred and optional pipeline alignments for the College Lake pipeline. Information from the 2014 Basin Management Plan Update Program Environmental Impact Report (2014 BMP Update PEIR) that remains relevant and accurate for the purposes of describing the physical or regulatory setting of geology, soils, paleontological resources, and geologic features has been incorporated as appropriate. The Project includes mitigation measures adopted by the Board of Directors to reduce the severity and magnitude of potential environmental effects.

3.6.1 Setting

The 2014 BMP Update PEIR Section 3.7.1 (p. 3.7-1 et seq.) describes existing geological, soils, and seismic conditions in the Project region. Regional environmental setting information from the 2014 BMP Update PEIR is summarized here. This section describes geology, soils, and seismicity information specific to the Project area.

3.6.1.1 Regional Setting

Geology

The Project is located within the Pajaro Valley, a wide plain between the Coast Ranges and Monterey Bay. The Coast Ranges are defined by their northwest-trending mountains and valleys, created by the many active faults in the area. The southern Santa Cruz Mountains consist of Middle to Lower Pleistocene1 marine sedimentary rocks and Early Miocene2 marine deposits. The Pajaro Valley is underlain by Quaternary3 alluvium from Aromas to Monterey Bay, and separates the southern Santa Cruz Mountains to the north from the Gabilan Range to the south.

Seismicity

The region is characterized by high seismic activity. The fault zones described below are considered to be components of the larger San Andreas Fault system. While each of these are their own discrete fault zones, and each of them move independently of one another, they are considered to be extensions of the main San Andreas Fault, and they each have somewhat different characteristics. The fault zones below are designated as Earthquake Fault Zones under the Alquist-Priolo Act of 1972.

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1 The Pleistocene Epoch is a length of geologic time spanning from 2.6 million years ago to 11,000 years ago.
2 The Miocene Epoch is a length of geologic time spanning from 23 million years ago to 5.3 million years ago.
3 The Quaternary Period is a broad length of geologic time spanning from 2.6 million years ago up to the present time.
San Andreas Fault zone
The San Andreas Fault is a northwest-trending, right-lateral, strike-slip fault, approximately 2.6 miles from the nearest Project component.\(^4\) The San Andreas has produced many major earthquakes in the recent past, including the 1906 San Francisco earthquake and the 1989 Loma Prieta earthquake. The 1989 Loma Prieta earthquake, which was a magnitude 6.9 event, was responsible for numerous deaths and injuries, and millions of dollars in damage to the Bay Area. Although the epicenter of this earthquake was located in the Forest of Nisene Marks State Park, just north of the unincorporated community of Aptos in Santa Cruz County, the effects were felt throughout the Bay Area as far north as San Francisco.

San Gregorio Fault zone
The San Gregorio Fault is also a northwest-trending, right-lateral, strike-slip fault, as is characteristic of the many faults that are associated with the San Andreas Fault system. It is located approximately 22.7 miles from the Project area and is considered active.

Calaveras Fault
The Calaveras Fault is a major fault that extends for about 100 miles from Dublin to Hollister, where it merges with the San Andreas Fault. The southern portion, which is considered to be the most active segment, is located approximately 14.1 miles from the nearest Project component.

Sargent Fault zone
The Sargent Fault branches off of the San Andreas Fault and extends for approximately 34 miles from the Lexington Reservoir to Hollister. The fault is located approximately 5.3 miles from the nearest Project component, and is considered active.

Zayante-Vergeles Fault zone
The Zayante-Vergeles Fault (ZVF) zone is of particular importance in relation to this Project as a portion of the fault runs directly through College Lake (refer to Figure 3.6-1). The northern segment of the fault zone is the Zayante Fault and is the segment that traverses the Project area. The fault is considered active, showing evidence for Holocene displacement.\(^5,6\) As mapped, part of the optional WTP site would be located on the potential southwestern strand of the ZVF. The actual location of this potential strand of the ZVF is undetermined. No obvious geomorphic evidence for faulting was observed in the digital elevation data and satellite imagery reviewed during a desktop study. Likewise, no obvious evidence for surface faulting was observed during a

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\(^5\) The Holocene Epoch is a period of geologic time that spans from the end of the last Ice Age (approximately 11,000 years ago) up to the present time.

Figure 3.6-1
Surface-Fault Rupture Hazard Zones
field visit on March 15, 2017. However, in both cases, the absence of evidence may be a result of intensive plowing and associated agricultural activity, as well as a lack of natural exposures and does not indicate absence of the fault. The dissimilar soil stratigraphy encountered in Borings B-01 and B-02 from the Fugro site assessment suggests a possible geologic contact (and/or potentially a fault trace) may exist in the area of the proposed College Lake water storage area and optional WTP site.

### 3.6.1.2 Local Setting

College Lake is located in an alluvial area bordered by gentle to moderate slopes along the northern edge of the Pajaro Valley plain. College Lake, and two nearby lakes—Kelly and Drew Lake—are in areas comprised of Quaternary alluvium, and the lake bottoms are classified as Quaternary Basin deposits, as shown on Figure 3.6-2. The basin deposits consist of unconsolidated plastic clay and silty clay; they have a high organic content with interbedded silt and sandy silt deposits. These types of soils have a high susceptibility to liquefaction in the event of an earthquake. Designated liquefaction zones are established by the Watsonville General Plan in low-lying areas underlain by the following types of geologic deposits: older and younger sequences of Holocene flood plain deposits along the Pajaro River and Corralitos Creek (unit Qfl) and Holocene basin deposits within low-lying areas of the Pajaro Valley (unit Qb). These units are shown on Figure 3.6-2 and described in greater detail below.

The Watsonville terrace deposits (Qtw) are Quaternary non-marine terrace deposits, subdivided into fluvial and alluvial fan facies. These terrace deposits are semi-consolidated, moderately to poorly sorted sediment ranging from silty clay to gravel-sized particles. These deposits have a low susceptibility to liquefaction and none of the mapped areas are considered unstable enough to produce landslides.

Both Corralitos and Salsipuedes creeks flow across the flood plain deposits (Qfl). The area immediately south of College Lake is alluvium classified as older flood plain deposits, which consist of unconsolidated, relatively fine-grained sand and silt with intermittent clay lenses; these deposits generally have a moderate susceptibility to liquefaction. The area surrounding Corralitos and Salsipuedes creeks is classified as younger flood plain deposits, which have a similar composition to the previously mentioned older deposits, the difference being that these deposits have a very high susceptibility to liquefaction.

The College Lake area is subject to strong seismic ground shaking. Ground shaking poses a significant risk to the proposed and existing facilities in the area. The entire area is expected to experience ground shaking of severe intensity in the event of a major earthquake, with peak

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7 Ibid.
8 Ibid.
9 A sedimentary facies is the sum total of features that reflect the specific environmental conditions under which a given rock was deposited.
Geologic Units

- **Q** - Alluvium
- **Qar** - Aromas Sand
- **Qb** - Basin deposits
- **Qd** - Dune sand
- **Qf** - Alluvial fan deposits
- **Qfl** - Flood plain deposits
- **Qtw** - Terrace deposits of Watsonville terrace
ground accelerations reaching 0.8g.\textsuperscript{11} The College Lake area has a high potential for liquefaction, as does the area along the College Lake pipeline alignment.

No part of the College Lake area is in a tsunami hazard area; however, movement on any of the active or potentially active faults in the project vicinity could result in the creation of a seiche.

The soils in the College Lake area are mostly Conejo loam on 0 to 2 percent slopes. The soils are flooded in the winter and drained by a Reclamation District 2049 in the spring for cultivation. The clay content creates a moderate hazard relative to expansive soils that make the soil unsuitable for construction materials, embankments, and levees, and is problematic for some types of construction. The perimeter areas of College Lake are comprised of a variety of soils types including the Danville loam, Diablo clay, Elder sandy loam, Tierra-Watsonville complex, and Watsonville loam.\textsuperscript{12} The site where the proposed weir structure and treatment facilities would be located are comprised of Baywood Variant loamy sand and the southern portion of the College Lake pipeline alignment is comprised of Baywood loamy sand. No part of the College Lake area is within a designated zone of mineral, aggregate, oil and gas, or geothermal resources.

### 3.6.1.3 Identification of Paleontological Resources and Geologic Features

Paleontological resources are the fossilized remains or impressions of plants and animals, including vertebrates (animals with backbones; mammals, birds, fish, etc.), invertebrates (animals without backbones; starfish, clams, coral, etc.), and microscopic plants and animals (microfossils). They are valuable, non-renewable, scientific resources used to document the existence of extinct life forms and to reconstruct the environments in which they lived. Fossils can be used to determine the relative ages of the depositional layers in which they occur and of the geologic events that created those deposits. The age, abundance, and distribution of fossils depend on the geologic formation in which they occur and the topography of the area in which they are exposed. The geologic environments within which the plants or animals became fossilized usually were quite different from the present environments in which the geologic formations now exist.

As previously discussed, the Project area is primarily underlain by Holocene-aged flood plain deposits. While the uppermost layers may not be old enough to have preserved fossils, they may be underlain by sediments that could exceed 5,000 years in age (early Holocene or older) and therefore may preserve fossil resources, as defined by the Society of Vertebrate Paleontology. The Pleistocene terrace deposits, present within a very small portion of the Project area, do have a record of vertebrate fossil preservation in Southern California, but similar sediments in Santa Cruz County only have a record of fossil plants that are poorly represented in fossil collections, indicative of low paleontological sensitivity. No fossil localities are known to be located within the Project area.\textsuperscript{13}

\textsuperscript{11} Ibid.
The County of Santa Cruz has identified four areas with significant hydrological, geological and paleontological features that stand out as rare or unique and representative in the County because of their scarcity, scientific or educational value, aesthetic quality or cultural significance. These areas include:

- **Majors Creek Canyon**: The cliffs and exposed rocks of this canyon to the east of State Route 1 are outstanding scenic features.
- **Martin Road**: East and west of Martin Road, encompassed in the botanical sites, are unusual sandhill outcroppings.
- **Wilder Creek**: This area contains a concentration of limestone caves worth protecting.
- **Table Rock**: Highly scenic coastal rock formations can be found in the vicinity of Table Rock and Yellow Bank Creek.

None of these features are present within College Lake or at the Project sites.

### 3.6.2 Regulatory Framework

#### 3.6.2.1 Federal and State

There have been no substantial changes in the federal or state regulations, policies, or plans relevant to the Project as set forth in the 2014 BMP Update PEIR, Section 3.7, Geology and Soils (p. 3.7-1). This analysis incorporates 2014 BMP Update PEIR, Section 3.7, Geology and Soils (p. 3.7-1) and relies on the summaries of federal or state regulations, policies, or plans set forth therein.

#### Paleontological Resources

**California Environmental Quality Act**

The California Environmental Quality Act (CEQA) Guidelines (Title 14, Chapter 3 of the California Code of Regulations, Section 15000 et seq.), define the procedures, types of activities, individuals, and public agencies required to comply with CEQA. As part of the CEQA process, one of the questions that must be answered by the lead agency relates to paleontological resources: “Will the proposed project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?” (CEQA Guidelines Section 15023, Appendix G, Section XIV, Part a).

The loss of any identifiable fossil that could yield information important to prehistory, or that embodies the distinctive characteristics of a type of organism, environment, period of time, or geographic region, would be a significant environmental impact. Direct impacts to paleontological resources primarily concern the potential destruction of non-renewable paleontological resources and the loss of information associated with these resources. This includes the unauthorized collection of fossil remains. If potentially fossiliferous bedrock or surficial sediments are disturbed, the disturbance could result in the destruction of paleontological resources and subsequent loss of

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3. Environmental Setting, Impacts, and Mitigation Measures

3.6 Geology and Soils

Information (significant impact). At the project-specific level, direct impacts can be mitigated to a less than significant level through the implementation of paleontological mitigation.

The CEQA threshold of significance for a significant impact on paleontological resources is reached when a project is determined to “directly or indirectly destroy a significant paleontological resource or unique geologic feature.” In general, for projects that are underlain by paleontologically sensitive geologic units, the greater the amount of ground disturbance, the higher the potential for significant impacts to paleontological resources. For projects that are directly underlain by geologic units with no paleontological sensitivity, there is no potential for impacts on paleontological resources unless sensitive geologic units which underlie the non-sensitive unit are also affected.

**Public Resources Code Section 5097.5 and Section 30244**

Other state requirements for paleontological resource management are included in Public Resources Code Section 5097.5 and Section 30244. These statutes prohibit the removal of any paleontological site or feature from public lands without permission of the jurisdictional agency, define the removal of paleontological sites or features as a misdemeanor, and require reasonable mitigation of adverse impacts to paleontological resources from developments on public (state, county, city, district) lands.

**Society of Vertebrate Paleontologists Guidelines**

In addition to the laws, regulations, and policies described in the regulatory framework, the standard practice in analyzing paleontological resources includes using guidance from the Society of Vertebrate Paleontology. Although not a law or regulation in the legal sense, these guidelines have become the standard in the industry. The Society of Vertebrate Paleontology defines the level of potential for sedimentary rocks based upon the potential for yielding fossils of certain types and the importance of recovered evidence for understanding the geologic record. The level of potential of geologic units in the Project area has not been evaluated. For purposes of analysis, it is assumed that all sedimentary units older than early Holocene (i.e., older than 5,000 years) may contain paleontological resources.

**3.6.2.2 Local**

Table 2-10 in Chapter 2, *Project Description*, identifies the approvals from Santa Cruz County and/or the City of Watsonville required for the Project. Table 3.6-1 presents pertinent local plans and policies regarding geology and soils to support County and City consideration of project consistency with general policies. In some cases, local policies are used in this EIR as criteria to determine the significance of physical effects on the environment (e.g., Impact NOI-1 in Section 3.8, Noise and Vibration).

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15 California Government Code Section 53091 exempts agencies like PV Water from complying with local building and zoning ordinances when locating or constructing facilities for the production, generation, storage, treatment, or transmission of water. California Government Code Section 65402(c) requires that PV Water notify cities and counties of its plans to construct projects or to acquire or dispose of property. The planning agency then has 40 days to determine project consistency with its general plan. If the planning agency disapproves, the disapproval may be overruled by PV Water.
3. Environmental Setting, Impacts, and Mitigation Measures

3.6 Geology and Soils

### 3.6.3 Impacts and Mitigation Measures

#### 3.6.3.1 Significance Criteria

In accordance with the CEQA, state CEQA Guidelines (including Appendix G), relevant plans, policies, and/or guidelines, and agency standards, the Project could have a significant impact if it were to:

- Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

| TABLE 3.6-1 |
| Local Plans and Policies Relevant to the Project |
| CITY OF WATSONVILLE PLANS AND POLICIES |
| Watsonville General Plan |
| Policy 12.C.2: Soils Investigation. The City shall require a soils investigation report prior to new development on sites deemed to have a high potential for soil erosion, landslide, or other soil-related constraints. |
| Watsonville Municipal Code |
| Section 9-5.705 (8) Polluted Runoff Controls. All development shall incorporate structural and nonstructural Best Management Practices. [Best Management Practices] are methods for controlling, reducing, or removing typical runoff pollutants. All components (i-x) of Section 9-5.705 are applicable here. |
| SANTA CRUZ COUNTY PLANS AND POLICIES |
| Santa Cruz County General Plan/Local Coastal Program |
| Policy 5.9.1: Protection and Designation of Significant Resources. Protect significant geological features such as caves, large rock outcrops, inland cliffs and special formations of scenic or scientific value, hydrological features such as major waterfalls or springs, and paleontological features, through the environmental review process. Designate such sites on the General Plan and Local Coastal Program Resources and Constraints Maps where identified. |
| Policy 6.1.1: Geologic Review for Development in Designated Fault Zones. Require a review of geologic hazards for all discretionary development projects, including the creation of new lots, in designated fault zones. Fault zones designated for review include the Butano, Sargent, Zayante, and Corralitos complexes, as well as the State designated Seismic Review Zones. Required geologic reviews shall examine all potential seismic hazards, and may consist of a Geologic Hazards Assessment and a more complete investigation where required. Such assessment shall be prepared by County staff under supervision of the County Geologist, or a certified engineering geologist may conduct this review at the applicant's choice and expense. |
| Policy 6.1.3: Engineering Geology Report for Public Facilities in Fault Zones. Require a full engineering geology report by a certified engineering geologist whenever a significant potential hazard is identified by a Geologic Hazards Assessment or Preliminary Geologic Report, and prior to the approval of any new public facility or critical structures within the designated fault zone. |
| Policy 6.1.8: Design Standards for New Public Facilities. Require all new public facilities and critical structures to be designed to withstand the expected groundshaking (specified in design standards) during an earthquake on the San Andreas Fault. |
| Policy 6.3.5: Installation of Erosion Control Measures. Require the installation of erosion control measures consistent with the Erosion Control Ordinance, by October 15, or the advent of significant rain, or project completion, whichever occurs first. Prior to October 15, require adequate erosion control to be provided to prevent erosion from early storms. For development activities require protection of exposed soil from erosion between October 15 and April 15 and require vegetation and stabilization of disturbed areas prior to completion of the project. For agricultural activities, require that adequate measures be taken to prevent excessive sediment from leaving the property. |

i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault;

ii. Strong seismic ground shaking;

iii. Seismic-related ground failure, including liquefaction; and/or

iv. Landslides.

- Result in substantial soil erosion or the loss of topsoil;
- 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;
- Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property;
- Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater; and/or
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

The following topics are not analyzed further in this section for the reasons described below:

- Having soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater. None of the Project components include the use of septic tanks or alternative wastewater disposal systems, and therefore, would have no impact on the support capacity of affected soils. For these reason, this criterion is not applicable to the Project.

- Result in the loss of topsoil. Impacts related to topsoil are evaluated in Section 3.2, Land Use and Agricultural Resources and reduced through implementation of Mitigation Measure LU-1c, Replacement of Topsoil (refer to Impact LU-1).

### 3.6.3.2 Methodology

As described in Section 3.1, this EIR provides an independent analysis of the Project’s potential environmental impacts. Table 3.6-2 presents mitigation measures from the 2014 BMP Update PEIR adopted by the Board of Directors (Resolution 2014-05) for the purpose of reducing impacts related to geology and soils. These adopted mitigation measures are considered part of the Project and thus are considered prior to any significance determinations. Potential impacts are evaluated in the following section. If warranted, additional mitigation is included and takes the form of (1) modifications to update the mitigation measures presented in Table 3.6-2 to reflect current conditions and site-specific impacts; or (2) new mitigation measures to replace or augment an adopted mitigation measure. The basis for the evaluations below are compliance with state requirements and implementation of the recommendations of geotechnical evaluations.
3.6 Geology and Soils

TABLE 3.6-2  
2014 BMP UPDATE PEIR MITIGATION MEASURES – GEOLOGY AND SOILS

<table>
<thead>
<tr>
<th>GS-1: Future construction of proposed BMP Update facilities shall be designed in accordance with design recommendations of geotechnical reports and in compliance with applicable policies and appropriate engineering investigation practices necessary to reduce the potential detrimental effects of ground shaking and liquefaction. Construction shall be in accordance with applicable City and County ordinances and policies regarding mitigation of seismic and geologic hazards, and appropriate geotechnical studies shall be conducted.</th>
</tr>
</thead>
<tbody>
<tr>
<td>GS-2: Construction of future BMP Update facilities shall include preparation and implementation of erosion control plans to minimize erosion and inadvertent transport of sediments into water bodies during installation of facilities. Measures shall include, but not be limited to: limiting the area of ground disturbance and vegetation removal at any one time during construction; conducting work prior to the rainy season if possible and protecting disturbed areas during the rainy season; installing bales or other appropriate barriers adjacent to water bodies to prevent transport of sediments into sloughs and water courses; and other Best Management Practices during construction to protect water quality. All grading and construction shall conform to requirements of the Santa Cruz County Grading Ordinance. To the extent possible, grading activities in non-cropped areas shall be limited to the period between April 15 and October 31.</td>
</tr>
<tr>
<td>GS-3: All diversion and pipeline facilities shall be designed and engineered in accordance with recommendations of a geotechnical report and appropriate engineering designs to reduce the potential detrimental effects of expansive soils, corrosivity, and/or other identified soils constraints. A licensed geotechnical engineer shall prepare recommendations applicable to foundation design, earthwork, and site preparation prior to or during the project design phase. Recommendations will address mitigation of site-specific, adverse soil and bedrock conditions that could hinder development. Project engineers shall implement the recommendations. Geotechnical design and design criteria will comply with applicable codes and requirements of the California Building Code with California additions (CCR Title 24), applicable City and County construction and grading ordinances.</td>
</tr>
</tbody>
</table>


3.6.3.3 Impact Evaluation

Impact GEO-1: The Project could directly or indirectly cause potential substantial adverse effects, including risk of loss, injury, or death involving an exacerbation of existing risks related to earthquake rupture, strong seismic ground shaking, seismic related ground failure including liquefaction, and landslides. *(Less than Significant)*

The Project components are not within a Zone of Required Investigation as delineated on an Alquist-Priolo Earthquake Fault Zone Map. As depicted on Figure 3.6-1, the proposed weir structure, intake pump station, and WTP (both preferred and optional sites) are within the City of Watsonville’s mapped Zayante-Vergeles zone of potential surface rupture. The optional WTP site is located on what may be a southwestern strand of the Zayante-Vergeles Fault; however, the actual location of this potential fault strand is undetermined.16 Obvious geomorphic evidence for the fault has not been found, although there is a disconformity present in the stratigraphy at the optional WTP site, which could represent a fault trace. In the event of a major earthquake in the Zayante-Vergeles fault zone each of the Project components is at risk of receiving damage as a result of that earthquake. These substantial adverse effects could include surface rupture, strong seismic ground shaking, and seismic related ground failures (e.g., liquefaction and/or landslides).

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The Board of Directors adopted Mitigation Measure GS-1 (presented above in Table 3.6-2) to reduce these potential risks by requiring that all Project components be designed in accordance with recommendations from a geotechnical report and in compliance with applicable policies and appropriate engineering investigations practices. Pajaro Valley Water Management Agency (PV Water) is currently implementing this measure and has conducted preliminary geotechnical investigations\textsuperscript{17} that have informed the designs presented in this EIR. PV Water would continue to implement this measure as design of the Project components progresses. In accordance with California Government Code Section 53091, adopted Mitigation Measure GS-1 has been revised as shown below.\textsuperscript{18} Continued implementation of this revised adopted mitigation measure would ensure that design engineers incorporate the findings of geotechnical investigations into project design, reducing this impact to \textit{less than significant}.

\textbf{Mitigation Measure GS-1 (Revised).}

Future construction of proposed BMP Update facilities shall be designed in accordance with design recommendations of geotechnical reports and in compliance with applicable policies and appropriate engineering investigation practices necessary to reduce the potential detrimental effects of ground shaking and liquefaction. Construction shall be in accordance with applicable requirements, City and County ordinances and policies regarding mitigation of seismic and geologic hazards, and appropriate geotechnical studies shall be conducted.

\textbf{Impact GEO-2: The Project could result in substantial soil erosion. (Less than Significant)}

Construction activities associated with each Project component would result in erosion and discharge of sediment in water bodies. These activities include the demolition of the existing weir structure and the construction of the proposed weir structure, intake pump station, WTP, and College Lake pipeline. Construction of Project components would involve dewatering, grading and excavation, landscaping, paving, and installing piping. Potential maintenance activities include the removal of excess sediment and debris from around the weir and in drainage channels in the lake. The Board of Directors adopted Mitigation Measure GS-2 (presented above in Table 3.6-2) to address erosion and discharge of sediment. In accordance with California Government Code Section 53091, Mitigation Measure GS-2 has been revised as shown below. In accordance with revised adopted Mitigation Measure GS-2, PV Water would prepare and implement (or require the construction contractor to prepare and implement) an erosion control plan. The erosion control plan would include, but would not be limited to:

- Limiting the area of ground disturbance and vegetation removal at any one time during construction;


\textsuperscript{18} Text that has been revised in adopted mitigation measures is indicated with \underline{underlining} where text has been added, and \textit{strike-through} where text has been deleted.
• Conducting work prior to the rainy season to the extent possible and protecting disturbed areas during the rainy season;
• Installing bales or other appropriate barriers adjacent to water bodies to prevent transport of sediments into sloughs and water courses;
• Immediately revegetating disturbed areas; and
• Implementing other Best Management Practices during construction to protect water quality.

Mitigation Measure GS-2 would also require that all grading and construction shall conform to applicable requirements (refer to Section 3.3, Surface Water, Groundwater and Water Quality, for more information). Implementation of revised adopted Mitigation Measure GS-2, including the erosion control plan, would reduce impacts associated with erosion and loss of top soil to less than significant.

Mitigation Measure GS-2 (Revised).

Construction of future BMP Update facilities shall include preparation and implementation of erosion control plans to minimize erosion and inadvertent transport of sediments into water bodies during installation of facilities. Measures shall include, but not be limited to: limiting the area of ground disturbance and vegetation removal at any one time during construction; conducting work prior to the rainy season if possible and protecting disturbed areas during the rainy season; installing bales or other appropriate barriers adjacent to water bodies to prevent transport of sediments into sloughs and water courses; immediately revegetating disturbed areas; and other Best Management Practices during construction to protect water quality. All grading and construction shall conform to applicable requirements of the Santa Cruz County Grading Ordinance. To the extent possible, grading activities in non-cropped areas shall be limited to the period between April 15 and October 31.

Impact GEO-3: The Project could be located on a geologic unit or soil that becomes unstable as a result of the Project or that could potentially result in landslide, lateral spreading, subsidence, liquefaction, or collapse for reasons caused or exacerbated by the Project. (Less than Significant)

The College Lake pipeline, weir structure and pump station, and WTP could exacerbate hazards associated with underlying soil properties. The soils to the east and west of the proposed weir structure, intake pump station, WTP (both preferred and optional sites), and within College Lake itself have a high to moderate liquefaction potential. In the event of a major earthquake in or around the Project area these soils would potentially liquefy. The two large shotcrete-lined sedimentation basins that are planned within the new treatment plant have been identified in the geotechnical report as having the potential to become unstable in the event of a major earthquake. Fugro estimates large slope displacements should an earthquake occur; however, the actual

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damage may vary depending on the characteristics of the potential earthquake. In addition, compressible soils may be present in the unit Qb and unit Qfl deposits, which may be susceptible to consolidation settlement under new loads from the Project components. The Board of Directors adopted Mitigation Measure GS-3 to address the risks associated with potentially unstable soils that could result in landslide, lateral spreading, subsidence, and liquefaction. Mitigation Measure GS-3 requires that all Project components be designed and engineered in accordance with recommendations of a geotechnical report and appropriate engineering designs to reduce the detrimental effects of any identified soil constraints. Also, geotechnical design and design criteria would comply with the most recent California Building Code specifications. In accordance with California Government Code Section 53091, Mitigation Measure GS-3 has been revised as shown below. Implementation of revised adopted Mitigation Measure GS-3 would ensure that impacts related to this criterion are less than significant.

Mitigation Measure GS-3 (Revised).

All diversion and pipeline facilities shall be designed and engineered in accordance with recommendations of a geotechnical report and appropriate engineering designs to reduce the potential detrimental effects of expansive soils, corrosivity, and/or other identified soils constraints. A licensed geotechnical engineer shall prepare recommendations applicable to foundation design, earthwork, and site preparation prior to or during the project design phase. Recommendations will address mitigation of site-specific, adverse soil and bedrock conditions that could hinder development. Project engineers shall implement the recommendations. Geotechnical design and design criteria will comply with applicable codes and requirements of the California Building Code with California additions (CCR Title 24), applicable City and County construction and grading ordinances.

Impact GEO-4: The Project could be located on expansive soil, creating or exacerbating substantial risks to life and property. (Less than Significant)

Soils near bodies of water tend to be expansive, or have a high “shrink-swell” potential. This is due to the high ratio of clay to sand present in the soils. Soil samples taken from two locations at College Lake, to the east and to the west of where the weir would be located, exhibit expansive properties. The 2014 BMP Update PEIR identified these potential risks and concluded that mitigation was necessary for the Project. Adopted Mitigation Measure GS-3 requires that all components of the Project shall be designed and engineered in accordance with recommendations from Fugro’s geotechnical report and appropriate engineering designs to reduce the impacts associated with expansive soils. Implementation of Mitigation Measure GS-3 would ensure that the impacts related to this criterion are less than significant.

Mitigation: None required.

Impact GEO-5: The Project could directly or indirectly destroy a unique paleontological resource or site or unique geologic feature. *(Less than Significant with Mitigation)*

No unique geologic features would be adversely affected by the Project, but there is a potential to impact a unique paleontological resource or site. The surficial sediments of the Project area are unlikely to have preserved fossils; however, there is a potential for increased sensitivity with depth. The majority of Project-related excavation is relatively shallow. Excavations could extend up to approximately 20 to 25 feet below ground surface at the proposed weir, intake pump station, and WTP, and even greater depths where pits are required for horizontal direction drilling or jack and bore construction along the College Lake pipeline route (shown on Figure 2-3a through 2-3e in Chapter 2, *Project Description*). These deeper excavations could encounter sediments that contain fossils. Thus the Project could directly or indirectly destroy a unique paleontological resource or site. With implementation of *Mitigation Measure GEO-1*, which includes procedures to follow in the event of a paleontological discovery, impacts to unique paleontological resources or sites would be *less than significant*.

**Mitigation Measure GEO-1: Inadvertent Discovery of Paleontological Resources.**

If construction or other Project personnel discover any potential fossils during construction, work at the discovery location shall cease in a 50-foot radius of the discovery until a qualified paleontologist meeting the Society of Vertebrate Paleontology standards has assessed the discovery and made recommendations as to the appropriate treatment. If the find is deemed significant, it shall be salvaged following the standards of the Society of Vertebrate Paleontology and curated with a certified repository. Following a discovery, the qualified paleontologist shall also provide PV Water with recommendations regarding future paleontological monitoring, if deemed warranted.

**Cumulative Impacts**

Impact C-GEO-1: The Project, in combination with past, present, and probable future projects in the Project area, could have cumulatively considerable impacts on a unique paleontological resource. *(Less than Significant with Mitigation)*

**Geology and Soils**

Although the Project area is within a seismically active region with a wide range of geologic and soil conditions, these conditions can vary greatly within a short distance. Accordingly, impacts related to geology, soils, and seismicity tend to be site-specific and depend on the local geology and soil conditions. For these reasons, the geographic scope for potential cumulative impacts consists of the Project sites and the immediate vicinity. The Project could contribute to a cumulative impact on geology, soils, and seismicity if the effects of the Project overlapped in time and space with those of other projects in the area, producing similar effects. Significant cumulative impacts related to geology, soils, and seismicity could occur if the incremental impacts of the Project combined with the incremental impacts of a cumulative project would directly or indirectly cause substantial adverse effects involving geologic, seismic, and soil hazards.
There are 22 projects listed in Table 3.1-1 that would be near or adjacent to the Project that could be constructed at the same time, which could cause significant cumulative erosion effects. However, as discussed in Section 3.3.2, Regulatory Framework, the National Pollutant Discharge Elimination System Construction General Permit would require each project involving disturbance of one acre or more of land to prepare and implement a Storm Water Pollution Prevention Plan (SWPPP). The SWPPPs would describe Best Management Practices to control runoff and prevent erosion for each such project. Through compliance with this requirement, the potential for erosion impacts would be reduced. The Construction General Permit has been developed to address cumulative conditions arising from construction throughout the state, and is intended to maintain cumulative effects of projects subject to this requirement below levels that would be considered significant. For example, two adjacent construction sites would be required to implement Best Management Practices to reduce and control the release of sediment and/or other pollutants in any runoff leaving their respective sites. The runoff water from both sites would be required to achieve the same action levels, measured as a maximum amount of sediment or pollutant allowed per unit volume of runoff water. Thus, even if the runoff waters were to combine after leaving the sites, the sediments and/or pollutants in the combined runoff would still be at concentrations (amount of sediment or pollutants per volume of runoff water) below action levels and would not combine to be cumulatively significant. In addition to the SWPPP, Mitigation Measure GS-2 (described in detail in Table 3.6-2) would require the preparation and implementation of an erosion control plan, which would further reduce the cumulative effects of the Project. Therefore, the Project would have a less-than-significant contribution to a cumulative impact with respect to soil erosion.

Seismically induced ground shaking, liquefaction and lateral spreading, and expansive or corrosive soils could cause structural damage or pipeline leaks or ruptures during construction and operations phases. However, state and local building regulations and standards have been established to address and reduce the potential for such impacts to occur. The Project and cumulative projects would be required to comply with applicable provisions of these laws and regulations. Through compliance with these requirements, the potential for impacts would be reduced. The purpose of the California Building Code (and local ordinances) is to regulate and control the design, construction, quality of materials, use/occupancy, location, and maintenance of all buildings and structures within its jurisdiction; by design, it is intended to reduce the cumulative risks from buildings and structures. Based on compliance with these requirements, the incremental impacts of the Project combined with impacts of other projects in the area would not combine to cause cumulatively considerable impacts related to seismically induced ground shaking, liquefaction and lateral spreading, or expansive or corrosive soils, and the impact would be less than significant.

Paleontological Resources

As noted, multiple projects that would result in ground disturbance are proposed throughout the geographic scope of analysis (refer to Table 3.1-1 and Figure 3.1-1 for projects). Cumulative impacts to unique paleontological resources or sites or unique geologic features could occur if any of these projects, in conjunction with this Project, would have impacts on paleontological resources that, when considered together, would be significant.
As described above under Impact GEO-5, there is the potential for deeper excavations to impact unique paleontological resource or sites. The surficial sediments of the Project area are unlikely to have preserved fossils, however, there is a potential for increased sensitivity with depth. Other projects in the cumulative scenario that include ground disturbance could result in similar impacts to paleontological resources. The incremental impact of the Project combined with those of the cumulative projects could result in a cumulative impact on paleontological resources. However, Mitigation Measure GEO-1 (described above) would ensure that the Project’s contribution toward cumulative effects on paleontological resources would not be cumulatively considerable, and the impact would be less than significant with mitigation.

**Mitigation Measure GEO-1: Inadvertent Discovery of Paleontological Resources**
(refer to Impact GEO-5)
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3.7 Hazards and Hazardous Materials

This section presents an analysis of potential impacts related to hazards and hazardous materials that would result from implementation of the proposed College Lake Integrated Resources Management Project (Project). The analysis includes both site options (preferred and optional) for the water treatment plant (WTP) as well as preferred and optional pipeline alignments for the College Lake pipeline. Information from the 2014 Basin Management Plan Update Program Environmental Impact Report (2014 BMP Update PEIR) that remains relevant and accurate for the purposes of describing the physical or regulatory setting of hazards and hazardous materials has been incorporated as appropriate. The Project includes mitigation measures adopted by the Board of Directors to reduce the severity and magnitude of potential environmental effects.

3.7.1 Setting

The 2014 BMP Update PEIR Section 3.8.1 generally describes existing hazardous materials in the Project region which likely include petroleum hydrocarbons and hazardous materials common to agriculture. This section is incorporated by reference and updated as provided below.

3.7.1.1 Hazardous Materials at Nearby Sites

A Cortese list database search for hazardous materials sites within one-quarter mile of the Project was performed to update the setting. Within one-quarter mile of the Project components (both preferred and optional) including the College Lake pipeline (both preferred and optional alignments), there are 76 sites listed in these databases; many are closed leaking underground storage tank (LUST) sites or other closed cleanup sites. Eight of these sites are currently active, not fully closed, or closed with land use restrictions, and are summarized in Table 3.7-1 and discussed in greater detail below. Refer to Appendix HAZ for the locations of these sites near Project components. Previous uses that released contaminants include vehicle fueling stations, dry cleaning, a manufactured gas plant, pesticide manufacturing, transformer dismantling and salvaging, and a military base.

Roy Wilson Maintenance Yard

The Roy Wilson Maintenance Yard is located on the west side of College Lake. This vehicle and equipment maintenance and storage yard includes three buildings and adjacent paved areas and is operated by the Santa Cruz County Department of Public Works. The Pajaro Valley Unified School District leases the northern portion of the site as a yard for school buses where buses are parked on-site and fueled using two above ground storage tanks. While three underground storage tanks were removed and surrounding soil excavated in 1995, the site remains active and is being

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1 Sites identified as meeting the Cortese List requirements are listed in the Department of Toxic Substances Control EnviroStor database, State Water Resources Control Board (State Water Board) GeoTracker database, State Water Board list of solid waste disposal sites with constituents above hazardous waste levels outside the waste management unit, State Water Board list of active Cease and Desist and Cleanup and Abatement Orders, and DTSC list of hazardous waste facilities subject to corrective action pursuant to California Health and Safety Code Section 25187.5.
### Table 3.7-1

cortese list sites within one-quarter mile of project componentsa

<table>
<thead>
<tr>
<th>Business Name (Figure Number in Appendix HAZ)</th>
<th>Street Address</th>
<th>Latitude, Longitude</th>
<th>Case Type</th>
<th>Status</th>
<th>Status Date</th>
<th>Potential Hazardous Materials on Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>State Water Resources Control Board GeoTracker</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roy Wilson Maintenance Yard (1)</td>
<td>198 Grimmer Rd, Watsonville</td>
<td>36.944233, -121.753675</td>
<td>LUST Cleanup Site</td>
<td>Open - Verification Monitoring</td>
<td>9/11/2014</td>
<td>Benzene, Diesel, Ethylbenzene, Gasoline, MTBE / TBA / Other Fuel Oxygenates, Naphthalene, Total Petroleum Hydrocarbons</td>
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<tr>
<td>East Lake Dry Cleaners – Former (2)</td>
<td>982 E. Lake Ave, Watsonville</td>
<td>36.923531, 121.745596</td>
<td>Cleanup Program Site</td>
<td>Open - Verification Monitoring</td>
<td>5/22/2018</td>
<td>Perchloroethylene and Trichloroethylene</td>
</tr>
<tr>
<td>Former Arco (2)</td>
<td>153 Main St, Watsonville</td>
<td>36.90682, -121.753168</td>
<td>LUST Cleanup Site</td>
<td>Open - Eligible for Closure</td>
<td>7/3/2015</td>
<td>Benzene, Ethylbenzene, Gasoline, MTBE / TBA / Other Fuel Oxygenates, Xylene</td>
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<tr>
<td>Sturdy Oil Card Lock (3)</td>
<td>1110 West Beach Street, Watsonville</td>
<td>36.90189, -121.77272</td>
<td>Cleanup Program Site</td>
<td>Open - Site Assessment</td>
<td>3/3/2016</td>
<td>Diesel</td>
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<tr>
<td>Columbia Pac Alum Corp., Pac Extrusion</td>
<td>1715 West Beach Street, Watsonville</td>
<td>36.896, -121.7788</td>
<td>Tiered Permit</td>
<td>Inactive – Needs Evaluation</td>
<td>8/9/2017</td>
<td>Arsenic, Copper, Nickel</td>
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<td>Department of Toxic Substances EnviroStor</td>
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<td></td>
<td></td>
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<tr>
<td>Radcliff Elementary School (2)</td>
<td>Rodriguez Street/West Lake Avenue, Watsonville</td>
<td>36.9105, -121.76037</td>
<td>School Cleanup</td>
<td>Certified</td>
<td>3/21/2005</td>
<td>Lead</td>
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<td>California Spray &amp; Chemical (2 &amp; 3)</td>
<td>135 Walker Street, Watsonville</td>
<td>36.905178, -121.758834</td>
<td>Voluntary Cleanup</td>
<td>Certified / Operation &amp; Maintenance</td>
<td>6/20/2002</td>
<td>Manufacturing - Pesticides</td>
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<tr>
<td>Berman Steel (3)</td>
<td>627 Walker St, Watsonville</td>
<td>36.910012, -121.765941</td>
<td>State Response</td>
<td>Certified</td>
<td>5/1/1981</td>
<td>Lead, Polychlorinated Biphenyls, Copper, and Zinc</td>
</tr>
</tbody>
</table>

NOTES:

a Includes the optional College Lake pipeline alignments and both WTP site options.

MTBA = Methyl tert-butyl ether
TBA = tertiary butyl alcohol
PG&E = Pacific Gas and Electric

remediated by monitoring natural attenuation. Reports from Geotracker indicate that the elevated soil vapor concentrations are related to elevated chemical concentrations in groundwater. Potential contaminants of concern include benzene, diesel, ethylbenzene, gasoline, naphthalene, total petroleum hydrocarbons, methyl tert-butyl ether (MTBE), tertiary butyl alcohol (TBA), and other fuel oxygenates. This site is not within the proposed water storage area of College Lake, but is within one-quarter mile of it.

**East Lake Dry Cleaners - Former**

This site contains low levels of perchloroethylene and trichloroethylene in the groundwater from an alleged one-time spill event. The spill released an unknown quantity of dry cleaning solvent during a change in site operation in 1979. There is no threat to human health from inhalation, and although the College Lake pipeline alignment is within one-quarter mile, it does not intersect this site.

**Former Arco**

This site contains a former Arco Station where three gasoline tanks and one waste oil tank were removed in 1998. Contaminants were detected in soil and samples were collected from beneath the tanks. Pollutants of concern at this site include benzene ethylbenzene, gasoline, xylene, MTBE, TBA, and other fuel oxygenates. The site is undergoing clean up, and no longer requires groundwater monitoring, but does not have closed levels of contamination yet. The College Lake pipeline alignment is within one-quarter mile, but does not intersect this site.

**Sturdy Oil Card Lock**

A release of diesel to soil was discovered during underground piping removal in 2015. Shortly thereafter, contaminated soils were excavated to a depth of 7.5 feet below ground surface in an area within 30 feet of West Beach Street. The shallow groundwater table is present approximately 4 feet below ground surface in the onsite well nearest West Beach Street, but generally flows away from West Beach Street. While cleanup of the site is not yet complete, the maximum concentrations of residual petroleum hydrocarbons in soil at the site are less than levels protective of utility worker direct contact in the top 10 feet below ground surface. This site is adjacent to and north of the College Lake pipeline alignment along West Beach Street.

**Columbia Pac Alum Corp., Pac Extrusion**

Groundwater underlying this property contains hazardous materials. Soil at the property was contaminated by aluminum extrusion and anodizing operations conducted by Indalex West, Inc. and other previous operators. These operations resulted in contamination of soil with TPH and metals. Groundwater underlying the site contains concentrations of arsenic and hexavalent chromium in excess of drinking water standards. Water may not be extracted for any use at the property. The College Lake pipeline alignment is adjacent to this site, but does not intersect it.

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2 The RWQCB determined in 2014 that the site does not yet qualify for closure for multiple reasons including that the site is not located within the area of a public water system, the site groundwater criteria do not meet the class one through four criteria of the Groundwater-Specific Criteria, and the soil vapor concentrations are above Low Threat Closure Policy criteria at two soil vapor monitoring points (SV-4 and SV-7).
Radcliff Elementary School

This approximately 1.4-acre site is occupied by mixed residential/commercial structures surrounded by a residential neighborhood and the existing school. The site has been historically utilized for mixed residential/commercial purposes. The potential contaminant of concern is lead; however, the contaminant removal action was completed on March 21, 2005, and the Department of Toxic Substances Control (DTSC) determined that all appropriate response actions were completed and that no further removal/remedial action was necessary. The College Lake pipeline alignment is within one-quarter mile, but does not intersect this site.

California Spray & Chemical

The California Spray and Chemical Company was formed in 1907 to produce lead arsenate insecticide spray. Manufacturing of the lead arsenate was discontinued at the site in 1929. The site is currently the location of a truck tire repair operation and a road construction and paving supply company. Potential contaminants of concern are arsenic and lead. Land uses, including activities that will disturb the soil, are restricted at the site. A Soil Management Plan and a Health and Safety Plan must be approved by the DTSC prior to excavation of contaminated soils, and the owner must provide the DTSC written notice at least fourteen days prior to any building, filling, grading, mining, or excavating below the ground surface. The College Lake pipeline alignment is within one-quarter mile, but does not intersect this site.

Berman Steel

The Berman Steel site was one of two sites used for transformer dismantling and salvaging. Contaminants found in soils included lead, polychlorinated biphenyls, copper, and zinc. Oil and contaminated soil were removed during site cleanup. Site cleanup was completed and certified in 1981. The College Lake pipeline alignment is within one-quarter mile of, but does not intersect this site.

3.7.1.2 Airports

The Watsonville Municipal Airport, located approximately 2.5 miles from the nearest Project component, is the only municipal airport in Santa Cruz County. It is considered a reliever airport for general aviation from the San Francisco Bay Area. The airport is home to approximately 333 aircraft and accommodates over 55,000 operations per year on four runways. Safety issues associated with the airport operations include noise, ground safety, and flight hazards. To address these issues, the City is implementing the Watsonville Municipal Airport Master Plan, which addresses airport safety and noise abatement.

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3.7.1.3 **Wildfire Hazards**

Based upon fire hazard mapping by the California Department of Forestry and Fire Protection Forest Resources Assessment Program\(^4\), the Project sites are not located within identified high fire hazard areas, and are in areas classified as Local Responsibility Area Unzoned (that is, fire hazard is not considered very high, high, or moderate in the project areas).\(^5\) Project sites similarly are not within Generalized Critical Fire Hazard Areas mapped by Santa Cruz County.

3.7.1.4 **Schools**

The following schools are within one-quarter mile of Project components: Ann Soldo Elementary, MacQuiddy Elementary, Mintie White Elementary, Radcliff Elementary, E.A. Hall Middle School, Lakeview Middle School, Watsonville High School, Ceiba College Prep Academy, and Linscott Charter.\(^6\)

3.7.1.5 **Emergency Response Plans**

The Santa Cruz Operational Area Emergency Management Plan (EMP) addresses the planned response to extraordinary situations associated with large-scale emergency incidents affecting Santa Cruz County.\(^7\) The EMP is reviewed, updated, republished, and redistributed by the Santa Cruz County Office of Emergency Services every four years in order to stay current. The Office of Emergency Services is responsible for ensuring that emergency response personnel can demonstrate and maintain, to the level deemed appropriate, the minimum National Incident Management System standards and Standardized Emergency Management System performance objectives. The EMP also addresses response levels, mutual aid, and federal, state, and local authorities for conducting and/or supporting emergency operations.


\(^5\) Wildland fire protection in California is the responsibility of either the State, local, or the federal government. Local responsibility areas include incorporated cities, cultivated agriculture lands, and portions of the desert. Local responsibility area fire protection is typically provided by city fire departments, fire protection districts, counties, and by CAL FIRE under contract to local government. (CAL FIRE, Frequently Asked Questions, Questions About Designation of Very High Fire Hazard Severity Zones in Local Responsibility Areas, 2012. Available online at http://www.fire.ca.gov/fire_prevention/fire_prevention_wildland_faqs#desig01. Accessed on August 3, 2018.)

\(^6\) Other sensitive receptors near Project components, such as daycare centers, are identified in Section 3.5, Air Quality and Greenhouse Gases.

\(^7\) County of Santa Cruz, Office of Emergency Services, *Operational Area Emergency Management Plan (EMP)*, October 2015.
3.7.2 Regulatory Framework

3.7.2.1 Federal

In California, federal regulations pertaining to the use and management of hazardous materials and wastes are largely enforced through state and local regulations. Relevant state and local regulations are discussed below.

3.7.2.2 State

California Fire Code

The California Fire Code, Article 80, includes specific requirements for the safe storage and handling of hazardous materials. These requirements reduce the potential for a release of hazardous materials and for mixing of incompatible chemicals, and specify the following specific design features to reduce the potential for a release of hazardous materials that could affect public health or the environment:

- Separation of incompatible materials with a non-combustible partition, or appropriate distance separation;
- Spill control in all storage, handling, and dispensing areas; and
- Separate secondary containment for each chemical storage system. The secondary containment must hold the entire contents of the tank, plus the volume of water needed to supply the fire suppression system for a period of 20 minutes in the event of a catastrophic spill.

The California Fire Code, Article 79, includes specific requirements for the safe storage and handling of flammable and combustible liquids. Specific requirements address fire protection; prevention and assessment of unauthorized discharges; labeling and signage; protection from sources of ignition; specifications for piping, valving, and fittings; maintenance of aboveground tanks; requirements for storage vessels, vaults, and overfill protection; and requirements for dispensing, using, mixing, and handling of flammable and combustible liquids.

The California Fire Code, Chapter 33, specifies safety requirements to prevent fires during construction and demolition. This chapter specifies precautions that must be taken to protect against fire and procedures for management of flammable and combustible liquids as well as flammable gasses during construction. Requirements for providing a water supply for fire protection, portable fire extinguishers, and a means of egress are also addressed.

Hazardous Materials Release Response Plans and Inventory Act

The Hazardous Materials Release Response Plans and Inventory Act of 1985, codified in Health and Safety Code, Sections 25500 et seq., also known as the Business Plan Act, requires businesses using hazardous materials to prepare a Hazardous Materials Business Plan (HMBP) that describes their facilities, inventories, emergency response plans, and training programs. HMBPs contain basic information on the location, type, quantity, and health risks of hazardous materials stored, used, or disposed. This code and the related regulations in 19 California Code of
Regulations (CCR) Sections 2620 et seq. require local governments to regulate local business storage of hazardous materials in excess of certain quantities. The law also requires that entities storing hazardous materials be prepared to respond to releases. Those using and storing hazardous materials are required to submit a HMBP to their local Certified Unified Program Agency (CUPA) and to report releases to their CUPA and the State Office of Emergency Services. The California Office of Emergency Services is responsible for implementing the accident prevention and emergency response programs established under the Act and implementing regulations. Refer to Unified Hazardous Waste and Hazardous Management Regulatory Program, below, for more information.

The HMBP would apply to the Project because contractors working on the Project that use hazardous materials would be required to comply with requirements for the use, handling, transportation, storage, and disposal of hazardous materials. The HMBP would include a spill response plan.

**Unified Hazardous Waste and Hazardous Materials Management Regulatory Program**

The Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (Unified Program), codified in Health and Safety Code Sections 25404 et seq., requires the administrative consolidation of six hazardous materials and waste programs under one agency, a CUPA. The following programs are consolidated under the Unified Program:

1. Hazardous Waste Generator and On-Site Hazardous Waste Treatment Programs (a.k.a. Tiered Permitting);
2. Aboveground Petroleum Storage Tanks and SPCCs;
3. Hazardous Materials Release Response Plans and Inventory Program (a.k.a. Hazardous Materials Disclosure or “Community-Right-To-Know”);
4. California Accidental Release Prevention Program;
5. Underground Storage Tank Program; and
6. Uniform Fire Code Plans and Inventory Requirements.

The Unified Program is intended to provide relief to businesses complying with the overlapping and sometimes conflicting requirements of formerly independently managed programs. The Unified Program is implemented at the local government level by CUPAs. Most CUPAs have been established as a function of a local environmental health or fire department. As stated in the 2014 BMP Update PEIR, the County of Santa Cruz Environmental Health Services Department is the designated CUPA and is responsible for enforcing local ordinance and state laws pertaining to use and storage of hazardous materials.
California and Federal Hazardous Waste Criteria

In accordance with Title 22 of CCR Section 66261.20 et seq., excavated soil is classified as a hazardous waste if it exhibits the characteristics of ignitability, corrosivity, reactivity, and/or toxicity. A waste is considered toxic in accordance with CCR 22 Section 66261.24 if it contains:

- Total concentrations of certain substances at concentrations greater than the total threshold limit concentrations;
- Soluble concentrations greater than the soluble threshold limit concentrations (STLCs);
- Soluble concentrations of certain substances greater than federal toxicity regulatory levels using the Toxic Characteristic Leaching Procedure (TCLP); or
- Specified carcinogenic substances at a single or combined concentration of 0.001 percent.

State and federal regulations consider waste to be hazardous if the soluble concentration exceeds the federal regulatory level as determined by the TCLP. Because the TCLP involves a 20-to-1 dilution of the sample, the total concentration of a substance in the soil would need to exceed 20 times the regulatory level for the soluble concentration to exceed the regulatory level in the extract. A waste is also considered hazardous under state regulations if the soluble contaminant concentration exceeds the STLC as determined by the waste extraction test method. Because the waste extraction test analysis is performed using a 10-to-1 dilution of the sample, the total concentration of a substance would need to exceed 10 times the STLC for the soluble concentration to possibly exceed the STLC in the extract. A waste may also be classified as toxic if testing indicates toxicity greater than the specified criteria. Soil that is not classified as a hazardous waste can be accepted at a Class II or Class III designated landfill, depending on the waste acceptance criteria for the specific landfill. This soil may also be reused on-site or sent to a recycling facility for reuse at another site if it is non-hazardous and meets specific criteria. Typically, the concentrations of all chemicals should be less than RWQCB Residential Environmental Screening Levels for unrestricted on-site reuse or off-site recycling.

National Pollutant Discharge Elimination System Construction General Permit

Refer to Section 3.3, Surface Water, Groundwater, and Water Quality, for a description of permitting needs in regard to the National Pollutant Discharge Elimination System General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (Order 2009-0009-DWQ, National Pollutant Discharge Elimination System No. CAS000002; as amended by Orders 2010-0014-DWQ and 2012-006-DWQ).

Utility Notification Requirements

The regulations in CCR Title 8, Division 1, Chapter 4, Subchapter 4, Section 1541 require excavators to determine the approximate locations of subsurface installations, such as sewer, telephone, fuel, electric, and water lines (or any other subsurface installations that may reasonably be encountered during excavation work) prior to opening an excavation. The California Government Code (Sections 4216 et seq.) requires owners and operators of underground utilities to become members of and participate in a regional notification center. According to Section 4216.1, operators of subsurface installations who are members of, participate in, and
share in the costs of a regional notification center, such as USA North 811 are in compliance with this section of the code. USA North 811 receives planned excavation reports from public and private excavators and transmits those reports to all participating members that may have underground facilities at the location of excavation. Members will mark or stake their facilities, provide information, or give clearance to dig. This notification requirement would apply to the Project because of the proposed excavation activities.

**Transportation of Hazardous Materials and Wastes**

The transport of hazardous materials is regulated by the California Highway Patrol under the California Vehicle Code. Specific requirements related to hazardous materials are specified in CCR Title 13, Division 2, Chapter 6. These regulations specify container types, packaging requirements, and placarding requirements as well as requirements for licensing and training for truck operators and chemical handlers.

Regulatory requirements for the transport of hazardous wastes in California are specified in CCR Title 22, Division 4.5, Chapters 13 and 29. In accordance with these regulations, all hazardous waste transporters must have identification numbers, which are used to identify the hazardous waste handler and to track the waste from its point of origin to its final disposal disposition. This number, issued by either the USEPA or DTSC, depends on whether the waste is classified as hazardous by federal regulations or only under California regulations. Hazardous waste transporters must also comply with the California Vehicle Code, California Highway Patrol regulations (CCR Title 13). A hazardous waste manifest is required for transport of hazardous wastes. The hazardous waste manifest documents the legal transport and disposal of the waste, and is signed by the generator and transporter(s) of the waste as well as the disposal facility. California regulations specify cleanup actions that must be taken by a hazardous waste transporter in the event of a discharge or spill, and for the safe packaging and transport of hazardous wastes.

### 3.7.2.3 Local

Table 2-10 in Chapter 2, *Project Description*, identifies the approvals from Santa Cruz County or the City of Watsonville required for the Project. Table 3.7-2 presents pertinent local plans and/or policies regarding hazardous materials to support County and City consideration of project consistency with general policies. In some cases, local policies are used in this EIR as criteria to determine the significance of physical effects on the environment (e.g., Impact NOI-1 in Section 3.8, Noise and Vibration).

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8 California Government Code Section 53091 exempts agencies like PV Water from complying with local building and zoning ordinances when locating or constructing facilities for the production, generation, storage, treatment, or transmission of water. California Government Code Section 65402(c) requires that PV Water notify cities and counties of its plans to construct projects or to acquire or dispose of property. The planning agency then has 40 days to determine project consistency with its general plan. If the planning agency disapproves, the disapproval may be overruled by PV Water.
3. Environmental Setting, Impacts, and Mitigation Measures

3.7 Hazards and Hazardous Materials

### Table 3.7-2
**LOCAL PLANS AND POLICIES RELEVANT TO THE PROJECT**

<table>
<thead>
<tr>
<th>Relevant Goals, Objectives, and Policies</th>
</tr>
</thead>
<tbody>
<tr>
<td>CITY OF WATSONVILLE PLANS AND POLICIES</td>
</tr>
<tr>
<td><strong>Watsonville General Plan</strong></td>
</tr>
<tr>
<td>Goal 9.11: Hazardous Materials. Protect the air, water, soil, and biotic resources from damage by exposure to hazardous materials through aggressive management of hazardous materials.</td>
</tr>
<tr>
<td><strong>Policy 9.1: Hazardous Materials.</strong> The City shall protect the natural environment through aggressive enforcement and compliance with hazardous materials plans.</td>
</tr>
<tr>
<td>SANTA CRUZ COUNTY PLANS AND POLICIES</td>
</tr>
<tr>
<td><strong>Santa Cruz County General Plan/Local Coastal Program</strong></td>
</tr>
<tr>
<td>Policy 6.6.1: Hazardous Materials Ordinance. Maintain the County's Hazardous Materials ordinance, placing on users of hazardous and toxic materials the obligation to eliminate or minimize the use of such materials wherever possible, and in all cases to minimize the release, emission, or discharge of hazardous materials to the environment, and [to] properly handle all hazardous materials and to disclose their whereabouts. Further, maintain the County's ordinance relating to ozone-depleting compounds. Ensure that any amendment of existing ordinance provisions is based on a finding that the amendments will provide protection to the environment and the community against toxic hazards that is equal to or stronger than the existing provisions.</td>
</tr>
<tr>
<td><strong>Santa Cruz County Code</strong></td>
</tr>
<tr>
<td>Santa Cruz County Code, Title 7 Health and Safety, Chapter 7.100 Hazardous Materials – Hazardous Waste – Underground Storage Tanks: Chapter 7.1 of the Santa Cruz County Code provides definitions, permit requirements, standards for Hazardous Materials Management Plans, and uses, handling, and storage responsibilities of hazardous materials, hazardous waste, and underground storage tanks. The Health Officer of Santa Cruz County or his/her representative is responsible for enforcing the regulations in this chapter.</td>
</tr>
</tbody>
</table>

SOURCE: City of Watsonville, Watsonville 2005 General Plan, Adopted May 24, 1994; Santa Cruz County, 1994 General Plan and Local Coastal Program for the County of Santa Cruz, California, 1994.

3.7.3 Impacts and Mitigation Measures

3.7.3.1 Significance Criteria

In accordance with the California Environmental Quality Act (CEQA), state CEQA Guidelines (including Appendix G), relevant plans, policies, and/or guidelines, and agency standards, the Project could have a significant impact if it were to:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school;
- Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment;
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 or excessive noise for people residing or working in the project area;

Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; and/or

Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires.

Relating to wildfire, the Project could have a significant impact if it were located in or near state responsibility areas or lands classified as very high fire hazard severity zone and it were to:

Substantially impair an adopted emergency response plan or emergency evacuation plan;

Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire;

Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or on going impacts to the environment; and/or

Expose people of structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes.

The following topics are not analyzed further in this section for the reasons described below:

Safety hazards from public airports. The nearest public airport, the Watsonville Municipal Airport, is located over two miles from Project components. Therefore, this criterion is not applicable.

Exposure to wildland fires. The Project sites are located in urban and agricultural areas and are not located within a high or very high fire hazard severity zone. Therefore, this criterion is not applicable.

Be located in or near state responsibility areas classified as very high fire hazard severity zone. The Project sites are not located within identified high fire hazards areas and are in areas classified as Local Responsibility Area Unzoned. Project sites similarly are not within Generalized Critical Fire Hazard Areas mapped by Santa Cruz County. Therefore, this criterion and related criteria are not applicable.

3.7.3.2 Methodology

As described in Section 3.1, this EIR provides an independent analysis of the Project’s potential environmental impacts. Table 3.7-3 presents mitigation measures from the 2014 BMP Update PEIR adopted by the Board of Directors (Resolution 2014-05) for the purpose of reducing impacts related to hazards and hazardous materials. These adopted mitigation measures are considered part of the College Lake Project and thus are considered prior to any significance determinations. Potential impacts are evaluated in the following section. If warranted, additional mitigation is included and takes the form of (1) modifications to update the mitigation measures
presented in Table 3.7-3 to reflect current conditions and site-specific impacts; or (2) new mitigation measures to replace or augment an adopted mitigation measure.

### TABLE 3.7-3
**2014 BMP UPDATE PEIR MITIGATION MEASURES – HAZARDS AND HAZARDOUS MATERIALS**

| HM-1: Prior to initiation of earthwork activities, [PV Water] shall perform soil testing on agricultural sites proposed for development and analytically test for pesticide residuals and pesticide-related metals arsenic, lead, and mercury. If contamination is identified in the soil samples above applicable levels, [PV Water] shall prepare a Site Management Plan (SMP) to establish protocols/guidelines for the contractor including: identification of appropriate health and safety measures while working in contaminated areas; soil reuse; handling, and disposal of any contaminated soils; and agency notification requirements. The SMP shall be subject to the review and approval of the appropriate regulatory agency. |
| HM-2: During the design phase of the proposed pipeline alignment from College Lake to Coastal Distribution System (CDS), [PV Water] shall perform a Phase I Environmental Site Assessment for the alignment to determine the potential for encountering hazardous materials contamination in soils to be excavated and identify appropriate recommendations. Appropriate health and safety measures shall be identified as needed for worker safety, soil handling, and disposal of contaminated soils. |


### 3.7.3.3 Impacts and Mitigation Measures

**Impact HAZ-1:** Project construction and operation could result in a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. *(Less than Significant)*

**Construction Impacts**

Project construction would require the use of routine hazardous materials such as fuels, lubricants, and solvents for construction vehicles and equipment. Without adequate management, the storage and use of hazardous materials at the Project site and staging areas could result in the accidental release of small quantities of hazardous materials, which could result construction worker exposure, degradation of soils, and/or entrainment in stormwater runoff affecting the downstream environment.

Implementation of adopted Mitigation Measure HM-1 would require the Pajaro Valley Water Management Agency (PV Water) or its contractor to test agricultural soil sites for pesticide residuals and metals prior to initiation of earthwork activities, and to implement a Site Management Plan if soil contamination is above applicable environmental screening levels. As described in Section 3.3, Surface Water, Groundwater, and Water Quality, the Construction General Stormwater Permit requires implementation of a Stormwater Pollution Prevention Plan for projects that disturb one or more acres of land. This plan would include best management practices to minimize the risk of a hazardous materials release during construction activities. The best management practices would include protection measures for the temporary on-site storage of fuel and other hazardous materials used during construction, including requirements for secondary containment and berming to prevent any release from reaching an adjacent waterway or stormwater collection system. All equipment and materials storage would be routinely inspected for leaks, and records would be maintained for documenting compliance with the storage and handling of hazardous materials.
materials. As the administering agency, PV Water would review and approve the plans prior to implementation, and would conduct periodic inspections to ensure compliance with the plans.

Regarding transport, the Project would be required to comply with the regulations of the California Highway Patrol related to the transportation of hazardous materials. With compliance of state regulations and implementation of this adopted mitigation measure, this impact would be less than significant.

**Operational Impacts**

As shown in Table 2-4 in Chapter 2, *Project Description*, operation of the Project would include the use and storage of several chemicals at the WTP, including sodium hypochlorite for disinfection, coagulants or polymers for thickening, high purity oxygen for ozonation, hydrogen peroxide for advanced oxidation and removal of toxicity, and diesel for a standby generator. None of these materials is considered extremely hazardous. These materials would be handled and stored safely in accordance with Article 80 of the California Fire Code.

Compliance with the Hazardous Materials Release Response and Inventory Act, described in Section 3.7.2, would require PV Water to prepare a Hazardous Materials Business Plan that includes a training program for workers on the use, handling, transportation, storage, and disposal of hazardous materials. In addition, transportation of hazardous materials is regulated by the California Highway Patrol and the California Department of Transportation, as discussed in Section 3.7.2, Regulatory Framework, and operational transport of hazardous materials would be subject to these regulations. Therefore, with compliance with applicable hazardous materials regulations, the potential impacts related to the routine use, transport, and disposal of hazardous materials during operation of the Project would be less than significant.

**Mitigation:** None required.

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**Impact HAZ-2:** Project construction and operation could result in reasonably foreseeable conditions involving the release of hazardous materials to the environment. *(Less than Significant)*

**Construction Impacts**

The Project would include demolition of the existing weir structure and intake pump station at College Lake. These structures are composed of cement and wood with no painting or lights, and are not likely to contain hazardous building materials. Any universal wastes encountered during demolition would be removed and disposed of in accordance with the established regulatory framework described in Section 3.7.2. Additionally, implementation of adopted Mitigation Measure HM-1 would require PV Water or its contractor to test agricultural soil sites for pesticide residuals and metals prior to initiation of earthwork activities, and to implement a Site Management Plan if soil contamination is above applicable environmental screening levels. With compliance of state regulations and implementation of this adopted mitigation measure, this impact would be less than significant.
Operational Impacts

Operation of the Project would not require the demolition of any structures with asbestos-containing materials or lead-based paint. Removal of any universal wastes would continue to comply with applicable laws and regulations.

As described in Chapter 2, *Project Description*, the operation and maintenance of Project components would require occasional site visits using vehicles that would use fuel and oil. Similar to the use of equipment during construction activities described above, PV Water and its contractors would be required to comply with numerous hazardous materials and stormwater regulations designed to ensure that hazardous materials are transported, used, stored, and disposed of in a safe manner to protect worker safety, to reduce the potential for a release of operations-related fuels or other hazardous materials to affect stormwater and downstream receiving water bodies, and to respond to accidental spills, if any. With compliance with existing regulations, this impact would be less than significant.

**Mitigation:** None required.

Impact HAZ-3: Project construction and operation could release hazardous emissions or handle acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school. (*Less than Significant*)

Section 15186 of the CEQA Guidelines requires that the environmental document for projects that are located within one-quarter mile of a school address the use of extremely hazardous materials and emission of hazardous air emissions. Hazardous air emissions include the toxic air contaminants that are listed in Title 17 of the California Code of Regulations, Section 93000 (refer to Section 3.5, Air Quality and Greenhouse Gas Emissions). Impacts associated with toxic air contaminant emissions are addressed in Impact AQ-2 in Section 3.5, and are therefore not addressed in this section. Section 3.7.1, Setting, identified schools within one-quarter mile of Project sites. The State of California defines acutely hazardous materials as extremely hazardous materials in Section 25532(i)(2) of the Health and Safety Code. Construction of the Project would use only common hazardous materials such as paints, solvents, cements, adhesives, and petroleum products (such as asphalt, oil, and fuel). None of these materials is considered extremely hazardous. In addition, the Project would not use any extremely hazardous materials during operation. Thus, impacts related to hazardous emissions or the use of extremely hazardous materials within one-quarter mile of a school would be less than significant.

**Mitigation:** None required.
Impact HAZ-4: The Project could be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. *(Less than Significant with Mitigation)*

**Construction Impacts**

None of the Project sites are included on a list of hazardous materials sites compiled by one or more government regulatory agency (refer to figures in Appendix HAZ). However, the College Lake pipeline would be installed within roadways, and would pass through seven Geotracker Sites with a status of “Completed – Case Closed”. The College Lake pipeline alignment is also adjacent to one site that has a status of open (Study Oil Card Lock Cleanup Program Site) and one site that has a status of inactive, but needing evaluation (Columbia Pac Alum Corp., Pac Extrusion Tiered Permit). Refer to Section 3.7.1, Setting, for descriptions of these sites.

In accordance with adopted Mitigation Measure HM-1, PV Water will perform soil testing on agricultural sites proposed for development (including pipeline sites). While adopted Mitigation Measure HM-2 would apply to the entire proposed pipeline alignment, because the soil testing required as part of adopted Mitigation Measure HM-1 would apply to agricultural lands along the pipeline route, PV Water shall perform a Phase I Environmental Site Assessment for all other portions of the College Lake pipeline alignment to determine the potential for encountering hazardous materials-contaminated soils to be excavated and identify appropriate recommendations. Revised adopted Mitigation Measure HM-2 is presented below to clarify this. Given the past land uses and the potential to encounter currently unknown contamination, should hazardous materials-contaminated soils be identified by either the soil testing (Mitigation Measure HM-1) or the Phase I Environmental Site Assessment (Mitigation Measure HM-2), project construction could result in a hazard to the public or the environment, a potentially significant impact. Implementation of a Health and Safety Plan *(Mitigation Measure HAZ-1a)* and a Soil Management Plan *(Mitigation Measure HAZ-1b)* would reduce this impact to a less-than-significant level by implementing appropriate health and safety measures for worker safety, soil handling, and disposal of contaminated soils. Results from soil testing and the Environmental Site Assessment would inform the contents of the Health and Safety Plan and Soil Management Plan.

Additionally, adopted Mitigation Measure AQ-1 would be implemented to minimize impacts from fugitive dust emissions (refer to Section 3.5, Air Quality and Greenhouse Gases for the full text of Mitigation Measure AQ-1). Implementation of adopted Mitigation Measures HM-1, HM-2, and AQ-1, and Mitigation Measures HAZ-1a and HAZ-1b, would reduce impacts associated with encountering potentially contaminated soil or groundwater to less-than-significant levels by controlling contact with and release of these materials into the environment. Methods of control include soil testing (for areas where soil testing has not already occurred), stopping work should these materials be encountered, and use of a qualified contractor to dispose of contaminated materials.

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9 Text that has been revised in adopted mitigation measures is indicated with underlining where text has been added, and strikethrough where text has been deleted.

10 While adopted Mitigation Measure HM-1 calls for a “Site Management Plan,” the typical term for a plan establishing soil management protocols is a “Soil Management Plan.” Soil Management Plan is used in Mitigation Measure HAZ-1b.
materials in accordance with regulatory requirements. With implementation of these mitigation measures, this impact would be *less than significant with mitigation*.

**Operation**

The Project would raise the existing weir at College Lake from 60.1 to 62.5 feet North American Vertical Datum of 1988 (NAVD88). This would prolong inundation of the lake. As indicated in Section 3.7.1, the Roy Wilson Maintenance Yard is a LUST Cleanup Site located on the west side of College Lake. The elevation of Roy Wilson Maintenance Yard is about 95 feet NAVD88. Groundwater elevations at the active yard monitoring wells have ranged from about 77 to 94 feet NAVD88 from 1995 to 2017. These elevations are all well above the existing and proposed weir elevations.

Shallow groundwater flow directions at the Roy Wilson Maintenance Yard are usually to the west, away from College Lake.\(^\text{11}\) Proposed water management operations would not change that flow direction. The increased weir elevation would still be below all recorded groundwater elevations at the maintenance yard. It is anticipated that at most, the change in lake elevations during operation might reduce the frequency of periods during which groundwater flows toward the lake and may even eliminate the occasional eastern flow periods.

Once the construction of the Project components has been completed, there would be no other potential to encounter contaminated soil. Operation of the Project would not result in a significant impact on the public or the environment under reasonably foreseeable conditions. This impact would be *less than significant*.

**Mitigation Measure HM-2 (Revised).**

Prior to initiation of earthwork activities on properties along the College Lake pipeline alignment not sampled as part of adopted Mitigation Measure HM-1, During the design phase of the proposed pipeline alignment from College Lake to Coastal Distribution System (CDS), PVWMA PV Water shall perform a Phase I Environmental Site Assessment for the alignment to determine the potential for encountering hazardous materials contamination in soils to be excavated and identify appropriate recommendations. Appropriate health and safety measures shall be identified as needed for worker safety, soil handling, and disposal of contaminated soils.

**Mitigation Measure HAZ-1a: Health and Safety Plan (HASP).**

Using information from the soil testing performed as part of adopted Mitigation Measure HM-1 and from the Phase I Environmental Site Assessment performed as part of adopted Mitigation Measure HM-2, PV Water shall require the construction contractor(s) to prepare and implement a site-specific HASP in accordance with 29 CFR 1910.120 to protect construction workers and the public during all excavation and grading activities. The HASP shall include, but is not limited to, the following elements:

1. Designation of a trained, experienced site safety and health supervisor who has the responsibility and authority to develop and implement the site HASP;

\(^{11}\) Geosyntec Consultants, 2017 Annual Groundwater Monitoring Report, Roy Wilson Yard, Watsonville, California, Figure 4, June 13, 2017.
2. A summary of all potential risks to construction workers and maximum exposure limits for all known and reasonably foreseeable site chemicals based on the most recent data collection and reporting;

3. Specified personal protective equipment and decontamination procedures, if needed;

4. Emergency procedures, including route to the nearest hospital; and

5. Procedures to be followed in the event that evidence of potential soil or groundwater contamination (such as soil staining, noxious odors, debris or buried storage containers) is encountered.

These procedures shall be in accordance with hazardous waste operations regulations and specifically include, but are not limited to, the following: immediately stopping work in the vicinity of unknown discovered or suspected hazardous materials release and notifying the Santa Cruz County CUPA (415-473-7085).

Mitigation Measure HAZ-1b: Soil Management Plan (SMP).

Using information from the soil testing performed as part of adopted Mitigation Measure HM-1 and from the Phase I Environmental Site Assessment performed as part of adopted Mitigation Measure HM-2, PV Water or its contractor shall develop and implement an SMP that includes a materials disposal plan specifying how the construction contractor shall remove, handle, transport, and dispose of all excavated material in a safe, appropriate, and lawful manner. The plan shall identify protocols for training workers to recognize potential soil contamination (such as soil staining, noxious odors, debris or buried storage containers), soil testing and disposal by a qualified contractor in the event that contamination is identified, and identification of approved disposal sites (e.g., approved landfill or reuse site). Contract specifications shall mandate approval of the SMP by PV Water as well as full compliance with all applicable local, state, and federal regulations related to the identification, transportation, and disposal of hazardous materials.

Impact HAZ-5: Project construction and operation could impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. (Less than Significant with Mitigation)

Construction Impacts

Project construction would not conflict with the County of Santa Cruz EMP, because the plan does not designate emergency response or evacuation routes, and the Project would not otherwise impair implementation of this plan. However, the Project could have a significant impact on implementation of emergency response or emergency evacuation if construction activities interfered with emergency response vehicle travel or restricted access to critical facilities such as hospitals or fire stations.

As discussed in Section 3.9, Transportation and Traffic, Project construction may require closure of one travel lane and shoulder, with one-way traffic control on two-lane roads, as well as temporary full road closures at Palm and Hushbeck Avenues, which could impede emergency
response traffic. However, implementation of Mitigation Measure TRA-1b (Construction Traffic Control/Traffic Management Plan) introduced in Section 3.9, Transportation and Traffic, would require the construction contractor to establish methods for maintaining traffic flow in and along the subject roadway corridor and minimizing disruption to emergency vehicle access to land uses along the alignment. Specific requirements that may be included in the traffic control/traffic management plan regarding emergency access and access to public schools are identified under Mitigation Measure TRA-1b in Impact TRA-1. As a result, implementation of Mitigation Measure TRA-1b would provide adequate access such that Project construction would not interfere with emergency response or evacuation activities and this impact would be reduced to less than significant with mitigation.

**Operational Impacts**

Upon completion of construction, all roadways would be reopened to through traffic and detours around the site would no longer be needed. Occasional maintenance vehicles would access the WTP, weir structure, lake bed; however, the vehicles would be parked off the streets, no lane closures would be required, and the potential impact related to emergency or evacuation plans would be less than significant.

**Mitigation Measure TRA-1b: Construction Traffic Control/Traffic Management Plan** (refer to Impact TRA-1 in Section 3.9, Transportation and Traffic)

**Cumulative Impacts**

**Impact C-HAZ-1:** The Project, in combination with past, present, and probable future projects in the Project area, would not result in significant adverse cumulative hazards and hazardous materials impacts. (Less than Significant)

The geographic scope of analysis for cumulative hazards and hazardous materials impacts encompasses and is limited to the Project sites and their immediately adjacent areas. This is because impacts relative to hazards and hazardous materials are generally site-specific and depend on the nature and extent of the hazards and hazardous materials released, and existing and future soil and groundwater conditions. For example, hazardous materials incidents tend to be limited to a smaller, more localized area surrounding the immediate spill location and extent of the release, and could only be cumulative if two or more hazardous materials releases spatially and temporally overlapped.

A significant cumulative impact related to hazards and hazardous material would occur if the incremental impacts of the project, combined in space and time with that of other projects cumulatively, would to substantially increase risk that people or the environment would be exposed to hazards and hazardous materials. As discussed above, the Project would have no impact with respect to either being within two miles of a public airport or wildland fire hazards. Accordingly, the Project could not contribute to cumulative impacts related to these topics and these topics are not discussed further.
Cumulative Impacts during Project Construction

There are numerous projects in the cumulative scenario near or adjacent to the Project that could be constructed at the same time (refer to Figure 3.1-1 in Section 3.1). Each project would be subject to the same regulatory requirements discussed in Section 3.7.2, Regulatory Framework, including the implementation of health and safety plans and soil and groundwater management plans, as needed. That is, cumulative projects involving releases of or encountering hazardous materials would all be required to remediate their respective sites to established regulatory standards. This would be the case regardless of the number, frequency, or size of the release(s), or the residual amount of chemicals present in the soil from previous spills. Therefore, while it is possible that the project and cumulative projects could result in releases of hazardous materials at the same location and time, the responsible party associated with each spill would be required to remediate site conditions to the same established regulatory standards. The potential residual effects of the project that would remain after compliance with regulatory requirements would not combine with the potential residual effects of cumulative projects to cause a significant cumulative impact because residual impacts would be highly site-specific. Accordingly, no substantial cumulative impact with respect to the use of hazardous materials would result. Compliance with existing regulations would ensure that any cumulative impacts related to exposure to hazardous materials would be less than significant.

As with the Project, cumulative projects could also require temporary lane closures that could interfere with emergency plans or routes, which would be a significant cumulative impact. However, as discussed in Section 3.9, Transportation and Traffic, PV Water’s construction contractor would prepare and implement a Construction Traffic Control/Traffic Management Plan that conforms to standards of the relevant local jurisdiction (City of Watsonville or Santa Cruz County). The Construction Traffic Control/Traffic Management Plan would require coordination of construction with emergency service providers, and all roads would be required to remain passable to emergency service vehicles at all times. Implementation of the Construction Traffic Control/Traffic Management Plan would provide adequate access such that project construction, in combination with other construction projects, would not interfere with emergency response or evacuation activities and this cumulative impact would be less than significant.

Cumulative Impacts during Project Operations

During operation, the Project and several projects in the cumulative scenario would require the transport, use, storage, and disposal of chemicals that may be hazardous. All project facilities involving the transport, use, storage, and disposal of hazardous materials would be required to prepare and implement a Hazardous Materials Business Plan and comply with applicable regulations, including those governing containment, site layout, and emergency response and notification procedures in the event of a spill or release. Transportation and disposal of wastes, such as spent cleaning solutions, would also be subject to regulations for the safe handling, transportation, and disposal of chemicals and wastes. Such regulations include standards to which parties responsible for hazardous materials releases must return spill sites, regardless of location, frequency, or size of release, or existing background contaminant concentrations to their original conditions. Compliance with existing regulations regarding hazardous materials transport would reduce the risk of environmental or human exposure to such materials and the cumulative impacts would be less than significant.
Mitigation: None required.
3.8 Noise and Vibration

This section presents an analysis of potential impacts related to noise and vibration that would result from implementation of the proposed College Lake Integrated Resources Management Project (Project). The analysis includes both site options (preferred and optional) for the water treatment plant (WTP) as well as preferred and optional pipeline alignments for the College Lake pipeline. Information from the 2014 Basin Management Plan Update Program Environmental Impact Report that remains relevant and accurate for the purposes of describing the physical or regulatory setting of noise and vibration has been incorporated as appropriate.

3.8.1 Setting

3.8.1.1 Technical Background and Noise Terminology

Noise can be generally defined as unwanted sound. Sound, traveling in the form of waves from a source, exerts a sound pressure level (referred to as sound level) that is measured in decibels (dB), with zero dB corresponding roughly to the threshold of human hearing and 120 to 140 dB corresponding to the threshold of pain.

Sound pressure fluctuations can be measured in units of hertz (Hz), which correspond to the frequency of a particular sound. Typically, sound does not consist of a single frequency, but rather a broad band of frequencies varying in levels of magnitude (sound power). The sound pressure level, therefore, constitutes the additive force exerted by a sound corresponding to the frequency/sound power level spectrum.

The typical human ear is not equally sensitive to all frequencies of the audible sound spectrum. As a result, when assessing potential noise impacts, sound is measured using an electronic filter that de-emphasizes the frequencies below 1,000 Hz and above 5,000 Hz in a manner corresponding to the human ear’s decreased sensitivity to low and extremely high frequencies instead of the frequency mid-range. This method of frequency weighting is referred to as A-weighting and is expressed in units of A-weighted decibels (dBA). Frequency A-weighting follows an international standard methodology of frequency de-emphasis and is typically applied to community noise measurements. Some representative noise sources and their corresponding A-weighted noise levels are shown on Figure 3.8-1.

Noise exposure is a measure of noise over a period of time. Noise level is a measure of noise at a given instant in time. Community noise varies continuously over a period of time with respect to the contributing sound sources of the community noise environment. Community noise is primarily the product of many distant noise sources, which constitute a relatively stable background noise exposure, with the individual contributors unidentifiable. The background noise level changes throughout a typical day, but does so gradually, corresponding with the addition and subtraction of distant noise sources such as traffic and atmospheric conditions. What makes community noise constantly variable throughout a day, besides the slowly changing background noise, is the addition of short duration single event noise sources (e.g., aircraft flyovers, motor vehicles, sirens), which are readily identifiable to the individual receptor. These successive additions of sound to the
<table>
<thead>
<tr>
<th>NOISE LEVEL</th>
<th>COMMON OUTDOOR ACTIVITIES (dBA)</th>
<th>COMMON INDOOR ACTIVITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>110</td>
<td>Jet flyover at 1,000 feet</td>
<td>Rock band</td>
</tr>
<tr>
<td>100</td>
<td>Gas lawnmower at 3 feet</td>
<td></td>
</tr>
<tr>
<td>90</td>
<td>Diesel truck at 50 feet at 50 mph</td>
<td></td>
</tr>
<tr>
<td>80</td>
<td>Noisy urban area, daytime</td>
<td></td>
</tr>
<tr>
<td>70</td>
<td>Gas lawnmower at 100 feet</td>
<td>Garbage disposal at 3 feet</td>
</tr>
<tr>
<td>60</td>
<td>Commercial area</td>
<td>Normal speech at 3 feet</td>
</tr>
<tr>
<td>50</td>
<td>Heavy traffic at 300 feet</td>
<td>Large business office</td>
</tr>
<tr>
<td>40</td>
<td>Quiet urban daytime</td>
<td>Dishwasher in next room</td>
</tr>
<tr>
<td>30</td>
<td>Quiet urban nighttime</td>
<td>Theater, large conference room (background)</td>
</tr>
<tr>
<td>20</td>
<td>Quiet suburban nighttime</td>
<td>Library</td>
</tr>
<tr>
<td>10</td>
<td>Quiet rural nighttime</td>
<td>Bedroom at night, concert hall (background)</td>
</tr>
<tr>
<td>0</td>
<td></td>
<td>Broadcast/recording studio</td>
</tr>
</tbody>
</table>

SOURCE: Caltrans, 2013a
community noise environment vary the community noise level from instant to instant, requiring the measurement of noise exposure over a period of time to legitimately characterize a community noise environment and evaluate cumulative noise impacts.

This time-varying characteristic of environmental noise is described using statistical noise descriptors. The most frequently used noise descriptors are summarized below:

- \( L_{eq} \): the energy-equivalent sound level used to describe noise over a specified period of time, typically one hour. The \( L_{eq} \) is the constant sound level, which would contain the same acoustic energy as the varying sound level, during the same time period (i.e., the average noise exposure level for the given time period).

- \( L_{max} \): the instantaneous maximum noise level for a specified period of time.

- \( L_{dn} \): a 24-hour day and night A-weighted noise exposure level, which accounts for the greater sensitivity of most people to nighttime noise by weighting noise levels at night (“penalizing” nighttime noises). Noise between 10:00 p.m. and 7:00 a.m. is weighted (penalized) by adding 10 dB to take into account the greater annoyance of nighttime noises.

As a general rule, in areas where the noise environment is dominated by traffic, the \( L_{eq} \) during the peak-hour is generally within one to two decibels of the \( L_{dn} \) at that location.\(^1\)

**Effects of Noise on People**

The effects of noise on people can be placed in three categories:

- Subjective effects of annoyance and dissatisfaction
- Interference with activities such as speech, sleep, and learning
- Physiological effects such as hearing loss or sudden startling

Environmental noise typically produces effects in the first two categories. Workers in industrial plants can experience noise in the last category. Because the effects of noise on people vary from person to person, it is not possible to measure the subjective effects of noise or the corresponding reactions of annoyance and dissatisfaction. A wide variation in individual thresholds of annoyance exists, and different tolerances to noise tend to develop based on an individual’s past experiences with noise. Thus, an important way of predicting a human reaction to a new noise environment is the way it compares to the baseline noise condition (typically the existing environment) to which one has adapted: the so-called “ambient noise” level. In general, the more a new noise exceeds the existing ambient noise level, the less acceptable the new noise will be judged by those hearing it. Some examples of human perception of various noise levels are provided in Figure 3.8-1.

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\(^1\) California Department of Transportation (Caltrans), *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, September 2013.
With regard to increases in A-weighted noise levels, the following relationships occur:

- Under controlled conditions in an acoustics laboratory, the trained healthy human ear is able to discern changes in sound levels of 1 dB.
- Outside of such controlled conditions, the trained ear can detect changes of 2 dB in normal environmental noise.
- It is widely accepted that the average healthy ear, however, can barely perceive noise level changes of 3 dB.
- A change in level of 5 dB is a readily perceptible increase in noise level.
- A 10 dB change is recognized as twice as loud as the original source.2

These relationships occur in part because of the logarithmic nature of sound and the decibel system. Because the decibel scale is based on logarithms, two noise sources do not combine in a simple linear fashion, but rather logarithmically. For example, if two identical noise sources produce noise levels of 50 dBA, the combined sound level would be 53 dBA, not 100 dBA.

**Noise Attenuation**

Stationary point sources of noise, including stationary mobile sources such as idling vehicles, attenuate (lessen) at a rate between 6 dB for hard sites and 7.5 dB for soft sites for each doubling of distance from the reference measurement. Hard sites are those with a reflective surface between the source and the receiver such as parking lots or smooth bodies of water. No excess ground attenuation is assumed for hard sites and the changes in noise levels with distance (drop-off rate) is simply the geometric spreading of the noise from the source. Soft sites have an absorptive ground surface such as soft dirt, grass, or scattered bushes and trees. In addition to geometric spreading, an excess ground attenuation value of 1.5 dB (per doubling distance) is normally assumed for soft sites. Line sources (such as traffic noise from vehicles) attenuate at a rate between 3 dB for hard sites and 4.5 dB for soft sites for each doubling of distance from the reference measurement.3

Noise levels may also be reduced by intervening structures, such as a row of buildings, a solid wall, or a berm located between the receptor and the noise source.

**Fundamentals of Vibration**

As described in the Federal Transit Administration’s (FTA’s) *Transit Noise and Vibration Impact Assessment*, groundborne vibration can be a serious concern for nearby neighbors, causing buildings to shake and rumbling sounds to be heard.4 In contrast to airborne noise, groundborne vibration is not a common environmental problem. It is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads. Some common sources of groundborne vibration are trains, buses and heavy trucks on rough roads, and construction activities such as blasting, sheet pile-driving, and operation of heavy earth-moving equipment.

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2 Ibid.
3 Ibid.
There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal, which is measured in inches per second (in/sec). The PPV is most frequently used to describe vibration impacts on buildings. The root mean square (RMS) amplitude is most frequently used to describe the effect of vibration on the human body. The RMS amplitude is defined as the average of the squared amplitude of the signal. Decibel notation is commonly used to express RMS. The decibel notation acts to compress the range of numbers required to describe vibration. Typically, groundborne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration. Sensitive receptors for vibration assessment include structures (especially older masonry structures), people who spend a lot of time indoors, and vibration sensitive equipment such as hospital analytical equipment and equipment used in computer chip manufacturing.

The effects of groundborne vibration include movement of the building floors, rattling of windows, shaking of items on shelves or hanging on walls, and rumbling sounds. In extreme cases, the vibration can cause damage to buildings. Building damage is not a factor for most projects, with the occasional exception of blasting and pile-driving during construction. Annoyance from vibration often occurs when the vibration exceeds the threshold of perception by only a small margin.

### 3.8.1.2 Existing Noise-Sensitive Land Uses

Human response to noise varies considerably from one individual to another. The effects of noise at various levels can include interference with sleep, concentration, and communication, and may cause physiological and psychological stress and hearing loss. Given these effects, some land uses are considered more sensitive to noise levels than others due to the duration and nature of time people spend at these uses. In general, residences are considered most sensitive to noise as people spend extended periods of time in them including the nighttime hours. Therefore, noise impacts on rest and relaxation, sleep, and communication are highest at residential uses. Schools, hotels, hospitals, nursing homes, and recreational uses are also considered to be more sensitive to noise as activities at these land uses involve rest and recovery, relaxation and concentration, and increased noise levels tend to disrupt such activities. Places such as churches, libraries, and cemeteries, where people tend to pray, study, and/or contemplate, are also sensitive to noise but due to the limited time people spend at these uses, noise increase impacts are usually tolerable. Commercial and industrial uses are considered the least noise-sensitive. Below is a description of the location of sensitive receptors near Project sites. In general, the above noise-sensitive uses also apply to vibration impacts on humans.

**Weir Structure and Intake Pump Station**

The Project would include a weir structure with an adjustable weir, and a diversion and intake pump station facility to divert surface water from College Lake. The location of weir and intake pump station can be found in Figure 2-2 in Chapter 2, *Project Description*. Sensitive receptors near the proposed weir structure and intake pump station consist of the Our Lady Help of Christians church, St. Francis Catholic High School, Lakeview Middle School and single-family residences. The closest sensitive receptor to the proposed weir structure and pump station is Our Lady Help of Christians church, which is located approximately 340 feet east of the proposed
weir structure boundary. The nearest residential community is located approximately 710 feet south-west of the proposed intake pump station boundary.

**Water Treatment Plant**

The Project would include a WTP to remove sediment, filter, and disinfect the diverted surface water. There are two potential locations where the proposed WTP could be constructed, which are identified as the preferred and optional sites. The location of the WTP sites can be found in Figure 2-2. Below is a description of the locations of sensitive receptors relative to each proposed WTP site.

**Preferred Water Treatment Plant Site**

As shown in Figure 2-2, the preferred WTP site would be located along Holohan Road. Sensitive receptors near the preferred WTP site consist of single-family residences. The closest residences to the preferred WTP site are located 40 feet southeast of the WTP boundary. Other residences located in the vicinity of the preferred WTP site are approximately 630 feet east of the site boundary.

**Optional Water Treatment Plant Site**

As shown in Figure 2-2, the optional WTP site would be located adjacent to the proposed intake pump station. Sensitive receptors near the optional WTP site consist of the Our Lady Help of Christians church, St. Francis Catholic High School, Lakeview Middle School and single-family residences. The closest sensitive receptors are Our Lady Help of Christians church, which is located approximately 470 feet east of the optional WTP site, and the nearest residential community (the Orchard Park neighborhood) approximately 330 feet south of the site boundary.

**College Lake Pipeline**

The Project would include an approximately 5.5-mile-long pipeline from the proposed WTP (both the preferred and optional site) to the existing Watsonville Area Water Recycling Facility at the Watsonville Wastewater Treatment Facility. Figures 2-3a through 2-3e show the preferred and optional pipeline alignments which generally follow existing road rights-of-way or traverse agricultural fields. Sensitive receptors along the alignments consist of single and multi-family residences and Watsonville High School. The nearest sensitive receptor to proposed trench and trenchless construction areas is approximately 25 and 35 feet, respectively.

**3.8.1.3 Existing Noise Environment**

The noise environment surrounding the various Project sites is influenced by vehicular traffic, such as along State Route (SR) 152, Holohan Road, and West Beach Street. Other noise sources in the vicinity of the Project sites include occasional aircraft overflight noise from the Watsonville Municipal Airport, farming activities (e.g., tractors) and residential neighborhood activities.

To quantify the existing ambient noise levels, Environmental Science Associates conducted a noise survey in the vicinity of the Project sites. The noise survey was conducted on April 4, 2018, and consisted of one 24-hour long-term measurement and ten 15-minute short-term noise measurements.
measurements. **Figure 3.8-2** illustrates the location of the long-term and short-term noise measurement sites. The results of the short-term noise survey are presented in **Table 3.8-1**. The results of the long-term noise measurement survey are shown in **Table 3.8-2**. All long-term noise measurements were conducted using a Larson Davis LxT2 sound level meter and all short-term noise measurements were conducted using a Larson Davis 831 sound level meter. The noise meters were calibrated before and after each noise measurement.

### TABLE 3.8-1
15-MINUTE SHORT-TERM AMBIENT NOISE MONITORING RESULTS

<table>
<thead>
<tr>
<th>Short Term Measurement Site</th>
<th>Start Date &amp; Time</th>
<th>L_{eq} (dBA)</th>
<th>L_{min} (dBA)</th>
<th>L_{max} (dBA)</th>
<th>Primary Noise Source(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ST-1 (Our Lady Help of Christians)</td>
<td>4/4/18 11:55 a.m.</td>
<td>57</td>
<td>38</td>
<td>68</td>
<td>Traffic along SR 152, church bells</td>
</tr>
<tr>
<td>ST-2 (near intersection of Laken Drive and Holohan Road)</td>
<td>4/4/18 12:16 p.m.</td>
<td>49</td>
<td>40</td>
<td>63</td>
<td>Traffic along Holohan Road</td>
</tr>
<tr>
<td>ST-3 (Lakeview Middle School)</td>
<td>4/4/18 12:35 p.m.</td>
<td>58</td>
<td>49</td>
<td>68</td>
<td>Traffic along SR 152</td>
</tr>
<tr>
<td>ST-4 (near intersection of SR 152 and Coleman Avenue)</td>
<td>4/4/18 12:59 p.m.</td>
<td>60</td>
<td>44</td>
<td>70</td>
<td>Traffic along SR 152</td>
</tr>
<tr>
<td>ST-5 (near intersection of California Street and Tuttle Avenue)</td>
<td>4/4/18 1:20 p.m.</td>
<td>59</td>
<td>38</td>
<td>76</td>
<td>Traffic along California Street and Tuttle Avenue</td>
</tr>
<tr>
<td>ST-6 (near intersection of SR 152 and Hushbeck Avenue)</td>
<td>4/4/18 1:40 p.m.</td>
<td>60</td>
<td>42</td>
<td>76</td>
<td>Traffic along SR 152 and Hushbeck Avenue</td>
</tr>
<tr>
<td>ST-7 (near intersection of SR 152 and Lincoln Street)</td>
<td>4/4/18 2:03 p.m.</td>
<td>63</td>
<td>44</td>
<td>74</td>
<td>Traffic along SR 152 and Lincoln Street</td>
</tr>
<tr>
<td>ST-8 (near intersection of 2nd Street and Menker Street)</td>
<td>4/4/18 2:28 p.m.</td>
<td>58</td>
<td>48</td>
<td>71</td>
<td>Traffic along 2nd Street</td>
</tr>
<tr>
<td>ST-9 (near Watson Street and Pine Street)</td>
<td>4/4/18 2:49 p.m.</td>
<td>54</td>
<td>46</td>
<td>67</td>
<td>Traffic along Pine Street</td>
</tr>
<tr>
<td>ST-10 (along West Beach Street, east of SR 1)</td>
<td>4/4/18 3:08 p.m.</td>
<td>69</td>
<td>53</td>
<td>82</td>
<td>Traffic along West Beach Street</td>
</tr>
</tbody>
</table>

**SOURCE:** ESA, 2018 Ambient Noise Survey for the College Lake Integrated Resources Management Project, April 4, 2018.

### TABLE 3.8-2
24-HOUR LONG-TERM AMBIENT NOISE MONITORING RESULTS

<table>
<thead>
<tr>
<th>Long Term Measurement Site</th>
<th>L_{eq} (dBA)</th>
<th>L_{min} (dBA)</th>
<th>L_{max} (dBA)</th>
<th>Assumed Primary Noise Source(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LT-1 (along Holohan Road, east of the intersection of SR 152 and Holohan Road)</td>
<td>66</td>
<td>28</td>
<td>87</td>
<td>Traffic along Holohan Road</td>
</tr>
</tbody>
</table>

**NOTES:** Measurements started April 4, 2018 and concluded April 5, 2018, over a 24-hour period.

**SOURCE:** ESA, 2018 Ambient Noise Survey for the College Lake Integrated Resources Management Project, April 4, 2018.
Figure 3.8-2
Noise Measurement Locations
3.8.2 Regulatory Framework

3.8.2.1 Federal

Federal regulations establish noise limits for medium and heavy trucks (more than 4.5 tons, gross vehicle weight rating) under 40 Code of Federal Regulations, Part 205, Subpart B. The federal truck pass-by noise standard is 80 dBA at 15 meters (approximately 50 feet) from the vehicle pathway centerline. These controls are implemented through regulatory requirements on truck manufacturers.

3.8.2.2 State

The State of California establishes noise limits for vehicles licensed to operate on public roads. For heavy trucks, the State pass-by standard is consistent with the federal limit of 80 dBA at approximately 50 feet from the centerline. The State pass-by standard for light trucks and passenger cars (less than 4.5 tons, gross vehicle rating) is also 80 dBA at approximately 50 feet from the centerline. These standards are implemented through controls on vehicle manufacturers and by legal sanction of vehicle operators by State and local law enforcement officials.

3.8.2.3 Local

Table 2-10 in Chapter 2, Project Description, identifies the approvals from Santa Cruz County and/or the City of Watsonville required for the Project. Table 3.8-3 presents pertinent local plans and policies regarding noise to support County and City consideration of project consistency with general policies. In some cases, local policies are used in this EIR as criteria to determine the significance of physical effects on the environment (e.g., Impact NOI-1, below).

3.8.3 Impacts and Mitigation Measures

3.8.3.1 Significance Criteria

In accordance with the California Environmental Quality Act (CEQA), state CEQA Guidelines (including Appendix G), relevant plans, policies, and/or guidelines, and agency standards, the Project could have a significant impact if it were to:

- Generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- Generate excessive groundborne vibration or groundborne noise levels; and/or
- For a project located within the vicinity of a private airstrip or 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 expose people residing or working in the project area to excessive noise levels.

5 California Government Code Section 53091 exempts agencies like PV Water from complying with local building and zoning ordinances when locating or constructing facilities for the production, generation, storage, treatment, or transmission of water. California Government Code Section 65402(c) requires that PV Water notify cities and counties of its plans to construct projects or to acquire or dispose of property. The planning agency then has 40 days to determine project consistency with its general plan. If the planning agency disapproves, the disapproval may be overruled by PV Water.
### TABLE 3.8-3
**LOCAL PLANS AND POLICIES RELEVANT TO THE PROJECT**

#### CITY OF WATSONVILLE PLANS AND POLICIES

**Watsonville 2005 General Plan**

**Policy 12.M: Noise.** The City shall utilize land use regulations and enforcement to ensure that noise levels in developed areas are kept at acceptable levels, and that future noise-sensitive land uses are protected from noise that is harmful.

**Implementation Measure 12.M.1: Traffic Noise.** The City shall enforce provisions of the California Vehicle Code and local ordinances to reduce vehicular noise intrusion in residential areas and near other noise sensitive land uses such as schools and hospitals.

**Implementation Measure 12.M.2: Truck Routes.** The City shall continue efforts to designate truck routes that bypass residential areas and other noise sensitive areas.

**Implementation Measure 12.M.3: Equipment Maintenance.** The City shall maintain all vehicles and mechanical equipment in peak operating condition and correctly fitted with noise control devices.

**Watsonville Municipal Code**

Chapter 5-8.02(a). The using, operating, or permitting to be played, used, or operated of any radio receiving set, musical instrument, phonograph, stereo, television, or other machine or device for producing or reproducing sound in such a manner as to disturb the peace, quiet, and comfort of neighboring residential inhabitants at any time with volume louder than is necessary for convenient hearing for the persons who are in the room, vehicle, or chamber in which such machine or device is operating and who are voluntary listeners thereto. The operation of any such set, instrument, phonograph, stereo, machine, or device between the hours of 10:00 p.m. and 7:00 a.m. in such a manner as to be plainly audible at a distance of fifty (50') feet from the residential building, structure, or vehicle in which it is located shall be prima facie evidence of a violation of this chapter.

#### SANTA CRUZ COUNTY PLANS AND POLICIES

**Santa Cruz County General Plan/Local Coastal Program**

**Policy 6.9.1: Commercial and Industrial Development.** For all new commercial and industrial developments which would increase noise levels above the maximum allowable standards of the Land Use Guidelines on Figure 6-1 [presented below as Figure 3.8-3], or Figure 6-2 [presented below as Table 3.8-4], the best available control technologies will be used to minimize noise levels. In no case shall the noise levels exceed the standard of Figure 6-2 [presented below as Table 3.8-4].

**Policy 6.9.7: Construction Noise.** Require mitigation of construction noise as a condition of future project approvals. The County of Santa Cruz General Plan does not specify when construction mitigation measures would be required.

**Santa Cruz County Code**

Section 8.30.010(C). The following factors shall be considered when determining whether a violation of the provisions of this section exists:

1. **Loudness (Intensity) of the Sound**
   - Day and Evening Hours. For the purpose of this factor, a noise shall be automatically considered offensive if it occurs between the hours of 8:00 a.m. and 10:00 p.m. and it is:
     - Clearly discernible at a distance of 150 feet from the property line of the property from which it is broadcast; or
     - In excess of 75 decibels at the edge of the property line of the property from which the sound is broadcast, as registered on a sound measuring instrument meeting the American National Standard Institute’s Standard S1.4-1971 (or more recent revision thereof) for Type 1 or Type 2 sound level meters, or an instrument which provides equivalent data. For this analysis, it is assumed that the County’s daytime construction exterior noise standard is an hourly $L_{eq}$ (i.e., $75 \text{ dBA } L_{eq}$).
   - Night Hours. For purposes of this factor, a noise shall be automatically considered offensive if it occurs between the hours of 10:00 p.m. and 8:00 a.m. and it is:
     - Made within 100 feet of any building or place regularly used for sleeping purposes; or
     - Clearly discernible at a distance of 100 feet from the property line of the property from which it is broadcast; or
     - In excess of 60 decibels at the edge of the property line of the property from which the sound is broadcast, as registered on a sound measuring instrument meeting the American National Standard Institute’s Standard S1.4-1971 (or more recent revision thereof) for Type 1 or Type 2 sound level meters, or an instrument which provides equivalent data. For this analysis, it is assumed that the County’s nighttime construction exterior noise standard is an hourly $L_{eq}$ (i.e., $60 \text{ dBA } L_{eq}$).

**NOTES:**

a “Offensive noise” means any noise which is loud, boisterous, irritating, penetrating, or unusual, or that is unreasonably distracting in any other manner such that it is likely to disturb people of ordinary sensitivities in the vicinity of such noise, and includes, but is not limited to, noise made by an individual alone or by a group of people engaged in any business, activity, meeting, gathering, game, dance, or amusement, or by any appliance, contrivance, device, tool, structure, construction, vehicle, ride, machine, implement, or instrument.
### TABLE 3.8-4

**COUNTY OF SANTA CRUZ**

**MAXIMUM ALLOWABLE NOISE EXPOSURE STATIONARY NOISE SOURCES**

| Category | Daytime $^e$  
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(7:00 a.m. to 10:00 p.m.)</td>
</tr>
<tr>
<td>Hourly $L_{eq}$ - average hourly noise level dBA $^c$</td>
<td>50</td>
</tr>
<tr>
<td>Maximum level, dBA $^c$</td>
<td>70</td>
</tr>
<tr>
<td>Maximum Level dBA - Impulsive Noise $^d$</td>
<td>65</td>
</tr>
</tbody>
</table>

**NOTES:**

- $^a$ As determined at the property line of the receiving land use. When determined the effectiveness of noise mitigation measures, the standards may be applied on the receptor side of the noise barriers or other property line noise mitigation measures.
- $^b$ Applies only where the receiving land use operates or is occupied during nighttime hours.
- $^c$ Sound level measurements shall be made with “slow” meter response.
- $^d$ Sound level measurements shall be made with “fast” meter response.
- $^e$ Allowable levels shall be raised to the ambient noise levels where the ambient hourly $L_{eq}$ is at least 10 dB lower than the allowable level. The definition of daytime and nighttime hours are different between the County of Santa Cruz’s General Plan and municipal code.

**SOURCE:** County of Santa Cruz, Chapter 6: Public Safety and Noise of the County of Santa Cruz General Plan, May 24, 1994.

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**Figure 3.8-3**

Land Use Compatibility for Community Noise Environment

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<table>
<thead>
<tr>
<th>LAND USE CATEGORY</th>
<th>COMMUNITY NOISE EXPOSURE - $L_{eq}$ or CNEL (dBA)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>50</td>
</tr>
<tr>
<td>Residential, Hotel, and Motels</td>
<td></td>
</tr>
<tr>
<td>Outdoor Sports and Recreation, Neighborhood Parks and Playgrounds</td>
<td></td>
</tr>
<tr>
<td>Schools, Libraries, Museums, Hospitals, Personal Care, Meeting Halls, Churches</td>
<td></td>
</tr>
<tr>
<td>Office Buildings, Business Commercial, and Professional</td>
<td></td>
</tr>
<tr>
<td>Auditoriums, Concert Halls, Amphitheaters</td>
<td></td>
</tr>
<tr>
<td>Industrial, Manufacturing, Utilities, and Agriculture.</td>
<td></td>
</tr>
</tbody>
</table>

- **Normally Acceptable** Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal condition.
- **Conditionally Acceptable** Specified land use may be permitted only after detailed analysis of the noise reduction requirements and needed mitigation measures.
- **Unacceptable** New construction or development should generally not be undertaken because mitigation is usually not feasible to achieve.

**SOURCE:** County of Santa Cruz, Chapter 6: Public Safety and Noise of the County of Santa Cruz General Plan. May 24, 1994.
The following topics are not analyzed further in this section for the reasons described below:

- **Exposure of people to excess noise due to proximity to an airport land use plan or private airstrip.** The Project sites would not result in the placement of workers in areas where they would be exposed to excessive noise levels associated with airports or airstrips. The nearest airport is the Watsonville Municipal Airport, approximately two miles to the west. The year 2020 noise contours for the Airport Master Plan indicates that the lowest (55 dBA) noise contour does not extend into the project area. Therefore, the Project would have no impact related to this criterion and this issue is not discussed further below.

- **Exposure of persons to, or generation of, excessive groundborne vibration or groundborne noise during project operations.** Project operations and routine maintenance would not expose people to, or generate, groundborne vibration. Groundborne noise occurs when vibrations transmitted through the ground result in secondary radiation of noise. Groundborne noise is generally associated with underground railway operations and with construction activities such as blasting, neither of which would result from implementation of the Project. Operation of the Project would not involve equipment that would produce groundborne vibration. Therefore, the Project would have no impact related to this criterion and this issue is not discussed further below.

### 3.8.3.2 Methodology

As described in Section 3.1, this EIR provides an independent analysis of the Project’s potential environmental impacts. Potential impacts associated with the Project are identified below. The analysis included in this section was developed based on data collected in the vicinity of Project sites, as well as information provided in the County of Santa Cruz General Plan and City of Watsonville 2005 General Plan, local noise ordinances and the Federal Highway Administration (FHWA) Road Construction Noise Model, and the FTA’s Transit Noise and Vibration Impact Assessment.

**Noise**

Analysis of the Project’s temporary construction noise effects is based on estimates of construction equipment units and duration of use provided by Carollo Engineers. The analyses accounted for attenuation of noise levels due to distances between the location where construction activity would occur and the nearest sensitive land uses. Construction noise levels at nearby sensitive land uses were estimated using the FHWA’s Roadway Construction Noise Model and compared to local noise standards.

Neither the County of Santa Cruz nor City of Watsonville have applicable local policies or standards to quantitatively assess the significance of short-term increases in noise levels from construction activities over existing conditions. For the purpose of assessing short-term construction noise, residences exposed to noise levels during construction that exceeds 75 dBA

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L\text{eq} during the daytime and 60 dBA L\text{eq} during the nighttime hours would be considered to provoke an adverse community reaction at residential land uses.\(^9\)

The primary noise source during Project operation would be the onsite pumps and air compressors at the proposed weir, pump station, and WTP. Noise generated by these stationary sources was calculated using reference noise levels and conceptual site plans provided by Carollo Engineers.\(^10\) Operational noise levels associated with each of the proposed pumps and air compressors were attenuated to the nearest sensitive receptor locations and compared to local noise standards.

**Vibration**

For the purposes of assessing potential vibration impacts on nearby sensitive land uses, the methodology described in the California Department of Transportation’s (Caltrans’) *Transportation and Construction Vibration Guidance Manual* was used.\(^11\) For adverse human reaction, the analysis applies the “severe” threshold of 0.4 in/sec PPV for continuous/frequent sources. For risk of architectural damage to historic buildings and structures, this analysis applies a threshold of 0.25 in/sec PPV. A threshold of 0.5 in/sec PPV is used to assess risk of damage for all other building types.\(^12\)

**3.8.3.3 Impacts and Mitigation Measures**

**Impact NOI-1: Construction of the Project would result in a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plans or noise ordinances. (Significant and Unavoidable with Mitigation)**

The Project would involve the construction of a new weir structure and intake pump station, WTP and a 5.5-mile-long pipeline connecting the proposed WTP to the existing Watsonville Wastewater Treatment Facility. Figures 2-1 through 2-3e and Figures 2-10, 2-14, and 2-16 in Chapter 2, *Project Description*, show the location and layout of Project components. The Project components would be built over approximately 18 months, with construction beginning in 2022 and ending in 2023 (refer to Table 2-5 in Chapter 2, *Project Description*).\(^13\) The majority of construction activities would occur during normal working hours; from 8:00 a.m. to 5:00 p.m., Monday through Saturday. However, trenchless pipeline construction could require 24 hours per day to accommodate horizontal directional drilling or jack-and-bore construction methods.

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\(^9\) Adverse community reaction is defined as the interference with the average person’s speech, sleep and desire for a tranquil environment.

\(^10\) Carollo Engineers, Civil Site Plans for Preferred WTP Site and Optional WTP Site, November 2018.


\(^12\) Ibid.

\(^13\) Schedule based on construction of grading and surcharging fill pad for the preferred WTP site. The duration of surcharging for the optional WTP site would be increased by 12 to 18 months to allow for consolidation of fill pad at that site. There would be no construction activity at the site during consolidation. The remainder of the construction phase durations for the WTP would be the same for both site options.
The majority of off-road equipment and vehicle usage would be associated with the intensive earthwork and the structural phases of construction. Large construction equipment such as drill rigs, backhoes, compactors, cranes, excavators, haul trucks, and pavers would be used during all construction and demolition phases of the Project. Table 3.8-5 shows typical noise levels produced by the types of off-road equipment that would be used during construction of the weir and intake pump station, WTP and College Lake pipeline.

The operation of each piece of equipment within the Project construction areas would not be constant throughout the day, as equipment would be turned off when not in use. Over a typical workday, the equipment would be operating at different locations and all the equipment would not operate concurrently at the same location of the Project construction area. To quantify construction-related noise exposure that would occur at the nearest sensitive receptors, it was assumed that the two loudest pieces of construction equipment would operate at the closest location of the Project sites to the nearest off-site sensitive receptors. Table 3.8-6 presents the highest $L_{\text{max}}$ and $L_{\text{eq}}$ noise levels to which sensitive receptors could be exposed at each of the construction sites.

A summary of impact by Project component is provided below.

**Weir Structure and Intake Pump Station**

The construction activities associated with the proposed weir structure and intake pump station would occur within unincorporated Santa Cruz County. Construction activities at the Project site would occur between 7:00 a.m. to 7:00 p.m. seven days per week, within the daytime and nighttime hours identified in Section 8.30.010(C) of the County of Santa Cruz noise ordinance (see Table 3.8-3). Sensitive receptors exposed to a noise level of 75 dBA $L_{\text{eq}}$ during the daytime or 60 dBA $L_{\text{eq}}$ during the nighttime hours would exceed the County’s noise ordinance standard.

Construction of the weir structure and intake pump station would begin in 2022 and occur over approximately 16 months excluding pre-commissioning, and taking into account a break between November and May when the site would be winterized and no construction would occur within the Salsipuedes Creek channel (refer to Table 2-5). Construction would involve dewatering; grading and excavation; pile driving; erecting concrete structures; installing piping, pumps, electrical and mechanical equipment; testing and commissioning facilities; and finish work such as erecting enclosures, painting, flooring, doors, windows, paving, landscaping, and fencing. Table 3.8-5 lists the equipment that would be used during construction.

The sensitive receptor nearest to the weir structure and intake pump station is the Our Lady Help of Christians church located approximately 340 feet east of the proposed weir structure boundary. The Our Lady Help of Christians church currently has a 7:00 a.m. mass Monday through Friday. The two loudest pieces of off-road equipment that would operate at the site during construction are an impact pile driver and excavator (see Table 3.8-5). As shown in Table 3.8-6, people worshiping at the Our Lady Help of Christians church would be exposed to $L_{\text{max}}$ and $L_{\text{eq}}$ construction noise levels of 74 dBA and 68 dBA, respectively, the latter of which would exceed the County of Santa Cruz’s nighttime noise standard. Therefore, there would be a significant impact with respect to exposure of sensitive land uses to noise levels in excess of standards found in the local noise ordinance.
### Table 3.8-5
REFERENCE CONSTRUCTION EQUIPMENT NOISE LEVELS (50 FEET FROM SOURCE)

<table>
<thead>
<tr>
<th>Type of Equipment</th>
<th>( L_{\text{max}} ), dBA</th>
<th>Hourly ( L_{\text{eq}} ), dBA/Percent Used&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weir Structure and Intake Pump Station</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excavator</td>
<td>85</td>
<td>81/40</td>
</tr>
<tr>
<td>Backhoe</td>
<td>80</td>
<td>76/40</td>
</tr>
<tr>
<td>Fork Lift</td>
<td>85</td>
<td>81/40</td>
</tr>
<tr>
<td>Impact Pile Driver</td>
<td>95</td>
<td>88/20</td>
</tr>
<tr>
<td>Crane</td>
<td>85</td>
<td>77/16</td>
</tr>
<tr>
<td>Pumps</td>
<td>77</td>
<td>74/50</td>
</tr>
<tr>
<td>Generator</td>
<td>82</td>
<td>79/50</td>
</tr>
<tr>
<td>Air Compressor</td>
<td>80</td>
<td>76/40</td>
</tr>
<tr>
<td>Water Treatment Plant</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excavator</td>
<td>85</td>
<td>81/40</td>
</tr>
<tr>
<td>Dozers</td>
<td>85</td>
<td>81/41</td>
</tr>
<tr>
<td>Scrapers</td>
<td>85</td>
<td>81/40</td>
</tr>
<tr>
<td>Skip Loader</td>
<td>80</td>
<td>76/40</td>
</tr>
<tr>
<td>Backhoe</td>
<td>80</td>
<td>76/40</td>
</tr>
<tr>
<td>Fork Lift</td>
<td>85</td>
<td>81/40</td>
</tr>
<tr>
<td>Crane</td>
<td>85</td>
<td>77/16</td>
</tr>
<tr>
<td>Scissor Lift</td>
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<td>81/40</td>
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<td>Pumps</td>
<td>77</td>
<td>74/50</td>
</tr>
<tr>
<td>Air Compressor</td>
<td>80</td>
<td>76/40</td>
</tr>
<tr>
<td>Generator</td>
<td>82</td>
<td>79/50</td>
</tr>
<tr>
<td>Paver</td>
<td>85</td>
<td>82/50</td>
</tr>
<tr>
<td>College Lake Pipeline – Trench Pipeline Installation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excavator</td>
<td>85</td>
<td>81/40</td>
</tr>
<tr>
<td>Skip Loader</td>
<td>80</td>
<td>76/40</td>
</tr>
<tr>
<td>Backhoe</td>
<td>80</td>
<td>76/40</td>
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<td>Fork Lift</td>
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<td>81/40</td>
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<td>Plate Compactor</td>
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<td>73/20</td>
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<tr>
<td>Pumps</td>
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<td>74/50</td>
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<tr>
<td>Air Compressor</td>
<td>80</td>
<td>76/40</td>
</tr>
<tr>
<td>Generator</td>
<td>82</td>
<td>79/50</td>
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<tr>
<td>Concrete Saw</td>
<td>90</td>
<td>83/20</td>
</tr>
<tr>
<td>Paver</td>
<td>85</td>
<td>82/50</td>
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<td>Sweepers</td>
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<td>College Lake Pipeline – Trenchless Pipeline Installation</td>
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</tr>
<tr>
<td>Pumps</td>
<td>77</td>
<td>74/50</td>
</tr>
<tr>
<td>Drill Rig</td>
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<td>77/16</td>
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<tr>
<td>Backhoe</td>
<td>80</td>
<td>76/40</td>
</tr>
</tbody>
</table>

**NOTES:**

<sup>a</sup> “Percent used” were obtained from the FHWA Roadway Construction Noise Model User’s Guide.

3. Environmental Setting, Impacts, and Mitigation Measures

3.8 Noise

<table>
<thead>
<tr>
<th>TABLE 3.8-6</th>
<th>SUMMARY OF ESTIMATED NOISE LEVELS AT SENSITIVE RECEPTORS DURING PROJECT CONSTRUCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Component</td>
<td>Loudest two Pieces of Construction Equipment</td>
</tr>
<tr>
<td>Facilities and Open Trench Pipeline Installation</td>
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</tr>
<tr>
<td>Weir Structure and Intake Pump Station</td>
<td>Impact Pile Driver, Excavator</td>
</tr>
<tr>
<td>Preferred Water Treatment Plant Site</td>
<td>Excavator, Dozer</td>
</tr>
<tr>
<td>Optional Water Treatment Plant Site</td>
<td>Excavator, Dozer</td>
</tr>
<tr>
<td>College Lake Pipeline</td>
<td>Concrete Saw, Excavator</td>
</tr>
<tr>
<td>Trenchless Pipeline Installation</td>
<td></td>
</tr>
<tr>
<td>Corralitos Creek Crossing</td>
<td>Crane, Vibratory Pile Driver</td>
</tr>
<tr>
<td></td>
<td>Drill Rig</td>
</tr>
<tr>
<td>SR 152 Crossing</td>
<td>Crane, Vibratory Pile Driver</td>
</tr>
<tr>
<td></td>
<td>Drill Rig</td>
</tr>
<tr>
<td>Walker Street Crossing</td>
<td>Crane, Vibratory Pile Driver</td>
</tr>
<tr>
<td></td>
<td>Drill Rig</td>
</tr>
<tr>
<td>SR 129 Crossing</td>
<td>Crane, Vibratory Pile Driver</td>
</tr>
<tr>
<td></td>
<td>Drill Rig</td>
</tr>
<tr>
<td>SR 1 Crossing</td>
<td>Crane, Vibratory Pile Driver</td>
</tr>
<tr>
<td></td>
<td>Drill Rig</td>
</tr>
</tbody>
</table>

NOTES:

<sup>a</sup> Reference construction equipment noise levels were obtained from Caltrans’ Roadway Construction Noise Level Model (RCNM) (FHWA, 2006).

<sup>b</sup> Assumed an attenuation rate of 7.5 dB per doubling of distance (i.e., soft site).


Implementation of Mitigation Measure NOI-1a would reduce construction noise exposure at the Our Lady Help of Christians church by requiring Pajaro Valley Water Management Agency (PV Water) to implement a Construction Noise Reduction Plan and restricting onsite impact pile driving activities to within the daytime hours as identified in the County of Santa Cruz noise ordinance. Implementation of Mitigation Measure NOI-1a is expected to attenuate construction noise levels by at least 5 dB. After implementation of all the measures identified in the Construction Noise Reduction Plan, the people worshiping at the church during morning mass would be expected to be exposed to a noise level of 58 dBA L<sub>eq</sub> (assuming simultaneous operation of an excavator and forklift) during onsite construction activities, which would not exceed the County’s nighttime construction noise standard. Therefore, this impact would be less than significant impact after mitigation.
3. Environmental Setting, Impacts, and Mitigation Measures

3.8 Noise

Water Treatment Plant
The construction activities associated with the WTP would occur within unincorporated Santa Cruz County. Construction activities at the WTP would occur between 8:00 a.m. to 5:00 p.m., within the daytime hours identified in Section 8.30.010(C) of the County of Santa Cruz noise ordinance (see Table 3.8-3). Sensitive receptors exposed to a noise level of 75 dBA L_{eq} would exceed the County’s noise ordinance standard. Construction of the WTP would begin in 2022 and occur over approximately 16 months for the preferred WTP site (refer to Table 2-5). Construction would involve grading and excavation; erecting concrete structures; installing piping, pumps, electrical and mechanical equipment; testing and commissioning facilities; and finish work such as erecting enclosures, painting, flooring, doors, windows, paving, landscaping, and fencing. Table 3.8-5 lists the equipment that would be used during construction. A summary of impacts for the preferred and optional WTP sites is provided below.

Preferred Water Treatment Plant Site
The closest sensitive receptor to the preferred WTP site is a single-family residence located approximately 40 feet southeast of the WTP boundary. As shown in Table 3.8-6, the nearest residences to the WTP boundary would be exposed to L_{max} and L_{eq} construction noise levels of 90 dBA and 86 dBA, respectively, which would exceed the County of Santa Cruz’s daytime noise standard of 75 dBA L_{eq}. Therefore, there would be a significant impact with respect to exposure of sensitive receptors to noise levels in excess of standards found in the local noise ordinance.

Implementation of Mitigation Measures NOI-1a would reduce construction noise exposure at the residence near the preferred WTP site by requiring PV Water to implement a Construction Noise Reduction Plan. Implementation of Mitigation Measure NOI-1a is expected to attenuate construction noise levels by at least 5 dB by requiring PV Water to provide nearby residences with a noise complaint hotline, install intake and exhaust mufflers on construction equipment, restrict the use of impact tools, and use temporary noise barriers. After implementation of all the measures identified in the Construction Noise Reduction Plan, the nearest sensitive receptor to the preferred WTP site would be expected to be exposed to a noise level of 82 dBA L_{eq} during daytime onsite construction activities, which would still exceed the County’s construction noise standard. Therefore, this impact would remain significant and unavoidable with mitigation.

Optional Water Treatment Plant Site
The closest sensitive receptors to the optional WTP site consists of residences within the Orchard Park neighborhood located approximately 330 feet south of the optional WTP site boundary. As shown in Table 3.8-6, the residences within the Orchard Park Neighborhood would be exposed to L_{max} and L_{eq} construction noise levels of 68 dBA and 64 dBA, respectively, which would not exceed the County of Santa Cruz’s daytime noise standard. Therefore, with respect to exposure of sensitive receptors to noise levels in excess of standards found in the local noise ordinance, this impact would be less than significant.

14 Schedule based on construction of grading and surcharging fill pad for the preferred WTP site. The duration of surcharging for the optional WTP site would be increased by 12 to 18 months to allow for consolidation of fill pad at that site. There would be no construction activity at the site during consolidation. The remainder of the construction phase durations for the WTP would be the same for both site options.
3. Environmental Setting, Impacts, and Mitigation Measures

3.8 Noise

College Lake Pipeline - Trench Pipeline Installation

The majority of the pipeline segments would be installed in existing roadways and farm land using conventional open-trench construction techniques. As shown on Figure 2-3a through Figure 2-3e, the pipeline alignments would transverse unincorporated Santa Cruz County and the City of Watsonville. As described in Table 3.8-3, the City of Watsonville noise ordinance has a time-of-day restriction for machines or devices (i.e., construction). Open trench pipeline construction is not proposed to occur outside of the allowed hours specified in the City of Watsonville noise ordinance, and therefore would not conflict with the City of Watsonville noise ordinance. Open trench pipeline construction would occur within the daytime hours identified in the Santa Cruz County noise ordinance.

For this analysis, off-road equipment used during pipeline construction is assumed to operate as close as 25 feet from the nearest sensitive receptor. Table 2-5 (in Chapter 2, Project Description) lists construction equipment that would be used during open-trench pipeline construction. As shown in Table 3.8-6, the sensitive receptors adjacent to the pipeline alignment would be exposed to noise levels of 99 dBA $L_{max}$ and 94 dBA $L_{eq}$ during open-trench construction activities. While pipeline installation would be expected to proceed at a rate of approximately 100 feet per day, limiting sensitive receptor exposure to a few days, the impact would, nevertheless, be significant with respect to exposure of persons to, or generation of, noise levels in excess of local standards.

Implementation of Mitigation Measure NOI-1a would reduce construction noise levels at nearby sensitive receptors through implementation of a Construction Noise Reduction Plan. However, due to the proximity of Project construction areas to nearby sensitive receptors, construction noise reduction measures implemented under the Construction Noise Reduction Plan are unlikely to reduce construction noise from all equipment to below the County of Santa Cruz noise standard of 75 dBA $L_{eq}$. Therefore, this impact would remain significant and unavoidable with mitigation for open-trench pipeline construction.

College Lake Pipeline - Trenchless Pipeline Installation

Horizontal directional drilling, jack and bore, and sheet pile driving could be required during the construction of the College Lake pipeline. A vibratory pile driver would be used to install sheet piles at the boring pits and would only be used during the daytime hours. Horizontal directional drilling (described in Section 2.6.6 in Chapter 2, Project Description) is a tunneling construction method, that consists of a surface-mounted drill rig with tracking and steering capabilities. This method of tunneling requires continuous excavation. Consequently, pipeline construction at the locations circled on Figures 2-3a through 2-3e could occur for up to 24 hours per day and (for longer tunneling) several days in a row. Since the vibratory pile driver would be used during the construction of the boring pits, vibratory pile driving and horizontal directional drilling would not occur at the same time. A summary of impacts for proposed horizontal directional drilling are provided below.

Corralitos Creek Crossing

Horizontal directional drilling and vibratory pile driving at the Corralitos Creek Crossing would occur within unincorporated Santa Cruz County. For this analysis, noise generated during the operation of one vibratory pile driver and one crane is compared to the County’s daytime noise
standard of 75 dBA $L_{eq}$ as both pieces of equipment would be operating during that time. Since horizontal directional drilling would occur 24-hours a day, the noise generated by the horizontal direction drill, operating by itself, is compared to the County’s nighttime noise standard of 60 dBA $L_{eq}$.

There are single family residences located approximately 460 feet to the north of where horizontal directional drilling would occur during the crossing of Corralitos Creek. As shown in Table 3.8-6, these sensitive receptors would be exposed to daytime noise levels of approximately 71 dBA $L_{max}$ and 64 dBA $L_{eq}$ and nighttime noise levels of 61 dBA $L_{max}$ and 54 dBA $L_{eq}$ during Project construction. Since construction activities would not exceed the County’s daytime or nighttime noise standards, impacts with respect to exposure of sensitive to noise levels in excess of standards found in the local noise ordinance would be less than significant.

State Route 152 and Walker Street Crossing
Horizontal directional drilling nearing SR 152 and Walker Street would occur entirely within the City of Watsonville. As described in Table 3.8-3, the City of Watsonville noise ordinance has a time-of-day restriction for machines or devices (i.e., construction). Since horizontal directional drilling would occur outside of the allowed hours specified in the City of Watsonville noise ordinance, horizontal directional drilling near SR 152 and Walker Street would conflict with the City of Watsonville noise ordinance. Therefore, there would be a significant impact with respect to exposure of sensitive to noise levels in excess of standards found in the local noise ordinance.

Implementation of Mitigation Measure NOI-1b would require PV Water to provide temporary hotel accommodations for all residents who would like it within 200 feet of where nighttime drilling activities would occur, which is the approximate noise contour distance to the Santa Cruz County nighttime standard of 60 dBA $L_{eq}$. Although the boring site is not within the County of Santa Cruz, the County’s nighttime noise standard is used to determine which sensitive receptors should be offered hotel accommodations. However, since the construction activities would occur outside of the allowed construction hours specified in the City of Watsonville noise ordinance, this impact would remain significant and unavoidable with mitigation.

State Route 129 Crossing
Horizontal directional drilling near SR 129 would occur in unincorporated Santa Cruz County. There are single family residences located approximately 670 feet to the north of where horizontal directional drilling would occur during the crossing of SR 129. As shown in Table 3.8-6, these sensitive receptors would be exposed to noise levels of 60 dBA $L_{max}$ and 53 dBA $L_{eq}$ during the daytime hours and 57 dBA $L_{max}$ and 50 dBA $L_{eq}$ during the nighttime hours during Project construction. Since construction activities would not exceed the County’s daytime or nighttime noise standards, impacts related to exposure of sensitive receptors to noise levels in excess of standards found in the local noise ordinance would be less than significant.

State Route 1 Crossing
Horizontal directional drilling near SR 1 would occur entirely within an unincorporated area of Santa Cruz County. There are single family residences located approximately 1,150 feet to the north of where horizontal directional drilling would occur during the crossing of SR 1. As shown
in Table 3.8-6, these sensitive receptors would be exposed to noise levels of 61 dBA $L_{max}$ and 54 dBA $L_{eq}$ during the daytime hours and 51 dBA $L_{eq}$ and 44 dBA $L_{eq}$ during the nighttime hours during Project construction. Since construction activities would not exceed the County’s daytime or nighttime noise standards, impacts related to exposure of sensitive receptors to noise levels in excess of standards found in the local noise ordinance would be less than significant.

**Impact Conclusion**

Project-related construction activities at the weir structure and intake pump station, optional WTP site and trenchless pipeline construction near the Corralitos Creek, SR 129 and SR 1 would either occur within the allowed construction hours and/or generate noise levels below the allowed construction noise standards identified in their respective jurisdiction’s noise ordinance. Therefore, impacts at these sites would be less than significant.

Construction activities at the preferred WTP site, pipeline alignments (trench construction), and trenchless pipeline construction near SR 152 and Walker Street would expose nearby sensitive receptors to noise levels that would exceed the County of Santa Cruz construction noise standard or occur outside the allowed construction hours identified in the City of Watsonville noise ordinance. Implementation of Mitigation Measure NOI-1a is expected to attenuate construction noise levels by at least 5 dB; however, noise levels would not be reduced below the County of Santa Cruz construction noise standard. In addition, construction activities at boring sites within the city limits would occur outside of the allowed hours specified in the City of Watsonville noise ordinance due to 24-hour trenchless pipeline construction. Therefore, a significant impact would occur at these locations even with implementation of Mitigation Measures NOI-1a and NOI-1b, and as a result impacts at these Project sites would remain significant and unavoidable with mitigation.

**Mitigation Measure NOI-1a: Construction Noise Reduction Plan**

PV Water shall develop and implement a Construction Noise Reduction Plan prior to initiating construction at the weir structure and intake pump station, the preferred WTP site, College Lake pipeline (trench construction) and trenchless construction activities near SR 152 and Walker Street. A disturbance coordinator shall be designated for the Project to implement the provisions of the plan. At a minimum, the Construction Noise Reduction Plan shall implement the following measures:

- Distribute to the potentially affected residences and other sensitive receptors within 200 feet of the Project construction site boundaries notice including a “hotline” telephone number, which shall be attended during active construction working hours, for use by the public to register complaints. The notice shall identify the noise disturbance coordinator who would be responsible for responding to any local complaints about construction noise. The disturbance coordinator would determine the reason for the noise complaints and institute actions warranted to correct the problem, if any. All complaints shall be logged noting date, time, complainant’s name, nature of complaint, and any corrective action taken. The notice shall also include the construction schedule.

- All construction equipment shall have intake and exhaust mufflers recommended by the manufacturers thereof.
The use of impact and vibratory pile drivers is limited to the daytime and evening hours permissible under the County of Santa Cruz noise ordinance. All impact pile driving activities shall be restricted to the hours of 8:00 a.m. to 10:00 p.m.

Maintain maximum physical separation, as far as practicable, between noise sources (construction equipment) and sensitive noise receptors. Separation may be achieved by locating stationary equipment (such as generators) in areas that would minimize noise impacts on the community.

Impact tools (e.g., jack hammers, pavement breakers) used during construction activities shall be hydraulically or electrically powered to avoid noise associated with compressed air exhaust from pneumatically powered tools to the extent feasible. Where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust shall be used.

Use construction noise barriers such as paneled noise shields, blankets, and/or enclosures adjacent to noisy stationary and off-road equipment. Noise control shields, blankets and/or enclosures shall be made featuring a solid panel and a weather-protected, sound-absorptive material on the construction-activity side of the noise shield. This measure does not apply to pipeline construction.

**Mitigation Measure NOI-1b: Off-site Accommodations for Substantially Affected Nighttime Receptors**

PV Water shall offer to provide temporary hotel accommodations for all residences within 200 feet of where trenchless construction activities would occur at the SR 152 and Walker Street crossings. The accommodations shall be provided for the duration of nighttime drilling activities. PV Water shall provide accommodations reasonably similar to those of the impacted residents (e.g., in terms of number of beds).

**Impact NOI-2: Operation of the Project could result in a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance. (Less than Significant)**

The primary noise sources associated with Project operation would be onsite pumps and air compressors. Operational activities associated with the weir, intake pump station, and WTP could result in the exposure of nearby off-site sensitive receptors to noise levels that could exceed local noise standards. This analysis assumes that all pumps and air compressors would operate during both daytime and nighttime hours. Table 3.8-7 presents the potential Project-related noise levels that sensitive receptors could be exposed to during the operation of stationary noise sources at the weir structure, intake pump station, and WTP.

The proposed weir structure, intake pump station, and WTP would be located entirely within an unincorporated area of Santa Cruz County. As shown in Table 3.8-4, the County of Santa Cruz General Plan limits stationary noise sources (e.g., pumps and air compressors) to 50 dBA L_{eq} during the daytime hours and 45 dBA L_{eq} during the nighttime hours. Since all of the proposed pumps and air compressors are assumed to operate during both the daytime and nighttime hours, the County
Santa Cruz nighttime noise standard of 45 dBA $L_{eq}$ is used to evaluate whether the Project would generate noise levels in excess of standards established in the County’s general plan.

As shown in Table 3.8-7, none of the sensitive receptors near the pumps and air compressor at the proposed weir structure, intake pump station, or WTP (at either the preferred or optional site) would be exposed to noise levels that exceed the applied stationary nighttime noise standard found in the County of Santa Cruz General Plan. Therefore, impacts related to exposure of persons to, or generation of, noise levels in excess of the local general plan standards would be less than significant.

**Mitigation:** None required.

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<tr>
<th>Noise Source</th>
<th>Pump Noise Level at 3 feet (dBA $L_{eq}$)</th>
<th>Number of pumps</th>
<th>Distance to nearest Sensitive Receptor (feet)</th>
<th>Attenuated Noise Level (dBA $L_{eq}$)</th>
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<tbody>
<tr>
<td>Weir Structure and Intake Pump Station</td>
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<td>Hypo Storage &amp; Feed</td>
<td>65</td>
<td>2</td>
<td>370</td>
<td>16</td>
</tr>
<tr>
<td>Filter Influent Pump Station</td>
<td>85</td>
<td>5</td>
<td>370</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Combined Noise Level</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>41</td>
</tr>
<tr>
<td>County of Santa Cruz Stationary Nighttime noise Standard</td>
<td>45</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Exceed Threshold (Yes or No)?</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>No</td>
</tr>
</tbody>
</table>

**NOTES:**

a Pump reference noise levels and conceptual site plans provided by Carollo Engineers.

b Measured distance from the nearest sensitive receptor to the Project site to the proposed onsite pump station location.

c Assumed an attenuation rate of 7.5 dB per doubling of distance (i.e., soft site).

**SOURCE:** ESA, 2018 Ambient Noise Survey for the College Lake Integrated Resources Management Project, April 4, 2018; Carollo Engineers, Civil Site Plans for Preferred WTP Site and Optional WTP Site, November 2018.
Impact NOI-3: Project construction would generate excessive groundborne vibration. *(Less than Significant with Mitigation)*

Human annoyance and building damage are typically the primary issues concerning temporary construction impacts from vibration. Construction activities that typically result in temporary vibration impacts include impact pile driving, the use of large bulldozers, loaded trucks, and auger drills.

For adverse human reaction, the analysis applies the “severe” threshold of 0.4 in/sec PPV for continuous/frequent intermittent sources. According to the Caltrans’ *Transportation and Construction Vibration Manual*, continuous/frequent intermittent sources include compactors and vibratory compaction equipment. For risk of architectural damage to historic buildings and structures, the analysis applies a threshold of 0.25 in/sec PPV. A threshold of 0.5 in/sec PPV is used to assess damage risk for all other buildings. For purposes of this impact discussion, sensitive receptors include both people and structures. As discussed further in Section 3.10, Cultural Resources, there are previously recorded historic buildings immediately adjacent to the College Lake pipeline alignment. *Table 3.8-8* presents the maximum vibration levels (PPV) that nearby residences and historic structures could be exposed to during operation of onsite construction equipment at each of the Project sites.

**Weir Structure and Intake Pump Station**

Construction of the weir and intake pump station would require the use of an impact pile driver during construction. The nearest structure to the proposed weir and intake pump station construction area is the Our Lady Help of Christians church. During onsite impact pile driving, people at the church would be exposed to vibration level of 0.012 in/sec PPV. As shown in *Table 3.8-8*, none of the onsite construction equipment proposed at the weir and intake pump station construction area would expose the Our Lady Help of Christians church structure to vibration levels that would exceed the applied human annoyance or building damage thresholds. Therefore, the impact would be *less than significant*.

**Water Treatment Plant (Preferred and Optional Sites)**

Construction of the WTP would not require the use of construction equipment known to generate high vibration levels such as an impact pile driver. However, for this analysis it is conservatively assumed that off-road equipment used during Project construction would generate vibration levels equivalent to either a jackhammer or small dozer. The nearest residential structures to the preferred and optional WTP sites are located 40 and 470 feet, respectively, from the site boundaries. As shown in *Table 3.8-8*, none of the onsite construction equipment proposed at the WTP construction areas would expose nearby residential structures to vibration levels that would exceed the applied human annoyance or building damage thresholds. Therefore, the impact would be *less than significant*.

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16 Ibid.
### TABLE 3.8-8
**SUMMARY OF VIBRATION LEVELS AT SENSITIVE RECEPTORS DURING CONSTRUCTION**

<table>
<thead>
<tr>
<th>Type of Equipment</th>
<th>Distance to Nearest Historic Structure/Residence or Modern Structure (feet)</th>
<th>Reference Vibration level at 25 feet</th>
<th>Vibration Impact Contours (Feet)</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Historic and Some Old Buildings (0.25 PPV)</td>
<td>Strongly Perceptible (0.4 PPV)</td>
<td>Older Residential Structures (0.5 PPV)</td>
<td></td>
</tr>
<tr>
<td>Weir Structure and Intake Pump Station</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excavator(^a)</td>
<td>340/340</td>
<td>0.035</td>
<td>7</td>
<td>5</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Backhoe(^b)</td>
<td></td>
<td>0.035</td>
<td>7</td>
<td>5</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Fork Lift(^b)</td>
<td></td>
<td>0.003</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Impact Pile Driver</td>
<td></td>
<td>0.644</td>
<td>47</td>
<td>34</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Crane(^b)</td>
<td></td>
<td>0.003</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Preferred Water Treatment Plant Site</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excavator(^a)</td>
<td>40/40</td>
<td>0.035</td>
<td>7</td>
<td>5</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Dozers(^b)</td>
<td></td>
<td>0.003</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Scrapers(^a)</td>
<td></td>
<td>0.035</td>
<td>7</td>
<td>5</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Skip Loader(^b)</td>
<td></td>
<td>0.003</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Backhoe(^a)</td>
<td></td>
<td>0.035</td>
<td>7</td>
<td>5</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Fork Lift(^b)</td>
<td></td>
<td>0.003</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Crane(^b)</td>
<td></td>
<td>0.003</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Scissor Lift(^b)</td>
<td></td>
<td>0.003</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Paver(^a)</td>
<td></td>
<td>0.035</td>
<td>7</td>
<td>5</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Optional Water Treatment Plant Site</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excavator(^a)</td>
<td>470/470</td>
<td>0.035</td>
<td>7</td>
<td>5</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Dozers(^b)</td>
<td></td>
<td>0.003</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Scrapers(^a)</td>
<td></td>
<td>0.035</td>
<td>7</td>
<td>5</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Skip Loader(^b)</td>
<td></td>
<td>0.003</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Backhoe(^a)</td>
<td></td>
<td>0.035</td>
<td>7</td>
<td>5</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Fork Lift(^b)</td>
<td></td>
<td>0.003</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Crane(^b)</td>
<td></td>
<td>0.003</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Scissor Lift(^b)</td>
<td></td>
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<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Paver(^a)</td>
<td></td>
<td>0.035</td>
<td>7</td>
<td>5</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>College Lake Pipeline - Trench Construction</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excavator(^a)</td>
<td>10/25</td>
<td>0.035</td>
<td>7</td>
<td>5</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Skip Loader(^b)</td>
<td></td>
<td>0.003</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Backhoe(^a)</td>
<td></td>
<td>0.035</td>
<td>7</td>
<td>5</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Fork Lift(^b)</td>
<td></td>
<td>0.003</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Plate Compactor(^a)</td>
<td></td>
<td>0.035</td>
<td>7</td>
<td>5</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Paver(^a)</td>
<td></td>
<td>0.035</td>
<td>7</td>
<td>5</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Sweepers(^b)</td>
<td></td>
<td>0.003</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>College Lake Pipeline - Trenchless Construction</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drill Rig</td>
<td>10/35</td>
<td>0.089</td>
<td>13</td>
<td>9</td>
<td>8</td>
<td></td>
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<tr>
<td>Vibratory Pile Driver</td>
<td></td>
<td>0.17</td>
<td>19</td>
<td>14</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Crane(^b)</td>
<td></td>
<td>0.003</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Backhoe(^a)</td>
<td></td>
<td>0.035</td>
<td>7</td>
<td>5</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

**NOTES:**
- **Bold** = Exceeds applied building or human perception threshold damage threshold.
- PPV = Peak Particle Velocity
- \(^a\) Assumed the same vibration level as a jack hammer.
- \(^b\) Assumed the same vibration level as a small dozer.

College Lake Pipeline - Trench Pipeline Installation

Open-trench construction activities along the College Lake pipeline alignments would require the use of off-road construction equipment such as excavators, backhoes and pavers. For this analysis it is conservatively assumed that off-road equipment used during Project construction would generate vibration levels equivalent to either a jackhammer or small dozer. As shown in Table 3.8-8, residential and historic structures are expected to be as close as 25 and 10 feet from the College Lake pipeline alignments during trench construction, respectively. These structures would not be exposed to vibration levels that would exceed the applied human annoyance or building damage thresholds. Therefore, the impact would be less than significant.

College Lake Pipeline - Trenchless Pipeline Installation

Trenchless construction sites along the College Lake pipeline would require the use of a vibratory pile driver to install sheet piles at the pit areas and a horizontal directional drill to install pipe under roadways. During onsite construction, the nearest residences located 35 feet from onsite construction activities would be exposed to a vibration level of 0.103 in/sec PPV during vibratory pile driving and 0.053 in/sec PPV during horizontal directional drilling, which is below the applied human annoyance and modern building damage thresholds. There are historic or potentially historic buildings (e.g., 200 Walker Street) located as close as 10 feet to trenchless construction at the following intersections: East Lake Avenue/Palm Avenue/Hushbeck Avenue, East Beach Street/Lincoln Street, and 2nd Street/Walker Street. These historic or potentially historic buildings could be exposed to vibration levels of 0.672 in/sec PPV during vibratory pile driving and 0.352 in/sec PPV during horizontal directional drilling, which would exceed the historic building damage threshold. As shown in Table 3.8-8, the historic or potentially historic structures located potentially as close as 19 feet to the vibratory pile driver and 13 feet to the drill rig could be exposed to vibration levels that would result in building damage. Therefore, there would be a significant impact with respect to exposure of persons to, or generation of, excessive groundborne vibration. Implementation of Mitigation Measure NOI-2 would ensure that vibration generated during the construction of the pipeline alignments would not exceed the 0.25 in/sec PPV historic building damage threshold. Therefore, this impact would be less than significant with mitigation.

Mitigation Measure NOI-2: Vibration Monitoring Plan

Prior to construction, PV Water shall require the pipeline construction contractor to develop a Vibration Monitoring Plan in coordination with a structural engineer and geotechnical engineer if trenchless construction methods are used at the following intersections: East Lake Avenue/Palm Avenue/Hushbeck Avenue, East Beach Street/Lincoln Street, and 2nd Street/Walker Street. The Vibration Monitoring Plan shall include the following elements:

- To mitigate vibration, the Vibration Monitoring Plan shall include measures such that surrounding buildings will be exposed to less than 0.25 in/sec PPV for historic or potentially historic buildings to prevent building damage. Measures may include

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18 Ibid.
19 Ibid.
restricting the use of vibratory pile driving and drill rigs from operating within 13 and 19 feet from historic structures, respectively.

• With permission of applicable property owners, conduct a pre-construction survey of buildings and other sensitive structures within the area of potential effects due to vibration-generating activities. Respond to any claims by inspecting the affected property promptly, but in no case more than five working days after the claim was filed. Any new cracks or other changes in structure will be compared to preconstruction conditions and a determination made as to whether the Project could have caused such damage. In the event that the Project is demonstrated to have caused any damage, such damage will be repaired to the pre-existing conditions.

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**Cumulative Impacts**

**Impact C-NOI-1:** The Project, in combination with past, present, and probable future projects in the site vicinity, would have a cumulatively considerable impact associated with construction noise. *(Significant and Unavoidable with Mitigation)*

**Construction**

The geographic context for changes in the noise and vibration environment due to construction of the Project components would be localized in a rural area of Santa Cruz County and urban areas of the City of Watsonville. In order to contribute to a cumulative noise and vibration impact, another project in close proximity would have to be constructed or operational at the same time as the Project. There are numerous projects in several locations near the Project sites that are currently in the planning stages and could be constructed and operational in the foreseeable future. A list of cumulative projects located in the vicinity of the Project can be found on Figure 3.1-1. As shown on Figure 3.1-1, the closest cumulative projects to the Project are the Main Street Safety Project, Lincoln Street Safety Project, Corralitos Creek ADA Compliance Project, Highway 152 Improvements Project, Highway 152/Holohan Road/College Road Interchange Improvements Project, Elm Street Improvement Project and Ohlone Parkway Improvements Phase 2 Project.

As discussed in Impact NOI-1 and NOI-3, construction of the Project would expose existing sensitive receptors to noise levels that would conflict with Santa Cruz County’s municipal code or generate vibration levels that could result in building damage to sensitive structures. If Project-related activities were to coincide with construction activities associated with a nearby cumulative project, the combined effect could result in the exposure of off-site sensitive land uses to higher noise and vibration levels than what was predicted under the Project. The construction of the cumulative projects listed in Table 3.1-1 and shown on Figure 3.1-1 could result in construction equipment operating at the same time and close proximity to those used under the Project. Therefore, the Project’s contribution to cumulative construction noise and vibration impacts would be significant. Although implementation of Mitigation Measure NOI-2 would ensure that vibration generated during the construction of the pipeline alignments would not exceed the applied 0.25 in/sec PPV historic building damage threshold, construction noise generated by the Project would remain above the County of Santa Cruz construction noise standard even with this
the implementation of Mitigation Measures NOI-1a and NOI-1b. Therefore, impacts at the Project sites would remain *significant and unavoidable with mitigation*.

**Operation**

As discussed in Impact NOI-2, operation of the Project would not expose the nearest sensitive receptor to noise levels that would conflict with either the Santa Cruz County or City of Watsonville general plans or result in a substantial permanent increase in ambient noise levels. None of the projects identified in the cumulative scenario that would be located in close proximity to the Project area would have operational noise and themselves be expected to generate substantial sources of operational noise. Therefore, a cumulatively significant operational noise impact would not be expected, and the Project’s contribution to cumulative operational noise impacts would be *less than significant*.

**Mitigation Measure NOI-1a: Construction Noise Reduction Plan** (refer to Impact NOI-1)

**Mitigation Measure NOI-1b: Off-site Accommodations for Substantially affected Nighttime receptors** (refer to Impact NOI-1)

**Mitigation Measure NOI-2: Vibration Monitoring Plan** (refer to Impact NOI-3)
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3.9 Transportation and Traffic

This section presents an analysis of potential impacts related to transportation and traffic that would result from implementation of the proposed College Lake Integrated Resources Management Project (Project). The analysis includes both site options (preferred and optional) for the water treatment plant (WTP) as well as preferred and optional pipeline alignments for the College Lake pipeline. Information from the 2014 Basin Management Plan Update Program Environmental Impact Report (2014 BMP Update PEIR) that remains relevant and accurate for the purposes of describing the physical or regulatory setting of transportation and circulation has been incorporated as appropriate. The Project includes mitigation measures adopted by the Board of Directors to reduce the severity and magnitude of environmental effects.

3.9.1 Setting

The 2014 BMP Update PEIR Section 3.11.1 describes existing transportation and circulation conditions in the Project region. Regional environmental setting information from the 2014 BMP Update PEIR is summarized here. This section also describes transportation and traffic information specific to the Project area.

3.9.1.1 Regional and Local Roadways

The Project, which includes the College Lake water storage area, proposed weir structure and intake pump station, WTP, and College Lake pipeline, would be located in portions of the City of Watsonville (City) and unincorporated Santa Cruz County (see Figure 2-1 in Chapter 2, Project Description). Regional access to the various Project components would be provided via State Route (SR) 1, SR 152, and SR 129, all of which are designated as truck routes by the California Department of Transportation (Caltrans). Traffic volumes and other roadway characteristics for regional roadways are provided below. Refer to Figures 2-3a through 2-3e in Chapter 2 for the locations of roadways described in this section.

SR 1 is a four-lane divided freeway in the Project area. Direct access to SR 1 is provided by SR 129 and SR 152. SR 1 in the vicinity of the Project carried between 37,000 and 53,000 average daily traffic (ADT) in 2016. According to Caltrans, peak-hour congestion levels are low on SR 1 in the vicinity of the Project.

SR 129 (Riverside Drive/Chittenden Road) provides east-west access through the Project area, providing connection between SR 1 (in Watsonville) and US 101. Approximately 2,000 feet east of Murphy Crossing Road (near Graniterock A.R. Wilson Quarry and Chittenden Pass), SR 129 is characterized by numerous curves, frequent changes in elevation, and narrow shoulders. In winter, rockfalls and mudslides commonly result in temporary closure of SR 129 in the gap. The majority of SR 129 is two lanes, except in downtown Watsonville, where it is four lanes.

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1 Caltrans, California Truck Network Map, 2018.
3 Caltrans, State Route 1 Transportation Concept Report, June 2017.
carried between 12,900 and 20,300 ADT in the vicinity of the Project in 2016. According to Caltrans, peak hour congestion levels are low to moderate on SR 129 in the vicinity of the Project.⁴

**SR 152** provides east-west access through the Project area, stretching east from SR 1 to the Central Valley. In the western portion of the Project area, SR 152 runs through Watsonville (along Main Street, East Beach Street, Lincoln Street, and East Lake Avenue) to Hecker Pass and Santa Clara County. Due to the winding nature of SR 152 over Hecker Pass, signs are posted prohibiting trucks over 45 feet in length from using that portion of the highway. The majority of SR 152 is two lanes, except in downtown Watsonville, where it is four lanes. SR 152 carried between 16,300 and 26,700 ADT in the vicinity of the Project in 2016. According to Caltrans, peak hour congestion levels are moderate to high on SR 152 in the vicinity of the Project.⁵

Local access to the proposed weir structure and intake pump station, and the WTP would be provided primarily by Holohan Road, a two-lane road. Holohan Road extends west from SR 152 to Green Valley Road and areas along Freedom Boulevard. In addition, the College Lake pipeline would be constructed within the right-of-way of the following local roadways:

- Holohan Road
- Wagner Avenue
- Mohovy Street
- Dolores Avenue
- Martinelli Street
- California Street
- Tuttle Avenue
- Tharp Avenue
- Palm Avenue
- Hushbeck Avenue
- East and West Beach Street
- Lincoln Street
- Maple Avenue/2nd Street
- Pine Street
- Clearwater Lane or Harvest Drive⁶

**Bicycle and Pedestrian Facilities**

Bicycle lanes are currently present on Holohan Road in the vicinity of the weir structure and intake pump station, and the WTP.⁷ There are also bicycle lanes on West Beach Street between Walker Street and Lee Road, which is along the proposed College Lake pipeline route. Existing pedestrian facilities in the vicinity of the weir structure and intake pump station and the WTP sites are limited; there are sidewalks on the north side of Holohan Road and College Road, and on the east side of SR 152 near St. Francis High School and Lakeview Middle School. Most roadways along the proposed College Lake pipeline route have sidewalks on at least one side of the roadway; portions of Beach Street and Clearwater Lane at the south end of the proposed alignment do not have any sidewalks.

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⁵ Caltrans, *State Route 152 Transportation Concept Report*, June 2017.
⁶ If the optional pipeline route is selected, pipeline construction would occur within the Harvest Drive right-of-way between Beach Street and SR 129 instead of Clearwater Lane.
⁷ Santa Cruz County Regional Transportation Commission, *Santa Cruz County Bike Map*, 2016.
Public Transit

The Santa Cruz Metropolitan Transit District (Santa Cruz Metro) provides public transit service in the Project area. Santa Cruz Metro operates fixed-route bus service and Paratransit service throughout Santa Cruz County. Route 79, which operates hourly Monday through Friday between 7:30 a.m. and 5:30 p.m. and three runs on weekends, connects Pajaro and East Lake via Downtown Watsonville.8 The nearest bus stop to the weir structure and intake pump station, and the WTP, is located approximately 500 feet to the south on the northeast corner of the SR 152/Holohan Road/College Road intersection. Route 79 stops at the Watsonville Transit Center, which provides access to other routes serving destinations throughout Santa Cruz County.

3.9.2 Regulatory Framework

3.9.2.1 Federal

Federal Aviation Administration

All airports and navigable airspace not administered by the United States Department of Defense are under the jurisdiction of the Federal Aviation Administration (FAA). Federal Regulation Title 14 Section 77 establishes the standards and required notification for objects affecting navigable airspace. In general, projects involving features exceeding 200 feet in height above ground level or extending at a ratio greater than 50:1 (horizontal to vertical) from a public or military airport runway less than 3,200 feet long out to a horizontal distance of 20,000 feet are considered potential obstructions, and require notification to the FAA. In addition, the FAA requires a congested area plan for operating a helicopter (with external load) near residential dwellings.

Transportation of Hazardous Materials

The U.S. Department of Transportation is the administering agency for the following regulations:

- Title 49 Code of Federal Regulations (CFR) Sections 171 through 177 (49 CFR 171–177), which govern the transportation of hazardous materials, the types of materials defined as hazardous, and the marking of transportation vehicles.

- Title 49 CFR 350–399 and Appendices A through G, Federal Motor Carrier Safety Regulations, which address safety considerations for the transport of goods, materials, and substances over public highways.

- Title 49 CFR 397.9, the Hazardous Materials Transportation Act of 1974, which directs the U.S. Department of Transportation to establish criteria and regulations for the safe transportation of hazardous materials.

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8 Santa Cruz Metro, Route 79 Pajaro/East Lake schedule and map, effective March 9, 2018.
3.9.2.2 State

California Department of Transportation

Caltrans is responsible for planning and maintaining state routes, highways, and freeways. Caltrans maintains jurisdictional authority of SR 1, SR 129, and SR 152 in the Project area. Caltrans has developed the Guide for the Preparation of Traffic Impact Studies for use when assessing potential traffic impacts on state facilities. This guide identifies peak hour trip generation thresholds for state facilities that, if triggered, would require the preparation of a Traffic Impact Study, the scope of which would be established in consultation with Caltrans. Since the Project would not generate a substantial number of peak hour construction or operational trips in relation to existing volumes on state facilities (refer to Impact TRA-1 discussion), it does not meet the criteria established by Caltrans to prepare a Traffic Impact Analysis. Therefore, a detailed analysis of traffic impacts on state facilities, other than that presented in the discussion of Impact TRA-1 below, is not required.

Senate Bill 743

With the adoption of the Senate Bill 375 in 2008, the State Legislature signaled its commitment to encourage land use and transportation planning decisions and investments to reduce vehicle miles traveled and thereby contribute to the reduction of greenhouse gas emissions, as required by the California Global Warming Solutions Act of 2006 (Assembly Bill 32).

On September 27, 2013, Senate Bill 743 was signed into law. Senate Bill 743 started a process that could fundamentally change transportation impact analysis as part of California Environmental Quality Act (CEQA) compliance. These changes include the elimination of auto delay, Level of Service, and other similar measures of vehicular capacity or traffic congestion as a basis for determining significant impacts in many parts of California (if not statewide). Senate Bill 743 required the Office of Planning and Research to propose revisions to the CEQA Guidelines establishing new criteria to “promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses.” (Public Resources Code Section 21099(b)(1).)

The new CEQA Guidelines section 15064.3, subdivision (b) was adopted in December 2018 by the California Natural Resources Agency. These revisions to the CEQA Guidelines criteria for determining the significance of transportation impacts are primarily focused on projects within transit priority areas, and shifts the focus from driver delay to reduction of greenhouse gas emissions, creation of multimodal networks, and promotion of a mix of land uses (which in turn reduces vehicle trips). Vehicle miles traveled, or VMT, is a measure of the total number of miles driven to or from a development and is sometimes expressed as an average per trip or per person.

The newly adopted guidance provides that a lead agency may elect to be governed by the provisions of this section immediately. Beginning on July 1, 2020, the provisions of this section shall apply statewide. Santa Cruz County and the City are currently engaged in this process and have not yet formally adopted its updated transportation significance thresholds or its updated transportation impact analysis procedures. Since the regulations of SB 743 have not been

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3. Environmental Setting, Impacts, and Mitigation Measures

3.9 Transportation and Traffic

finalized or adopted by the County or the City, automobile delay remains the measure used to determine the significance of a traffic impact. As a lead agency, Pajaro Valley Water Management Agency (PV Water) may elect to develop its own significance thresholds or may opt to use the thresholds of “host” jurisdictions (i.e., for projects within the City of Watsonville, PV Water would use the City’s thresholds).

3.9.2.3 Local

Table 2-10 in Chapter 2, Project Description, identifies the approvals from Santa Cruz County and/or the City required for the Project. Table 3.9-1 presents pertinent local plans and policies regarding transportation and traffic to support County and City consideration of project consistency with general policies. In some cases, local policies are used in this EIR as criteria to determine the significance of physical effects on the environment (e.g., Impact NOI-1 in Section 3.8, Noise and Vibration).

City of Watsonville Trails and Bicycle Master Plan and the Santa Cruz County Bicycle Plan

The City of Watsonville Trails and Bicycle Master Plan was prepared to develop a framework for building an integrated system of pathways and bikeways that will link residents to the outdoors. Building upon past planning efforts and existing facilities, the Trails and Bicycle Master Plan contains detailed trail and bikeway recommendations and guidelines, which together form a comprehensive non-vehicular circulation network. The Santa Cruz County Bicycle Plan consolidates into one document all bicycle-related County plans and projects that are currently identified in the County’s General Plan, the Santa Cruz County Regional Transportation Plan, and other local documents. Bicycle facilities are defined in these two planning documents using three different classifications as follows:

Class I Bikeway: A dedicated off-road bicycle and/or pedestrian path (typically multi-use path), which provides for bicycle travel on a paved right-of-way completely separated from any street or highway.

Class II Bikeway: A dedicated bike lane on a street and/or highway (not a sidewalk), with signing and pavement markings separating the bicycle lane from adjacent traffic flow.

Class III Bikeway: Dedicated bike routes that provide for shared use with pedestrian or motor vehicle traffic and are identified by signing.

Bicycle facilities in the Project area are identified above in Section 3.9.1.1.

California Government Code Section 53091 exempts agencies like PV Water from complying with local building and zoning ordinances when locating or constructing facilities for the production, generation, storage, treatment, or transmission of water. California Government Code Section 65402(c) requires that PV Water notify cities and counties of its plans to construct projects or to acquire or dispose of property. The planning agency then has 40 days to determine project consistency with its general plan. If the planning agency disapproves, the disapproval may be overruled by PV Water.

City of Watsonville, City of Watsonville Trails & Bicycle Master Plan for the Watsonville Scenic Trails Network, November 2012.

County of Santa Cruz, Santa Cruz County Bicycle Plan, March 2011.
3. Environmental Setting, Impacts, and Mitigation Measures

3.9 Transportation and Traffic

**Table 3.9-1**

<table>
<thead>
<tr>
<th>Local Plans and Policies Relevant to the Project</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>City of Watsonville Plans and Policies</strong></td>
</tr>
</tbody>
</table>

**Watsonville General Plan**

*Goal 10.1: Street and Highway Facilities.* Plan and provide for a safe, efficient, and environmentally sensitive network of streets and highways for movement of people and goods.

*Goal 10.9: Utility Routing.* Ensure the adequate provision of necessary public utilities in a way which minimizes their visual impacts and potential hazards to the safety of residents.

**Implementation Measure 10.B.2 SR 129: Truck Route.** The City shall continue to encourage the use of SR 129 as the designated east-west truck route. Encourage the addition of two lanes from Union to Lakeview.

**Implementation Measure 10.B.3 SR 152: Scenic Corridor.** The City shall support the designation of SR 152 as a scenic corridor from SR 1 east to the Santa Cruz County line. To this effect, the City shall support measures to prohibit large trucks on scenic SR 152. Encourage the addition of two lanes from Holohan Road to Lincoln Street.

**Watsonville Municipal Code**

Title 7 (Public Works) of the Watsonville Municipal Code contains three chapters that detail the City’s regulations regarding the use of roads and the construction of utilities infrastructure, including encroachments. They are: Chapter 1 (Streets Excavation), Chapter 2 (Sidewalks, Driveways, Curbs, and Gutters), and Chapter 5 (Underground Utilities). Numerous regulations may be applicable to the Project via the encroachment permit process, including regulations regarding the use of roadways, the type of vehicles and load sizes allowable on given roadways, encroachment on private property, and the construction of utilities infrastructure. The Municipal Code applies to all roads within the City’s jurisdiction, and project construction must adhere to all ministerial regulations presented in the Municipal Code.

**Santa Cruz County Plans and Policies**

**Santa Cruz County Code**

Title 9 (Roads, Vehicles, and Traffic), Chapter 9.7 (Streets and Roads) of the Santa Cruz County Municipal Code details the County’s regulations regarding the use of roads and the construction of utilities infrastructure, including encroachments. Numerous regulations may be applicable to the Project via the encroachment permit process, including regulations regarding the use of roadways, the type of vehicles and load sizes allowable on given roadways, encroachment on private property, and the construction of utilities infrastructure. The County Code applies to all roads within the County’s jurisdiction, and project construction must adhere to all ministerial regulations presented in the County Code.


3.9.3 Impacts and Mitigation Measures

3.9.3.1 Significance Criteria

In accordance with the CEQA, state CEQA Guidelines (including Appendix G), relevant plans, policies, and/or guidelines, and agency standards, the Project could have a significant impact if it were to:

- Conflict with an applicable program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities;

- Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b);

- Substantially increase hazards due to a geometric design feature (e.g. sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment); and/or

- Result in inadequate emergency access.

In addition to the above-listed criteria, the following criteria are derived from common engineering practice to apply to the project-specific analysis presented herein:
- Substantially increase traffic safety hazards due to increased traffic volumes; or
- Cause substantial damage or wear of public roadways by increased movement of heavy vehicles.

The following topics are not analyzed further in this section for the reasons described below:

- **Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities.** In 2000, the Santa Cruz County Regional Transportation Commission exercised its right on behalf of the local jurisdictions in Santa Cruz County to be exempt from preparation and implementation of a Congestion Management Plan. As a result, none of the roadways in the Project area are subject to Congestion Management Plan-established Level of Service standards. Therefore, this criterion is not discussed further. Furthermore, the Project would not directly or indirectly eliminate alternative transportation corridors or facilities (e.g., bike paths, lanes, bus turnouts, etc.) both because of Project site locations and because of the short-term nature of construction activities where potential effects could occur. In addition, the Project would not include changes in policies or programs that support alternative transportation. Therefore, the Project would not conflict with adopted policies, plans, or programs supporting alternative transportation, and this significance criterion is not discussed further.

- **Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b).** As discussed in Section 3.9.2, Regulatory Framework, the provisions of this section shall apply statewide in July 1, 2020. Since no VMT thresholds have been adopted yet, no further analysis is required and no impacts related to CEQA Guidelines section 15064.3, subdivision (b) would occur.

- **Increased hazards due to a geometric design feature or incompatible uses.** The Project would not include new design features (e.g., new facilities or obstructions within public roadways) or alterations of existing features (e.g., road realignment) that could increase operations-phase transportation hazards. In addition, traffic generated by the Project would be compatible with the mix of vehicle types (automobiles and trucks) currently using roads in the Project area. Therefore, the Project would not result in transportation hazards caused by a design feature or incompatible use, and this significance criterion is not discussed further.

### 3.9.3.2 Methodology

As described in Section 3.1, this EIR provides an independent analysis of the Project’s potential environmental impacts. The Board of Directors (Resolution 2014-05) adopted one mitigation measure from the 2014 BMP Update PEIR for the purpose of reducing impacts related to transportation and traffic:

- **TR-1:** Conduct a preconstruction survey of road conditions on key access routes to the project sites (e.g., San Andreas Road). The pavement conditions of local streets judged to be in good condition for use by heavy truck traffic shall be monitored. Roads damaged by construction shall be repaired to a structural condition equal to, or better than, that which existed prior to construction activity.

This adopted mitigation measure is considered part of the Project and thus is considered prior to any significance determinations. Potential impacts are evaluated in the following section. If warranted, additional mitigation is included and takes the form of (1) modifications to update Mitigation
Measure TR-1 to reflect current conditions and site-specific impacts; or (2) new mitigation measures to replace or augment an adopted mitigation measure.

The evaluation of transportation and traffic impacts is based on the development assumptions for the Project, as described in Chapter 2, *Project Description*. The number of construction trips associated with the Project was quantified, taking into account the estimated construction schedule and the number of truck trips and worker trips assumed to occur in each construction phase.

Operation of the Project would add up to two new employees, which would generate approximately four new one-way daily trips. The routine maintenance activities within College Lake (e.g., sediment and debris removal, vegetation management) described Chapter 2, *Project Description*, would occur annually or semi-annually and would generate approximately 1,300 truck trips per year, or up to 33 new one-way daily trips over a 40-day period. Sediment removal would require an estimated 52 off-haul truck trips per year with a maximum of two new one-way trips per day over a 26-day period. In total, operation and maintenance would generate a maximum of 39 daily one-way vehicle trips, which is far less than would be generated by Project construction (see below). Due to the minimal amount of trips generated by operational and maintenance activities, the impact evaluation for operational activities is predominantly qualitative in nature.

Specific construction assumptions related to transportation and circulation are outlined below for each of the components that comprise the Project. The Project facilities would be constructed over a period of approximately 18 months beginning in 2022 and ending in 2023. The approximate duration of construction activities would vary by Project component as follows: WTP – 16 months\(^{13}\), proposed weir structure and intake pump station – 16 months excluding pre-commissioning and taking into account a 4-month break between November and May when the site would be winterized and no construction would occur within the Salsipuedes Creek channel, College Lake pipeline – 13 months. Refer to Table 2-5 in Chapter 2, *Project Description* for more detail about construction schedule. Construction work would typically occur during normal working hours Monday through Saturday between the hours of 8:00 a.m. and 5:00 p.m. Exceptions would include construction of the proposed weir structure and intake pump station, which would occur seven days per week between the hours of 7:00 a.m. and 7:00 p.m., and trenchless pipeline construction, which could occur for up to 24 hours per day and several days in a row.

**Weir Structure, Intake Pump Station, and Water Treatment Plant Construction**

Trucks traveling to and from the proposed weir structure, intake pump station, and WTP construction areas are anticipated to travel to and from Holohan Road to SR 1 using SR 152 and Airport Boulevard. Construction debris and recyclable material would be transported from the Project sites to the Buena Vista Landfill. Trucks exiting the WTP and weir construction sites would travel west on Holohan Road, continue onto Airport Boulevard, turn right onto Ranport Road, and turn left onto Buena Vista Drive to arrive at the landfill. As noted in Chapter 2, *Project Description*, construction staging and laydown for the proposed weir structure and intake pump

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\(^{13}\) Schedule based on construction of grading and surcharging fill pad for the preferred WTP site. The duration of surcharging for the optional WTP site would be increased by 12 to 18 months to allow for consolidation of fill pad at that site. There would be no construction activity at the site during consolidation. The remainder of the construction phase durations for the WTP would be the same for both site options.
station would occur within an approximately 0.6-acre area surrounding the facilities. Construction staging and laydown for the proposed WTP would consist of the WTP site (either preferred or optional); a construction disturbance area (e.g., to accommodate heavy equipment movement for site grading) would also occur within up to 30 feet from the WTP site boundary, although Salsipuedes Creek, the Pinto Creek drainage ditch, and Holohan Road would be avoided.

**College Lake Pipeline Installation**

The installation of 5.5 miles of 24-inch-diameter pipeline connecting the WTP to the Coastal Distribution System would affect traffic flow by temporarily reducing the capacity of the affected roads because of lane closures. As noted above, local roadways that would be affected are: Holohan Road, Wagner Avenue, Mohovy Street, Dolores Avenue, Martinelli Street, California Street, Tuttle Avenue, Tharp Avenue, Palm Avenue, Hushbeck Avenue, East Beach Street, West Beach Street, Lincoln Street, Maple Avenue, 2nd Street, Pine Street, and Clearwater Lane or Harvest Drive.\(^\text{14}\) Pipeline segments that would cross state highways (i.e., SR 152, SR 129, SR 1) would be constructed using a trenchless technique that would avoid lane closures on such facilities where feasible.\(^\text{15}\) Pipeline construction is estimated to occur at installation rates of approximately 100 linear feet per day for urban areas, meaning that lane closures affecting local roadways would be temporary and short in duration.

Delivery trucks would use streets in the immediate area of the College Lake pipeline installation to access the construction corridor within the city. Staging and laydown for pipeline construction would occur primarily within the width of the construction corridor and along the proposed pipeline route.

**3.9.3.3 Impacts and Mitigation Measures**

**Impact TRA-1: Construction of the Project would have temporary and intermittent effects on traffic and transportation conditions in the Project area. (Less than Significant with Mitigation)**

The 2014 BMP Update PEIR identified short-term traffic increases associated with the following activities: trucks hauling equipment and materials to the site; trucks hauling excavated materials from the site; trucks importing new fill to the site; and the daily arrival/departure of construction workers to the sites. It concluded that construction of the proposed improvements would be temporary, and therefore, would not result in any long-term degradation in operating conditions or level of service for roadways. Furthermore, construction trucks hauling materials to and from the Project sites would result in short-term and intermittent reduction of roadway capacities due to slower movements and larger turning radii of the trucks compared to passenger vehicles. Overall, the 2014 BMP Update PEIR concluded that the Project would result in a less-than-significant impact with regard to temporarily increased traffic on area roadways from project generated vehicle trips by construction workers and construction vehicular activities. As such, no

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\(^\text{14}\) If the optional pipeline route is selected, pipeline construction would occur within the Harvest Drive right-of-way between Beach Street and SR 129 instead of Clearwater Lane.

\(^\text{15}\) Trenchless construction at the Palm Avenue/SR 152/Hushbeck Avenue intersections may be infeasible based on roadway geometry.
mitigation measures were proposed. This impact determination assumed that PV Water would include Construction Traffic Minimization Practices into plans and contract specifications. Because PV Water did not adopt Construction Traffic Minimization Practices, many of the standard practices have been included as part of Mitigation Measure TRA-1b, below.

The Project would not introduce any uses to the Project area that would generate noticeable long-term changes in traffic; operational traffic would be limited to four one-way daily trips made by two new employees and infrequent trips by maintenance personnel (i.e., up to 35 one-way daily trips) to remove sediment and debris from the Project sites. Thus potential traffic and transportation effects would be confined to construction of the proposed facilities. Construction-generated traffic would be temporary and therefore would not result in any long-term degradation in operating conditions or level of service on any roadways in the Project area. The primary impacts from the movement of construction trucks would include short-term and intermittent lessening of roadway capacities due to slower movements and larger turning radii of the trucks compared to passenger vehicles.

Construction activities conducted for the Project could result in increased traffic volumes on area roadways generated by the daily arrival and departure of constructions workers, and by trucks hauling equipment and materials to and from the construction sites. As a worst-case scenario, worker and construction trips for all Project components were assumed to occur simultaneously. Table 3.9-2 shows the total number of one-way, daily worker and truck trips that could potentially occur during the peak of construction activity. The Project would generate an estimated maximum of 110 one-way worker trips per day, and a maximum of 231 one-way truck trips per day. The import and export of fill material would represent the bulk of all construction traffic, and would only occur for abbreviated periods as indicated in the table.

<table>
<thead>
<tr>
<th>Project Component</th>
<th>Total Number of Days</th>
<th>Number of Peak Haul Days</th>
<th>Peak Daily One-Way Trips</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Workers</td>
</tr>
<tr>
<td>Weir and Intake Pump Station*a</td>
<td>210</td>
<td>15</td>
<td>36</td>
</tr>
<tr>
<td>Treatment Plant</td>
<td>360</td>
<td>40</td>
<td>52</td>
</tr>
<tr>
<td>College Lake to CDS Pipeline</td>
<td>200</td>
<td>100</td>
<td>22</td>
</tr>
<tr>
<td>Total</td>
<td><strong>110</strong></td>
<td><strong>231</strong></td>
<td></td>
</tr>
</tbody>
</table>

**NOTES:**

*a Assumes same crew for weir and intake pump station.

SOURCE: Carollo Engineers, Request for Information, e-mail from R. Gutierrez, November 16, 2018.

However, given the different locations of the distinct Project components (especially the pipeline), increased traffic generated by construction activities associated with these temporarily overlapping construction phases generally would not use the same roadways. As such, the impact of increased traffic on traffic and transportation conditions for these Project components generally would not be additive. An exception would be the potential concurrent use of SR 1 and/or SR 152, which would be the primary routes used for regional access to all work sites by the construction workforce, and Holohan Road, which would be the primary access route for construction haul trucks and deliveries to the proposed weir structure, intake pump station, and WTP site.
3.9 Transportation and Traffic

Based on the existing ADT volumes on SR 1 and SR 152 noted in Section 3.9.1 and the estimated number of construction-related project trips shown in Table 3.9-2, the concurrent construction activities would increase the ADT volume on regional roadways by no more than 0.01 percent (i.e., too small of a change to be perceived by the average motorist). Traffic increases on local roads would be more noticeable, but the roadways would continue to accommodate traffic within the roadways’ carrying capacity with no discernable effect on level of service. Proposed hours of construction are generally between 8:00 a.m. and 5:00 p.m. Truck trips related to off-hauling of excavated material from pipeline trenching and deliveries of equipment and materials would be dispersed over the course of the day, thus lessening the effect on traffic flow conditions. Construction workers traveling to/from the Project sites on weekdays during the hours of 7:00 to 9:00 a.m. and 4:00 to 6:00 p.m. would coincide with peak-period traffic, and therefore, would have the greatest potential to impede traffic flow. While the construction contractor for each Project component would likely schedule truck trips to avoid peak traffic hours on area roadways, dispersion of the 341 one-way construction vehicle trips (110 worker trips and 231 truck trips) over the course of the nine-hour workday would cause less-than-significant impacts on traffic flow during any specific hour. Even if all construction vehicle trips were to occur on a single roadway segment, that would still only amount to an average of an additional 38 hourly vehicle trips, which would not result in any discernable effect on roadway operations. The primary impacts from the movement of construction trucks would include short-term and intermittent lessening of roadway capacities due to slower movements and larger turning radii of the trucks compared to passenger vehicles. In addition, drivers could experience delays if they were traveling behind a construction truck.

Implementation of new Mitigation Measures TRA-1a and TRA-1b, as outlined below, would require compliance with local road encroachment permit conditions, preparation of a Traffic Control Plan, identification of roadways that require special construction techniques, development of a circulation and detour plan, and consultation with local transit service providers. With implementation of Mitigation Measures TRA-1a and TRA-1b, impacts related to temporary and intermittent effects on traffic and transportation conditions in the Project area would be reduced to less than significant.

**Mitigation Measure TRA-1a: Encroachment Permits**

PV Water shall require the construction contractor to obtain any necessary road encroachment permits from the appropriate local jurisdiction (i.e., City of Watsonville, Santa Cruz County) prior to constructing each Project component and shall comply with the conditions of approval attached to all Project permits and approvals.

**Mitigation Measure TRA-1b: Construction Traffic Control/Traffic Management Plan**

PV Water shall require the construction contractor to prepare a Construction Traffic Control/Traffic Management Plan and submit it to the appropriate local jurisdiction (i.e., City of Watsonville, Santa Cruz County) for review and approval prior to construction. The plan shall be prepared in accordance with professional engineering standards and may include, but not be limited to, the following elements as appropriate:

- Identify hours of construction for each Project component.
3.9 Transportation and Traffic

- Schedule truck trips outside of peak morning and evening commute hours when feasible to minimize adverse impacts on traffic flow if agencies with jurisdiction over the affected roads identify highly congested roadway segments during their review of the encroachment permit applications. Haul routes that minimize truck traffic on local roadways and residential streets shall be used.

- Develop circulation and detour plans to minimize impacts on local street circulation. This may include the use of signing and flagging to guide vehicles, bicyclists, and pedestrians through and/or around the construction zone.

- Control and monitor construction vehicle movements by enforcing current standard construction specifications as defined by the appropriate local jurisdiction (i.e., City of Watsonville, Santa Cruz County) through periodic onsite inspections by the construction contractor.

- Install traffic control devices where traffic conditions warrant, as specified in the applicable jurisdiction's standards (e.g., the California Manual of Uniform Traffic Controls for Construction and Maintenance Work Zones).

- Perform construction that crosses on-street and off-street bikeways, sidewalks, and other walkways in a manner that allows for safe access for bicyclists and pedestrians. Alternatively, provide safe detours to reroute affected bicycle/pedestrian traffic.

- Consult with the Santa Cruz Metro at least one month prior to construction to coordinate bus stop relocations (as necessary) and to reduce potential interruption of transit service.

- Comply with roadside safety protocols to reduce the risk of accidents, as defined in the Caltrans Division of Construction Code of Safe Practices and the California Manual of Uniform Traffic Controls for Construction and Maintenance Work Zones. Provide "Road Work Ahead" warning signs and speed control (including signs informing drivers of state-legislated double fines for speed infractions in a construction zone) to achieve required speed reductions for safe traffic flow through the work zone.

- Store all equipment and materials in designated contractor staging areas.

- Encourage construction crews to park at staging areas to limit lane closures in the public rights-of-way.

- Include a plan and implementation process for notifications and a process for communication with affected residents and businesses prior to the start of construction. Advance public notification shall include posting of notices and appropriate signage of construction activities at least one week in advance. The written notification shall include the construction schedule, the exact location and duration of activities within each street (i.e., which lanes and access point/driveways would be blocked on which days and for how long), and a toll-free telephone number for receiving questions or complaints.

- Include a plan and implementation process to coordinate all construction activities with emergency service providers in the area at least one month in advance. Emergency service providers shall be notified of the timing, location, and duration of construction activities. All roads shall remain passable to emergency service vehicles at all times.
• Include a plan and implementation process to coordinate all construction activities with the Pajaro Valley Unified School District at least two months in advance. The Pajaro Valley Unified School District shall be notified of the timing, location, and duration of construction activities. PV Water shall coordinate with the Pajaro Valley Unified School District to identify peak circulation periods at schools along the College Lake pipeline alignment (i.e., the arrival and departure of students), and require their contractor to avoid construction and lane closures during those periods, if feasible. The construction contractor for each Project component shall be required to ensure that construction of the Project component does not inhibit vehicle, bicycle, pedestrian, and/or school bus service through inclusion of such provisions in the construction contract. The assignment of temporary crossing guards at designated intersections may be needed to enhance pedestrian safety during Project construction.

• Identify all roadway locations where special construction techniques (e.g., trenchless pipeline installation or night construction) will be used to minimize impacts on traffic flow. Require all open trenches and pits be covered with metal plates at the end of each workday to accommodate traffic and access.

Impact TRA-2: Construction of the Project would temporarily disrupt circulation patterns near sensitive land uses (schools, hospitals, fire stations, police stations, and other emergency providers). *(Less than Significant with Mitigation)*

The Project would result in temporary effects on traffic flow, particularly with pipeline construction within a road right-of-way. Open-trench pipeline construction within road rights-of-way would require the closure of one travel lane and shoulder (or parking lane), with one-way traffic control around the construction area on two-lane roads. Trenchless (i.e., horizontal directional drilling, jack and bore) pipeline construction would also require the closure of one travel lane and shoulder, but for much shorter segments of roadway that would accommodate the entry and exit points. The exception is the intersection of East Lake Avenue/Palm Avenue/Hushbeck Avenue, where geometric constraints may require full roadway closures at Palm Avenue and Hushbeck Avenue at the pipeline entry and exit points. These temporary full-road closures could last for up to one week, although the roadways would be open during non-construction hours using metal plates to cover the pits. Pipeline construction within or across streets could result in delays for emergency vehicle access, and would also obstruct pedestrian, bicycle, and vehicle access to schools. Construction along the pipeline alignments could cause delays to school buses and limit access to school bus stops.

Construction of the proposed weir structure, intake pump station, and WTP would not directly interfere with circulation patterns near sensitive land uses (i.e., schools, hospitals, fire stations, police stations, or other emergency providers) because no such uses are located adjacent to these proposed facilities. However, construction could indirectly disrupt circulation patterns near sensitive land uses, as haul routes could pass by sensitive land uses, and traffic may divert to roadways with sensitive land uses due to construction activity.

As stated previously in the discussion of Impact TRA-1, implementation of Mitigation Measure TRA-1b would require PV Water to coordinate with the Pajaro Valley Unified School...
District prior to construction regarding construction schedule in the vicinity of schools and school access routes during construction. In addition, it would require the construction contractor to establish methods for maintaining traffic flow in and along the subject roadway corridor and minimizing disruption to emergency vehicle access to land uses along the alignment. Specific requirements that may be included in the traffic control/traffic management plan regarding emergency access and access to public schools are identified under Mitigation Measure TRA-1b. With implementation of Mitigation Measure TRA-1b, impacts related to temporary effects on emergency access and access to public schools would be mitigated to less than significant.

Mitigation Measure TRA-1b: Construction Traffic Control/Traffic Management Plan (refer to Impact TRA-1)

Impact TRA-3: Construction of the Project would have temporary effects on alternative transportation or alternative transportation facilities in the Project area. (Less than Significant with Mitigation)

The Project would not result in any long-term impact on demand for alternative transportation or on alternative transportation facilities (i.e., for transit and bicyclists). However, pipeline construction along Project area roadways could disrupt bicycle facilities (i.e., Holohan Road and West Beach Street) and access to bus stops and slow bus movements for bus routes provided by Santa Cruz Transit; see Public Transit discussion in Section 3.9.1.1.

As stated previously in the discussion of Impact TRA-1, implementation of Mitigation Measure TRA-1b would require the construction contractor to establish methods for minimizing construction effects on transit service. Specific requirements that may be included in the traffic control/traffic management plan are identified under Mitigation Measure TRA-1b. With implementation of Mitigation Measure TRA-1b, impacts related to effects on alternative transportation or alternative transportation facilities would be mitigated to less than significant.

Mitigation Measure TRA-1b: Construction Traffic Control/Traffic Management Plan (refer to Impact TRA-1)

Impact TRA-4: Construction of the Project could temporarily increase the potential for accidents on Project area roadways. (Less than Significant with Mitigation)

The Project would not alter the permanent configuration (alignment) of area roadways, and would not introduce types of vehicles that are not already traveling on area roads. However, construction zones in the public right-of-way and heavy equipment operating adjacent to or within a road right-of-way would increase the potential for accidents. Construction-generated trucks on Project area roadways could interact with other vehicles. Potential conflicts could also occur between construction traffic and alternative modes of transportation (e.g., bicyclists and buses).
As stated previously in the discussion of Impact TRA-1, implementation of Mitigation Measure TRA-1b requires the contractor to prepare a traffic control/traffic management plan in accordance with professional engineering standards prior to construction, including compliance with roadside safety protocols, so as to reduce the risk of accidents. Specific requirements that may be included in the traffic management plan are identified under Mitigation Measure TRA-1b. Thus, implementation of Mitigation Measure TRA-1b would ensure temporary increases in the potential for accidents would be mitigated to less than significant.

**Mitigation Measure TRA-1b: Construction Traffic Control/Traffic Management Plan** (refer to Impact TRA-1)

**Impact TRA-5: Construction of the Project could increase wear-and-tear on the designated haul routes used by construction vehicles to access the Project sites. (Less than Significant)**

This impact criterion was evaluated in the 2014 BMP Update PEIR. The 2014 BMP Update PEIR noted that local-serving roads, such as Holohan Road, may not be built with a pavement thickness that would withstand large heavy truck volumes. The projected increase in use of this or other local roadways by heavy trucks could result in significant wear on these roadways. The impact analysis conducted in the 2014 BMP Update PEIR for this impact criterion adequately addresses potential wear-and-tear impacts that could occur to local roadways as a result of increased truck volumes associated with construction of the Project. Implementation of adopted Mitigation Measure TR-1 from the 2014 BMP Update PEIR would reduce impacts to less than significant.

**Mitigation:** None required.

**Cumulative Impacts**

**Impact C-TRA-1: The Project, in combination with past, present, and probable future projects in the Project area, would have cumulatively considerable impacts on transportation and traffic. (Less than Significant with Mitigation)**

The cumulative analysis of transportation and traffic impacts uses a list-based approach and identifies probable future projects that could contribute to a cumulative impact. The geographic scope for this analysis is the roadway network in the vicinity of the Project sites that would be affected by the Project.

**Project Construction**

Impacts on traffic associated with construction (e.g., an intermittent reduction in street and intersection operating capacity, potential conflicts with pedestrians/bicyclists, overlap with construction of nearby related projects) are typically considered as potential short-term impacts. As noted above, the Project would result in significant traffic impacts during construction activities. However, implementation of Mitigation Measures TRA-1a, TRA-1b, and adopted Mitigation Measure TR-1 from the 2014 BMP Update PEIR, construction impacts on
transportation and traffic would be reduced to less-than-significant levels. Each of the identified cumulative projects listed in Table 3.1-1 (see Section 3.1.3.2, Approach to Cumulative Impact Analysis in this EIR) would be required to comply with jurisdictional requirements regarding haul routes and would implement mitigation measures and/or include project characteristics, such as traffic controls and scheduling, notification, and safety procedures, to reduce potential traffic impacts during construction. In addition, many of the cumulative projects, like the Project, would likely restrict construction truck traffic and deliveries to off-peak hours to the extent feasible. Accordingly, Project-related contributions to cumulative construction traffic conditions during construction would be less than significant with mitigation.

**Project Operations**

As discussed above in the impact discussion of the Project, operation and maintenance associated with the Project would result in a minimal amount of daily vehicle trips. This is due to the fact that the Project, once constructed, would require infrequent and minor maintenance, which would not result in any discernable effect on study area roadway operations. Additionally, operation of the Project would not alter the permanent configuration (alignment) of area roadways or introduce any barriers to travel. For these reasons, the Project would not result in any operational impacts and could not cause or contribute to any cumulative effects related to these transportation and traffic topics. Accordingly, Project-related contributions to cumulative construction traffic conditions during operation would be less than significant.

**Mitigation Measure TRA-1a: Encroachment Permits** (refer to Impact TRA-1)

**Mitigation Measure TRA-1b: Construction Traffic Control/Traffic Management Plan** (refer to Impact TRA-1)
3.10 Cultural Resources

This section presents an analysis of potential impacts related to cultural resources that would result from implementation of the proposed College Lake Integrated Resources Management Project (Project). The analysis includes both site options (preferred and optional) for the water treatment plant as well as preferred and optional pipeline alignments for the College Lake pipeline. Information from the 2014 Basin Management Plan Update Program Environmental Impact Report (2014 BMP Update PEIR) that remains relevant and accurate for the purposes of describing the physical or regulatory setting of cultural resources has been incorporated as appropriate. The Project includes mitigation measures adopted by the Board of Directors to reduce the severity and magnitude of potential environmental effects.

3.10.1 Setting

The 2014 BMP Update PEIR Section 3.5.1 generally describes existing cultural resources in the Project region including archaeology and ethnography. This section describes aspects of the physical environmental setting salient to cultural resources for the Project area.

3.10.1.1 Geologic Setting

The California coast has undergone dramatic landscape changes since humans began to inhabit the region more than 10,000 years ago. Rising sea levels and increased sedimentation into streams and rivers are among the changes. In many places, the interface between older land surfaces and Holocene-age landforms are marked by a well-developed buried soil profile (or “paleosol”). Paleosols preserve the composition and character of the earth’s surface prior to subsequent sediment deposition; thus, paleosols have the potential to preserve archaeological resources if the area was occupied or settled by humans. Because human populations have grown since the arrival of the area’s first inhabitants, younger paleosols (ca. 4,000 years ago to present) are more likely to yield archaeological resources than older Quaternary paleosols.

The Project is located within the Pajaro Valley in southern Santa Cruz County, California. The basin is bounded on the west by Monterey Bay, on the east by the San Andreas Fault, on the north by hills composed of Pliocene-aged marine sediments of the Purisima Formation, and on the south by hills composed of the Pleistocene-aged Aromas Sands Formation. The basin is underlain by pre-Pliocene bedrock, which is covered in places by more than 1,200 meters (4,000 feet) of unconsolidated marine and terrestrial deposits that range in age from the Pliocene.

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2 The Holocene Epoch is a period of geologic time that spans from the end of the last Ice Age (approximately 11,000 years ago) up to the present time.
4 The Quaternary Period is a broad length of geologic time spanning from 2.6 million years ago up to the present time.
5 The Pliocene Epoch is a period of geologic time that spans from 5.3 million to 2.6 million years ago.
6 The Pleistocene Epoch is a period of geologic time that spans from 2.6 million to 11,000 years ago.
to recent. The basin is characterized by the Pajaro River, its tributaries, and a series of sloughs and shallow lakes. The headwaters of the river are within the Diablo Range to the east, and the mainstem is joined by tributaries from the Gabilan Mountains in the south, including the San Benito River, and the Santa Cruz Mountains in the north. Historically, much of the Pajaro River floodplain was tidally influenced. Although some portions remain tidally influenced large areas of the slough system and floodplain have been channelized and drained to create farmland.

Three geologic deposits are present within the Project area: Pleistocene-aged fluvial facies (Qwf); Holocene-aged older floodplain deposits (Qof); and Holocene-aged younger floodplain deposits (Qyf). The vast majority of the Project is underlain by older and younger floodplain deposits.

Pleistocene-aged (quaternary) fluvial facies (Qwf) are terrace deposits of Watsonville and consist of semiconsolidated, moderately to poorly sorted silt, sand, silty clay, and gravel, which may be more than 200 feet thick. Gravel, approximately 50 feet thick, is generally present 50 feet below the surface of the deposit. The upper 5 to 15 feet of the unit is moderately indurated (hardened) owing to clay and iron oxide cementation in weathered zone.

Holocene-aged older floodplain deposits (Qof) consist of unconsolidated, fine-grained sand, silt, and clay. Deposits are more than 200 feet thick beneath parts of the Pajaro River flood plain. The lower parts of these deposits include large amounts of gravel, which provide groundwater for the uses within the Pajaro Valley.

Holocene-aged younger floodplain deposits (Qyf) consist of unconsolidated, fine-grained, heterogeneous deposits of sand and silt, commonly containing relatively thin, discontinuous layers of clay. The thickness of the unit is generally less than 20 feet.

### 3.10.1.2 Prehistoric Setting

Archaeologists have developed individual, cultural, chronological sequences tailored to the archaeology and material culture of each subregion of California. Each of these sequences is based principally on the presence of distinctive cultural traits and stratigraphic separation of deposits. Jones et al. provide a framework for the interpretation of the Central Coast and the Monterey Bay Area. The authors divide human history on the Central Coast into six broad periods: the Paleo-Indian Period (pre-8000 B.C.), the Early Archaic Period (8000 to 3500 B.C.), the Early Period (3500 to 600 B.C.), the Middle Period (600 B.C. to A.D. 1000), the Middle/Late Transition Period (1000 to 1250 A.D.), and the Late Period (A.D. 1250–1769). The periods have been largely defined on the basis of distinctive bead types; typological analysis and radiocarbon dating of Olivella beads show the bead sequence in the Monterey Bay Area as generally similar to those of the California Central Valley and the Santa Barbara Coast. Economic patterns, stylistic aspects, and regional phases further subdivide cultural periods into shorter phases. This scheme

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uses economic and technological types, socio-politics, trade networks, population density, and variations of artifact types to differentiate between cultural periods.

Evidence of human habitation during the Paleo-Indian Period, characterized by big-game hunters occupying broad geographic areas, has not yet been discovered in the Monterey Bay Area. The oldest known occupation of the Monterey Bay area dates from ca. 5000 B.C., however data representing this earliest occupation are limited. The Early Archaic Period is represented by the Millingstone Culture (8000 to 3500 B.C.) and is marked by large numbers of handstones and/or millingslabs, crude core and cobble-core tools, and less abundant flake tools and large side-notched projectile points. Millingstone components have been identified at locations in Monterey County near Elkhorn Slough and Monterey Peninsula. Faunal remains indicate that Millingstone people exploited shellfish, fish, birds, and mammals, and with a majority of Millingstone sites less than 25 kilometers from the shoreline there appears to have been a focus on shellfish consumption. Virtually all of the earliest known sites have been identified on the shore or in pericoastal valleys.

The Early and Middle Periods are represented by the Hunting Culture (3500 B.C. to A.D. 1250), which was marked by large quantities of stemmed and notched projectile points. During the Early Period (3500 to 600 B.C.), the first cut shell beads and the mortar and pestle are documented in burials, indicating the beginning of a shift from mobility to sedentism. During the Middle Period, (600 B.C. to A.D. 1000), geographic mobility may have continued, although groups began to establish longer-term base camps in localities from which a more diverse range of resources could be exploited. The first rich middens are recorded from this period. The addition of milling tools, obsidian and chert concave-base projectile points, and the occurrence of sites in a wider range of environments suggest that the economic base was more diverse and required logistical hunting techniques. Coastal habitation was still preferred but large Hunting Culture middens have also been identified in inland valleys.

The Late Period (A.D. 1250–1769) is distinguished from the Hunting Culture by large amounts of Desert side-notched and Cottonwood arrow points, small bifacial bead drills, bedrock mortars, hopper mortars, distinct Olivella bead types, and steatite disk beads. These assemblages represent social complexity developed toward lifeways of large, central villages with resident political leaders and specialized activity sites. This differs dramatically from the Hunting Culture materials and may represent developments associated with population increase, environmental changes, and ethnic migrations.

### 3.10.1.3 Historic Setting

Spanish incursions into the Monterey Bay region began in the early seventeenth century when the Sebastian Vizcaino expedition arrived at Monterey in 1602. It was not until over a century later that the Spanish government began to take an active interest in colonizing what was then known as Alta California. Captain Gaspar de Portola led a land expedition to Monterey by way of the coast in 1769.10 The first Spanish exploration of the Salinas Valley followed in 1774, when Don

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Juan Bautista de Anza’s expedition established a route through the valley to Monterey. This route was known as El Camino Real, or the Royal Road.\footnote{Breschini, Gary S., and Trudy Haversat, \textit{Preliminary Archaeological Report and Cultural Resources Management Plan for Two Proposed School Sites, Watsonville, Santa Cruz County, California}. Report on file at Northwest Information Center, 1989; Breschini, Gary S., and Trudy Haversat, \textit{Archaeological Investigations at CA-SCR-44, Northeast of Watsonville, Santa Cruz County, California}. Report on file at Northwest Information Center, 1989.}

Spanish control of California ended with Mexican independence in 1821. In 1834 the Mexican government secularized the Spanish missions. In Santa Cruz County, 21 land grants were made to Mexican settlers. Most grantees used their land to establish ranches with enormous free-ranging herds of horses and Spanish cattle, as it was cattle that powered the Californio\footnote{Spanish speaking, Catholic persons of Latin American descent born in Alta California between 1769 and 1848} economy. Cattle hides and tallow were the medium of exchange in business transactions among the Californios and with many trading ships that came from the American east coast.\footnote{Ibid.}

The 1848 Treaty of Guadalupe Hidalgo brought Alta California under control of the United States of America. News of the Gold Rush that same year sparked a huge migration into California. Due to the rapid influx of settlers into the area, legal determinations of ownership of lands awarded by Spanish or Mexican authorities were often disputed. The new American government passed the Land Act of 1851, which placed the burden of proof-of-ownership to the grantees so that the few Native Americans who had received grants lost their title, as did many of the Hispanic owners. By congressional action, a board of Land Commissioners heard grant claims; their decision was then appealed in Federal Courts.\footnote{Ibid.}

\section*{History of the Project Area}

Cattle and sheep ranching dominated the area until the 1880s. During this time, free-range, comparatively wild Spanish cattle were replaced by American breeds of livestock and dairy cows. Fencing with wooden posts and barbed wire became a prominent feature across the landscape. Agriculture in the area became more intensive when farming shifted to wheat and barley cultivation. Early crops also included sugar beets and alfalfa. Apple orchards were the dominant crop in the Pajaro Valley for much of the 20th Century. While apple orchards remain, the majority of agriculture in the Pajaro Valley has been replaced by crops that can be harvested more than once a year, including berries and vegetables. After World War II, Watsonville also became a frozen-food processing center.\footnote{National Museum of American History, Delivering the Goods. Accessed on April 28, 2018. Available online at http://amhistory.si.edu/onthemove/exhibition/exhibition_3_1.html.}

The development of railroads, including the Southern Pacific and regional lines such as the Monterey and Salinas Valley Railroad and the Pajaro Valley Consolidated Railroad, allowed for distribution and improved marketing for the Central Coast Region. By the 1890s, Watsonville had...
a thriving freight business, serving the needs of the Pajaro Valley’s agricultural commerce. Local farmers and fruit packing houses shipped strawberries, apples, and other fruits and vegetables to market at San Francisco and beyond. The development of the refrigerator car allowed produce to be shipped as far as Chicago and New York, opening up new markets to Pajaro Valley’s farmers.\textsuperscript{16} By 1901, the coast route was open and running between San Francisco and Los Angeles, further opening up distribution routes.

A port was established in the Pajaro Valley for a brief 11-year-period from 1902 to 1913, with an associated double-track railroad running approximately along the present route of Beach Road (within the College Lake pipeline route). The port suffered extensive damage in 1904 and 1912, and by 1913 had completely folded.\textsuperscript{17}

Numerous ethnic groups have called Watsonville and the Pajaro Valley home since the mid-1800s, including those of Slavic, Chinese, Japanese, Filipino, and Mexican descent. Slavic groups entered the area as agriculture boomed after development of the railroads, first meeting the need for field labor and later entering the buying, shipping, and farming markets. At one point they controlled at least one-third of the orchards in and around Watsonville.\textsuperscript{18}

The Chinese entered the area after the Gold Rush and railroad-buildings eras, establishing fishing villages and providing field labor. By the mid-1880s, a Chinatown had been established in Watsonville along Main Street and Union Street to Maple Avenue\textsuperscript{19} (adjacent to the College Lake pipeline route). After the Chinese exclusion Act of 1882, availability of Chinese labor declined.\textsuperscript{20}

The Japanese first immigrated into the area around 1892 on lumber-cutting contracts, but soon began to fill the need of low cost farm labor left vacant by declining Chinese populations. The National Origins Act of 1924 restricted Japanese immigration, again leading to a decline in low cost farm labor.\textsuperscript{21} In 1942, the Japanese were moved to internment camps for the duration of World War II. While many were reluctant to return to Pajaro Valley after the end of the war due to anti-Japanese sentiments, the establishment of a hostel at the first Buddhist Church and Japanese Language Buildings encouraged them to return, and they established strawberry and flower growing industries.\textsuperscript{22}

\textsuperscript{17} Edwards, Rob, and Mary Ellen Farley, \textit{An Assessment of the Cultural Resources of the Lower Pajaro River Basin, California, with Selected Preliminary Field Study}. Prepared for the U.S. Army Corp of Engineers, San Francisco. Document on file at Northwest Information Center, 1974.
\textsuperscript{18} Ibid.
\textsuperscript{22} Edwards, Rob, and Mary Ellen Farley, \textit{An Assessment of the Cultural Resources of the Lower Pajaro River Basin, California, with Selected Preliminary Field Study}. Prepared for the U.S. Army Corp of Engineers, San Francisco. Document on file at Northwest Information Center, 1974.
Filipino immigrants first entered Pajaro Valley in the 1920s after the expiration of Hawaiian sugar contracts and to fill the need for low cost farm labor. By January 1930, anti-Filipino sentiments prompted the Northern Monterey County Chamber of Commerce to publicly state that whites had a supreme right to inhabit the county, setting off a race riot. On January 22, a mob of 700 whites attacked Filipinos in their homes, killing one Filipino man. In 1934, a Repatriation Bill offered to pay Filipinos their passage back to the Philippines, but most declined the offer and stayed in Pajaro Valley. Many were later drafted in World War II.23

Mexican farm laborers became an increasingly important source of labor after the 1920s. During World War II, the United States encouraged Mexican immigration through the issuance of short-term agricultural labor contracts in anticipation of labor shortages due to the war. By the time the program ended in 1964, Mexicans had become the dominant source of farm labor in the Watsonville region. Today, Watsonville’s population is approximately 70 percent Latino, and they continue to provide over 90 percent of the farm labor.24

During the Great Depression in the 1930s, many families migrated from the Dust Bowl of Oklahoma and the surrounding area to Pajaro Valley in search of work, establishing camps along the river banks. Competition between out-of-work white migrants and ethnic laborers led to an eruption of violence, and eventually more offers to provide free transport home to Mexicans and Filipinos who shared the same economic and labor profile.25

### 3.10.1.4 Identification of Historical and Archaeological Resources

#### Previously Recorded Archaeological Resources

Records searches for the Project were conducted through the California Historical Resources Information System (CHRIS) Northwest Information Center (NWIC) housed at Sonoma State University on June 22, 2017 (File No. 16-2078) and August 4, 2017 (File No. 17-0246) and updated on September 19, 2017 (File No. 17-0246) and April 25, 2018 (File No. 17-2410).26

The records search results indicate that 138 cultural resources studies have been conducted within a one-half-mile radius of the Project sites. Approximately 70 percent of the one-half mile records search radius has been included in previous cultural resources surveys. Of the previous studies, 22 overlap the Project area. Approximately 35 percent of the Project area has been included in previous cultural resources studies.

23 Ibid.
The records search results indicate that seven archaeological resources have been previously recorded within a one-half-mile radius of the Project sites, including four prehistoric archaeological resources (CA-SCR-107, -150, -286, and -295); two multicomponent archaeological resources (CA-SCR-44/H and -104/H); and one informal resource (Site X – possible site). In addition, two resources within the one-half-mile radius but not on file at NWIC include one prehistoric archaeological site (CL-2) and one historic-period archaeological site (P-1H).

Of the nine resources, two (CA-SCR-44/H and CA-SCR-150) overlap a Project component (new lake storage area). CA-SCR-44/H is a multicomponent site consisting of a prehistoric component with Native American burials and a historic component. The prehistoric component of CA-SCR-44/H has been previously recommended eligible for listing in the National Register and California Register under Criterion D/4. Refer to Section 3.10.2 for a discussion of the criteria related to eligibility for listing in the National Register and California Register. CA-SCR-150 is a prehistoric archaeological site with a scatter of shell, flaked stone, and groundstone. CA-SCR-150 does not appear to have been previously evaluated for listing in the National Register or California Register.

Previously Recorded Historic Architectural Resources

A review of NWIC files and the Historic Property Data File for Santa Cruz County indicated that 43 historic resources (primarily residential and commercial structures) have been previously documented within or adjacent to Project components. One resource (P-44-000395 – Watsonville Historic District) overlaps the College Lake pipeline route. The Watsonville Historic District encompasses the City of Watsonville boundary. The Watsonville Historic District has not been evaluated for listing in the National Register or California Register, nor have contributors and non-contributors been identified.

Cultural Resources Survey

A cultural resources survey of the Project area was conducted on April 12-13, 2018. Approximately 10 percent of the Project area was subject to systematic survey, with ground surface visibility varying from 50 to 100 percent. Approximately 5 percent of the Project area was subject to opportunistic survey, with ground surface visibility varying from 25 to 50 percent. Approximately 25 percent of the Project area was subject to windshield survey (conducting a survey from a

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3. Environmental Setting, Impacts, and Mitigation Measures

3.10 Cultural Resources

A total of five newly identified historic architectural resources meeting the California Office of Historic Preservation’s 45-year-old age threshold were documented during the 2018 survey: ESA-Built-001 (pump intake house and weir), ESA-Built-002 (76 Holohan Road – residence), ESA-Built-003 (38 Holohan Road – agricultural buildings), ESA-Built-004 (canal segment), and ESA-Built-005 (railroad spur). These resources were evaluated for listing in the National Register and California Register and found ineligible.31 No archaeological resources were identified as a result of the survey.

3.10.1.6 Geoarchaeological Review

The geoarchaeological study was based on a review of previously recorded archaeological sites obtained through records searches at the CHRIS-NWIC, a literature review, and a review of geologic maps, soils maps, and historical aerial photos and maps covering the Project area.32 The geoarchaeological review indicates that the majority of the Project area is considered to have a high sensitivity for prehistoric archaeological resources and that these resources could be shallowly or deeply buried. As indicated on Figure 3.10-1, areas with moderate to low sensitivity for cultural resources are shaded orange; areas with high sensitivity for shallow (less than one meter below ground surface) and deep (greater than one meter below ground surface) cultural resources are shaded purple; and areas with high sensitivity for shallow cultural resources but low sensitivity for deep cultural resources are shaded green. Most of the previously identified cultural resources on file at the CHRIS-NWIC correspond to the green or purple shaded areas on Figure 3.10-1.

Areas that have the highest probability to contain significant resources are within 200 meters (656 feet) of the high water mark of the College Lake water storage area based on the distribution of known archaeological sites and Holocene depositional history of the College Lake area. Areas that have a relatively lower, though still moderate, probability to contain significant deposits include the low-lying floodplain area.

31 These resources are not recommended for listing under either National Register or California Register criteria based on lack of significant associations with events or persons, lack of distinctive architecture, and because the sites are unlikely to yield significant information. For details, refer to Ehringer, C., C. Lockwood, M. Loder, and F. Clark, College Lake Integrated Resources Management Project, City of Watsonville and Unincorporated Santa Cruz County, California: Cultural Resources Assessment Report, prepared for Pajaro Valley Water Management Agency, prepared by ESA, June 2018.

Figure 3.10-1
Archaeological Sensitivity

SOURCE: USGS, 1997; ESA, 2017

College Lake Integrated Resources Management Project

Project Components

- Preferred Pipeline Route
- Optional Pipeline Route
- Preferred Water Treatment Plant Site
- Optional Water Treatment Plant Site
- Lake Storage Area with Proposed Weir (elev 62.5 ft)

Water
Geologic Unit Boundary
Moderate to Low Sensitivity for Cultural Resources
High Sensitivity for Shallow and Deep Cultural Resources
High Sensitivity for Shallow Cultural Resources/ Low Sensitivity for Deep Cultural Resources
3.10.2 Regulatory Framework

3.10.2.1 Federal and State

Historic Resources, Archaeological Resources, and Human Remains

National Historic Preservation Act

The principal federal law addressing historic properties is the National Historic Preservation Act (NHPA), as amended (54 United States Code of Laws 300101 et seq.), and its implementing regulations (36 Code of Federal Regulations [CFR] Part 800). Section 106 requires a federal agency with jurisdiction over a proposed federal action (referred to as an “undertaking” under the NHPA) to take into account the effects of the undertaking on historic properties, and to provide the Advisory Council on Historic Preservation an opportunity to comment on the undertaking.

The term “historic properties” refers to “any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register” (36 CFR Part 800.16(l)(1)). The implementing regulations (36 CFR Part 800) describe the process for identifying and evaluating historic properties, for assessing the potential adverse effects of federal undertakings on historic properties, and seeking to develop measures to avoid, minimize, or mitigate adverse effects. The Section 106 process does not require the preservation of historic properties; instead, it is a procedural requirement mandating that federal agencies take into account effects to historic properties from an undertaking prior to approval.

The steps of the Section 106 process are accomplished through consultation with the State Historic Preservation Officer, federally-recognized Indian tribes, local governments, and other interested parties. The goal of consultation is to identify potentially affected historic properties, assess effects to such properties, and seek ways to avoid, minimize, or mitigate any adverse effects on such properties. The agency also must provide an opportunity for public involvement (36 CFR 800.1(a)). Consultation with Indian tribes regarding issues related to Section 106 and other authorities (such as the National Environmental Policy Act and Executive Order No. 13007) must recognize the government-to-government relationship between the Federal government and Indian tribes, as set forth in Executive Order 13175, 65 FR 87249 (November 9, 2000), and Presidential Memorandum of November 5, 2009.

National Register of Historic Places

The National Register of Historic Places (National Register) was established by the NHPA of 1966, as “an authoritative guide to be used by federal, State, and local governments, private groups and citizens to identify the Nation’s historic resources and to indicate what properties should be considered for protection from destruction or impairment” (36 CFR 60.2).\(^{33}\) The National Register recognizes a broad range of cultural resources that are significant at the national, state, and local levels and can include districts, buildings, structures, objects, prehistoric archaeological sites, historic-period archaeological sites, traditional cultural properties, and

cultural landscapes. As noted above, a resource that is listed in or eligible for listing in the National Register is considered “historic property” under Section 106 of the NHPA.

To be eligible for listing in the National Register, a property must be significant in American history, architecture, archaeology, engineering, or culture. Properties of potential significance must meet one or more of the following four established criteria:

A. Are associated with events that have made a significant contribution to the broad patterns of our history;
B. Are associated with the lives of persons significant in our past;
C. Embody the distinctive characteristics of a type, period, or method of construction or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
D. Have yielded, or may be likely to yield, information important in prehistory or history.

In addition to meeting one or more of the criteria of significance, a property must have integrity. Integrity is defined as “the ability of a property to convey its significance”.

The National Register recognizes seven qualities that, in various combinations, define integrity. The seven factors that define integrity are location, design, setting, materials, workmanship, feeling, and association. To retain historic integrity a property must possess several, and usually most, of these seven aspects. Thus, the retention of the specific aspects of integrity is paramount for a property to convey its significance.

Ordinarily religious properties, moved properties, birthplaces or graves, cemeteries, reconstructed properties, commemorative properties, and properties that have achieved significance within the past 50 years are not considered eligible for the National Register unless they meet one of the Criteria Considerations, in addition to meeting at least one of the four significance criteria above (A-D) and possessing integrity.

California Environmental Quality Act

The California Environmental Quality Act (CEQA) is the principal statute governing environmental review of projects occurring in the state and is codified in Public Resources Code Section 21000 et seq. CEQA requires lead agencies to determine if a proposed project would have a significant effect on the environment, including significant effects on historical or unique archaeological resources. Under CEQA (Section 21084.1), a project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment.

The CEQA Guidelines (California Code of Regulations Title 14, Section 15064.5) recognize that historical resources include: (1) a resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the California Register of Historical Resources (California Register); (2) a resource included in a local register of historical resources, as defined

34 Ibid.
35 Ibid.
in Public Resources Code Section 5020.1(k) or identified as significant in a historical resource survey meeting the requirements of Public Resources Code Section 5024.1(g); and (3) any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California by the lead agency, provided the lead agency’s determination is supported by substantial evidence in light of the whole record. The fact that a resource does not meet the three criteria outlined above does not preclude the lead agency from determining that the resource may be a historical resource as defined in Public Resources Code Sections 5020.1(j) or 5024.1.

If a lead agency determines that an archaeological site is a historical resource, the provisions of Section 21084.1 of CEQA and Section 15064.5 of the CEQA Guidelines apply. If an archaeological site does not meet the criteria for a historical resource contained in the CEQA Guidelines, then the site may be treated in accordance with the provisions of Section 21083, which is as a unique archaeological resource. As defined in Section 21083.2 of CEQA a “unique” archaeological resource is an archaeological artifact, object, or site, about which it can be clearly demonstrated that without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

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

If an archaeological site meets the criteria for a unique archaeological resource as defined in Section 21083.2, then the site is to be treated in accordance with the provisions of Section 21083.2, which state that if the lead agency determines that a project would have a significant effect on unique archaeological resources, the lead agency may require reasonable efforts be made to permit any or all of these resources to be preserved in place (Section 21083.1(a)). If preservation in place is not feasible, mitigation measures shall be required. The CEQA Guidelines note that if an archaeological resource is neither a unique archaeological nor a historical resource, the effects of the project on those resources shall not be considered a significant effect on the environment (CEQA Guidelines Section 15064.5(c)(4)).

A significant effect under CEQA would occur if a project results in a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5(a). Substantial adverse change is defined as “physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of a historical resource would be materially impaired” (CEQA Guidelines Section 15064.5(b)(1)). According to CEQA Guidelines Section 15064.5(b)(2), the significance of a historical resource is materially impaired when a project demolishes or materially alters in an adverse manner those physical characteristics that:
A. Convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the California Register;

B. Account for its inclusion in a local register of historical resources pursuant to Section 5020.1(k) of the Public Resources Code or its identification in a historical resources survey meeting the requirements of Section 5024.1(g) of the Public Resources Code, unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or

C. Convey its historical significance and that justify its eligibility for inclusion in the California Register as determined by a Lead Agency for purposes of CEQA.

In general, a project that complies with the Secretary of the Interior’s Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings is considered to have mitigated its impacts to historical resources to a less-than-significant level (CEQA Guidelines Section 15064.5(b)(3)).

California Register of Historical Resources

The California Register is “an authoritative listing and guide to be used by State and local agencies, private groups, and citizens in identifying the existing historical resources of the State and to indicate which resources deserve to be protected, to the extent prudent and feasible, from substantial adverse change” (Public Resources Code Section 5024.1(a)). The criteria for eligibility for the California Register are based upon National Register criteria (Public Resources Code Section 5024.1(b)). Certain resources are determined by the statute to be automatically included in the California Register, including California properties formally determined eligible for, or listed in, the National Register.

To be eligible for the California Register, a prehistoric or historic-period property must be significant at the local, state, and/or federal level under one or more of the following four criteria:

1. Is associated with events that have made a significant contribution to the broad patterns of California’s history and cultural heritage;

2. Is associated with the lives of persons important in our past;

3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or

4. Has yielded, or may be likely to yield, information important in prehistory or history.

A resource eligible for the California Register must meet one of the criteria of significance described above, and retain enough of its historic character or appearance (integrity) to be recognizable as a historical resource and to convey the reason for its significance. It is possible that a historic resource may not retain sufficient integrity to meet the criteria for listing in the National Register, but it may still be eligible for listing in the California Register.

Additionally, the California Register consists of resources that are listed automatically and those that must be nominated through an application and public hearing process. The California Register automatically includes the following:

- California properties listed on the National Register and those formally determined eligible for the National Register;
- California Registered Historical Landmarks from No. 770 onward; and
- Those California Points of Historical Interest that have been evaluated by the State Office of Preservation and have been recommended to the State Historical Commission for inclusion on the California Register.

Other resources that may be nominated to the California Register include:

- Historical resources with a significance rating of Category 3 through 5 (those properties identified as eligible for listing in the National Register, the California Register, and/or a local jurisdiction register);
- Individual historical resources;
- Historical resources contributing to historic districts; and
- Historical resources designated or listed as local landmarks, or designated under any local ordinance, such as an historic preservation overlay zone.

**California Health and Safety Code Section 7050.5**

California Health and Safety Code Section 7050.5 requires that in the event human remains are discovered, the County Coroner be contacted to determine the nature of the remains. In the event the remains are determined to be Native American in origin, the Coroner is required to contact the Native American Heritage Commission within 24 hours to relinquish jurisdiction.

**California Public Resources Code Section 5097.98**

California Public Resources Code Section 5097.98 provides procedures in the event human remains of Native American origin are discovered during project implementation. Public Resources Code Section 5097.98 requires that no further disturbances occur in the immediate vicinity of the discovery, that the discovery is adequately protected according to generally accepted cultural and archaeological standards, and that further activities take into account the possibility of multiple burials. Public Resources Code Section 5097.98 further requires the Native American Heritage Commission, upon notification by a County Coroner, designate and notify a Most Likely Descendant (MLD) regarding the discovery of Native American human remains. Once the MLD has been granted access to the site by the landowner and inspected the discovery, the MLD then has 48 hours to provide recommendations to the landowner for the treatment of the human remains and any associated grave goods.

In the event that no descendant is identified, or the descendant fails to make a recommendation for disposition, or if the land owner rejects the recommendation of the descendant, the landowner
may, with appropriate dignity, reinter the remains and burial items on the property in a location that will not be subject to further disturbance.

**California Government Code Sections 6254(r) and 6254.10**

These sections of the California Public Records Act were enacted to protect archaeological sites from unauthorized excavation, looting, or vandalism. Section 6254(r) explicitly authorizes public agencies to withhold information from the public relating to “Native American graves, cemeteries, and sacred places maintained by the Native American Heritage Commission.” Section 6254.10 specifically exempts from disclosure requests for “records that relate to archaeological site information and reports, maintained by, or in the possession of the Department of Parks and Recreation, the State Historical Resources Commission, the State Lands Commission, the Native American Heritage Commission, another state agency, or a local agency, including the records that the agency obtains through a consultation process between a Native American tribe and a state or local agency.”

### 3.10.2.2 Local

Table 2-10 in Chapter 2, *Project Description*, identifies the approvals from Santa Cruz County and/or the City of Watsonville required for the Project. Table 3.10-1 presents pertinent local plans and policies regarding cultural resources to support County and City consideration of project consistency with general plan policies.\(^{37}\) In some cases, local policies are used in this EIR as criteria to determine the significance of physical effects on the environment (e.g., Impact NOI-I in Section 3.8, Noise and Vibration).

### 3.10.3 Impacts and Mitigation Measures

#### 3.10.3.1 Significance Criteria

In accordance with the CEQA, state CEQA Guidelines (including Appendix G), relevant plans, policies, and/or guidelines, and agency standards, the Project could have a significant impact if it were to:

- Cause a substantial adverse change in the significance of a historical resource pursuant to in Section 15064.5;\(^{38}\)
- Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5; and/or
- Disturb any human remains, including those interred outside of formal cemeteries.

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\(^{37}\) California Government Code Section 53091 exempts agencies like PV Water from complying with local building and zoning ordinances when locating or constructing facilities for the production, generation, storage, treatment, or transmission of water. California Government Code Section 65402(c) requires that PV Water notify cities and counties of its plans to construct projects or to acquire or dispose of property. The planning agency then has 40 days to determine project consistency with its general plan. If the planning agency disapproves, the disapproval may be overruled by PV Water.

\(^{38}\) Refer to Section 3.10.2.1, above, for information about Section 15064.5.
 TABLE 3.10-1
LOCAL PLANS AND POLICIES RELEVANT TO THE PROJECT

<table>
<thead>
<tr>
<th>CITY OF WATSONVILLE PLANS AND POLICIES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Watsonville General Plan</strong></td>
</tr>
<tr>
<td>Goal 9.10: Archaeological Resources. Identify and protect prehistoric resources for their scientific, educational, and cultural values.</td>
</tr>
<tr>
<td><strong>Policy 9.H: Archaeological Resources.</strong> The City shall foster and provide for the preservation of cultural resources and artifacts of historic and prehistoric human occupation within the Pajaro Valley.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SANTA CRUZ COUNTY PLANS AND POLICIES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Santa Cruz County General Plan/Local Coastal Program</strong></td>
</tr>
<tr>
<td>5.19.1: Evaluation of Native American Cultural Sites. Protect all archaeological resources until they can be evaluated. Prohibit any disturbance of Native American Cultural Sites without an appropriate permit. Maintain the Native American Cultural Sites ordinance.</td>
</tr>
<tr>
<td>5.19.2: Site Surveys. Require an archaeological site survey (surface reconnaissance) as part of the environmental review process for all projects with very high site potential as determined by the inventory of archaeological sites, within the Archaeological Sensitive Areas, as designated on General Plan and Local Coastal Program Resources and Constraints Maps filed in the Planning Department.</td>
</tr>
<tr>
<td>5.19.3: Development Around Archaeological Resources. Protect archaeological resources from development by restricting improvements and grading activities to portions of the property not containing these resources, where feasible, or by preservation of the site through project design and/or use restrictions, such as covering the site with earthfill to a depth that ensures the site will not be disturbed by development, as determined by a professional archaeologist.</td>
</tr>
<tr>
<td>5.19.4: Archaeological Evaluations. Require the applicant for development proposals on any archaeological site to provide an evaluation, by a certified archaeologist, of the significance of the resource and what protective measures are necessary to achieve General Plan and Local Coastal Program Land Use Plan objectives and policies.</td>
</tr>
<tr>
<td>5.19.5: Native American Cultural Sites. Prohibit any disturbance of Native American Cultural Sites without an archaeological permit.</td>
</tr>
<tr>
<td>5.20.3: Development Activities. For development activities on property containing historic resources, require protection, enhancement and/or preservation of the historic, cultural, architectural, engineering or aesthetic values of the resource as determined by the Historic Resources Commission. Immediate or substantial hardship to a project applicant shall be considered in establishing project requirements.</td>
</tr>
</tbody>
</table>

SOURCE: City of Watsonville, Watsonville 2005 General Plan, Adopted May 24, 1994; County of Santa Cruz, 1994 General Plan/Local Coastal Program, Chapter 5 – Conservation and Open Space, Effective December 19, 1994; County of Santa Cruz, Santa Cruz County Code, Chapter 16.40 Native American Cultural Sites, October 2, 2018.

3.10.3.2 Methodology

As described in Section 3.1, this EIR provides an independent analysis of the Project’s potential environmental impacts. Table 3.10-2 presents mitigation measures from the 2014 BMP Update PEIR that were adopted by the Board of Directors (Resolution 2014-05) for the purpose of reducing impacts related to cultural resources. These adopted mitigation measures are considered part of the College Lake Project and thus are considered prior to any significance determinations. Potential impacts are evaluated in the following section. If warranted, additional mitigation is included and takes the form of (1) modifications to update the mitigation measures presented in Table 3.10-2 to reflect current conditions and site-specific impacts; or (2) new mitigation measures to replace or augment an adopted mitigation measure.
3. Environmental Setting, Impacts, and Mitigation Measures

3.10 Cultural Resources

### TABLE 3.10-2
#### 2014 BMP UPDATE PEIR MITIGATION MEASURES – CULTURAL RESOURCES

| CR-1a: Final pipeline and facility plans shall locate facilities and pipeline alignments away from identified and recorded archaeological sites in each component area based on a site reconnaissance and archaeological investigation conducted by a qualified archaeologist at the time site-specific construction plans are developed. The archaeologist shall identify the areal extent of potential recorded sites, assess potential significance to identified resources, recommend adjustment to siting of improvements, facilities and/or pipeline alignments, if necessary, and provide other recommendations to avoid impacts to identified significant resources. If a significant or potentially significant archaeological or historic resource is identified pursuant to the definitions in the State CEQA Guidelines as identified above, the consulting archaeologist shall develop an appropriate mitigation plan for the cultural resource. Possible mitigation measures for important cultural resources may include monitoring by a qualified archaeologist during construction at identified sensitive sites, documentation and recordation of the resource, recovery and relocation, or stabilization of the resource. |
| CR-1b: The cultural resource boundaries of potentially significant sites shall be marked as exclusion zones both on ground and on construction maps prior to the commencement of construction activities on component sites. Construction supervisory personnel shall be notified of the existence of cultural resources in each component area and will be required to keep personnel and equipment away from these cultural resources sites. During construction and operational phases, personnel and equipment will be restricted to each surveyed corridor for each component. |
| CR-1c: Should any as yet undiscovered cultural resources be uncovered at any component site, such as structural features, or unusual amounts of bone or shell, artifacts, human remains, or architectural remains be encountered during any development activities, work will be suspended and PV Water staff will be contacted. A qualified professional archaeologist shall be retained and will perform any necessary investigations to determine the significance of the find. PV Water will then implement any mitigation deemed necessary for the recordation and/or protection of the cultural resources. In addition, pursuant to Sections 5097.97 and 5097.98 of the State Public Resources Code and Section 7050.5 of the State Health and Safety Code, in the event of the discovery of human remains, all work must be halted and the County Coroner shall be immediately notified. If the remains are determined to be Native American, guidelines of the Native American Heritage Commission shall be adhered to in the treatment and disposition of the remains. |


In accordance with adopted Mitigation Measure CR-1a, ESA conducted a cultural resources constraints analysis to identify cultural resources within or near Project components. The analysis was conducted to provide an initial assessment of Project components’ potential to impact cultural resources and to provide recommendations to avoid or lessen impacts to known cultural resources under Section 106 of the National Historic Preservation Act of 1966 (Section 106) and CEQA, and also provides recommendations regarding future identification and evaluation of unknown resources. Pajaro Valley Water Management Agency (PV Water) used information from that analysis in identifying sites for the Project components in order to avoid or reduce potential impacts to known cultural resources.39

### 3.10.3.3 Impacts and Mitigation Measures

**Impact CUL-1: The Project could cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines Section 15064.5. (Less than Significant with Mitigation)**

The following discussion focuses on architectural resources. Archaeological resources, including archaeological resources that are potentially historical resources according to CEQA Guidelines Section 15064.5, are addressed under Impact CUL-2.

No historical resources would be directly impacted by the Project. While the College Lake pipeline traverses the Watsonville Historic District (which is considered to be a historical

resource by PV Water pursuant to CEQA Guidelines Section 15064.5(a)(4)), pipeline construction would be limited to existing paved road right-of-ways, and would not directly result in a substantial adverse change to historical resources. Newly identified resources ESA-Built-001, -002, -003, -004, and -005 were found ineligible for listing in the National Register and California Register and do not qualify as historical resources under CEQA.

There is, however, a potential for the Project to result in indirect effects to adjacent historical resources. Numerous previously documented historic architectural resources qualifying as, or potentially qualifying as, historical resources are located adjacent to Project components, the construction of which has the potential to cause vibratory effects (particularly the College Lake pipeline within city streets in Watsonville). In addition, based on a review of historic aerial photographs, there are numerous other undocumented historic-age buildings adjacent to the College Lake pipeline.

The distance between all historic-age buildings and areas of Project construction was measured to determine if such buildings fell within the vibration impact contours for each type of construction equipment that would be used during construction (refer to Table 3.8-9 in Section 3.8, Noise and Vibration). With the exception of one building (200 Walker Street), no historic architectural resources are within the range that exceeds applied building damage thresholds. 200 Walker Street has not been previously evaluated for listing in the National Register or California Register, but is considered to be a historical resource by PV Water pursuant to CEQA Guidelines Section 15064.5(a)(4).

Historical resources located within 19 feet of a vibratory pile driver and 13 feet of a drill rig would be exposed to vibration levels expected to cause building damage, and the Project could result in a substantial adverse change in the significance of these resources. With implementation of Mitigation Measure NOI-2, which (among other things) would ensure that vibration generated during pipeline construction would not exceed a performance standard of 0.25 inches per second peak particle velocity (the threshold for historic buildings), this impact would be less than significant.

Mitigation Measure NOI-2: Vibration Monitoring Plan (refer to Impact NOI-3 in Section 3.8, Noise and Vibration)

Impact CUL-2: The Project could cause a substantial adverse change in the significance of an archaeological resource, including those determined to be a historical resource defined in Section 15064.5 or a unique archaeological resource defined in Public Resources Code 21083.2. (Less than Significant with Mitigation)

This section discusses archaeological resources that are potentially historical resources according to CEQA Guidelines Section 15064.5 as well as unique archaeological resources defined in Public Resources Code Section 21083.2(g).

Two previously recorded archaeological sites (CA-SCR-44/H and CA-SCR-150) overlap slightly with the proposed lake storage area. CA-SCR-44/H has been previously recommended eligible
for listing in the National Register and California Register under Criterion D/4 (data potential) and is considered a historical resource pursuant to CEQA Guidelines Section 15064.5(a)(3). CA-SCR-150 has not been previously evaluated for listing in the National Register or California Register, but has been determined by PV Water to be a historical resource pursuant CEQA Guidelines Section 15064.5(a)(4). Neither site would be subject to direct impacts from Project-related ground disturbance, but there is potential for indirect impacts due to prolonged water storage compared to existing conditions and erosion.

There is also a potential for the Project to encounter buried archaeological resources during Project-related ground disturbance. The Project area is generally considered to have a moderate to high sensitivity for buried prehistoric archaeological resources, and the geoarchaeological review indicated that these resources could be shallowly or deeply buried. As indicated on Figure 3.10-1, areas with moderate to low sensitivity for cultural resources are shaded orange; areas with high sensitivity for shallow and deep cultural resources are shaded purple; and areas with high sensitivity for shallow cultural resources but low sensitivity for deep cultural resources are shaded green.

The areas with the highest potential to encounter historic-period archaeological resources includes the area along Maple Street/2nd Street between Main Street and Union Street where the original Chinatown was located in the mid-1880s. There may also be traces of the railroad line related to the Watsonville Railroad and Navigation Company’s wharf at Palm Beach that once ran along the present route of Beach Road.

The Project has the potential to result in a substantial adverse change in the significance of an archaeological resource since there is potential for indirect impacts to known archaeological resources due to prolonged inundation and erosion, and to unknown archaeological resources from ground disturbance, which would extend up to 30 feet in depth. With implementation of Mitigation Measures CUL-1a through CUL-II, which require retention of a qualified archaeologist, pre-construction surveys, development of a cultural resources monitoring and mitigation program, construction worker cultural resources sensitivity training, archaeological and Native American monitoring, treatment of inadvertent discoveries, and long-term monitoring of CA-SCR-44/H and CA-SCR-150, impacts to archaeological resources would be reduced to less than significant.

Mitigation Measure CUL-1a: Retention of a Qualified Archaeologist

Prior to start of any ground-disturbing activities (i.e., demolition, pavement removal, pot-holing or auguring, boring, drilling, grubbing, vegetation removal, brush clearance, weed abatement, grading, excavation, trenching, or any other activity that has potential to disturb soil), PV Water shall retain a qualified archaeologist meeting the Secretary of the Interior’s Professional Qualifications Standards for archaeology (codified in 36 CFR Part 61; 48 FR 44738-44739) to oversee and ensure that all mitigation related to archaeological resources is carried out.

Mitigation Measure CUL-1b: Pre-Construction Phase I Cultural Resources Survey

Prior to the start of any ground-disturbing activity, the qualified archaeologist shall conduct a pre-construction Phase I Cultural Resources Survey of all areas that have not
3. Environmental Setting, Impacts, and Mitigation Measures

3.10 Cultural Resources

been previously surveyed within the last five years. The survey shall document resources potentially qualifying as historical resources or unique archaeological resources under CEQA. The qualified archaeologist shall document the results of the survey in a Phase I Cultural Resources Survey Report that follows *Archaeological Resource Management Reports (ARMR): Recommended Contents and Format.* The qualified archaeologist shall also prepare Department of Parks and Recreation 523 forms for resources encountered during the survey, which shall be appended to the report. If historic architectural resources are encountered that could potentially be impacted by the Project, the qualified archaeologist shall consult with a Qualified Architectural Historian meeting the Secretary of the Interior’s Professional Qualifications Standards for architectural history (codified in 36 CFR Part 61; 48 FR 44738-44739). The qualified archaeologist shall submit the draft Phase I Cultural Resources Survey Report to PV Water at least 90 days prior to the start of ground disturbance. The qualified archaeologist shall submit the final Phase I Cultural Resources Survey Report to the Northwest Information Center.

In the event resources potentially qualifying as historical resources or unique archaeological resources under CEQA are identified during the survey, avoidance and preservation in place shall be the preferred manner of mitigating impacts to the resources. Preservation in place maintains the important relationship between artifacts and their archaeological context and also serves to avoid conflict with traditional and religious values of groups who may ascribe meaning to the resource. Preservation in place may be accomplished by, but is not limited to, avoidance, incorporating the resource into open space, capping, or deeding the site into a permanent conservation easement. If avoidance of archaeological resources is determined by PV Water to be infeasible in light of factors such as the nature of the find, Project design, costs, and other considerations, then the portion of the resource within the Area of Direct Impact shall be subject to presence/absence testing and if potentially significant deposits are identified, the resource shall be evaluated for significance under all four National Register/California Register Criteria (A/1-D/4). If a resource is found to be significant (i.e., meets the definition for historical resource in CEQA Guidelines Section 15064.5(a) or unique archaeological resource in Public Resources Code Section 21083.2(g)), the qualified archaeologist shall develop an Archaeological Data Recovery and Treatment Plan for the resource. When assessing significance and developing treatment for resources that are Native American in origin, the qualified archaeologist and PV Water shall consult with the appropriate Native American representatives.

**Mitigation Measure CUL-1c: Development of a Cultural Resources Monitoring and Mitigation Program**

The qualified archaeologist shall prepare a Cultural Resources Mitigation and Monitoring Program (CRMMP) based on the final approved Project design plans. The CRMMP shall be submitted to PV Water at least 60 days prior to the start of any ground-disturbing activities. The CRMMP shall include:

- **Provisions for Archaeological Monitoring.** The CRMMP shall outline the archaeological monitor(s) responsibilities and requirements (refer to Mitigation Measure CUL-1f). The qualified archaeologist, in consultation with PV Water, shall have the ability to modify monitoring frequencies (i.e., either increase, decrease, or discontinue entirely) at all locations described below, based on soil observations (if it

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is determined that the likelihood of encountering intact significant resources is low due to disturbances or soil types, monitoring may be decreased or cease entirely) or discoveries (discovery of archaeological resources may warrant increased frequency of monitoring).

- Full-time archaeological monitoring shall be required during all ground disturbance in the following locations:
  - Areas shaded purple and green on Figure 3.10-1 of the College Lake Integrated Resources Management Project EIR that are within agricultural fields (i.e., not within paved roadway right-of-ways).
  - The area along Maple Street/2nd Street between Main Street and Union Street within the City of Watsonville.
  - Within 100 feet of Environmentally Sensitive Areas established through implementation of Mitigation Measure CUL-1e.

- Part-time archaeological monitoring consisting of one 8-hour day per week shall be conducted during ground disturbance in the following locations (as noted above, the frequency of monitoring may be modified if conditions warrant):
  - Areas shaded purple on Figure 3.10-1 of the College Lake Integrated Resources Management Project EIR that are within paved roadway right-of-ways (i.e., not within agricultural fields), with the exception of area along Maple Street/2nd Street between Main Street and Union Street, which requires full-time monitoring as outlined above.
  - Areas shaded orange on Figure 3.10-1 of the College Lake Integrated Resources Management Project EIR that are within agricultural fields (i.e., not within paved roadway right-of-ways).

- Part-time archaeological monitoring consisting of one 4-hour day per week shall be conducted during ground disturbance in the following locations (as noted above, the frequency of monitoring may be modified if conditions warrant):
  - Areas shaded orange on Figure 3.10-1 of the College Lake Integrated Resources Management Project EIR that are within paved roadway right-of-ways (i.e., not within agricultural fields).

- Procedures for Discovery of Archaeological Resources. Procedures to be implemented in the event of an archaeological discovery shall be fully defined in the CRMMP, and shall include stop-work and protective measures, notification protocols, procedures for significance assessments, and appropriate treatment measures, and shall address procedures for when an archaeological monitor is present, and when one is not present. The CRMMP shall state avoidance or preservation in place is the preferred manner of mitigating impacts to historical resources and unique archaeological resources, but shall provide procedures to follow should PV Water determine that avoidance is infeasible in light of factors such as the nature of the find, Project design, costs, and other considerations. See also Mitigation Measure CUL-1h.

If, based on the recommendation of the qualified archaeologist, it is determined that a discovered archaeological resource constitutes a historical resource or unique
archaeological resource pursuant to CEQA and data recovery through excavation is the only feasible mitigation available, an Archaeological Resources Data Recovery and Treatment Plan shall be prepared and implemented by the qualified archaeologist in coordination with PV Water that provides for the adequate recovery of the scientifically consequential information contained in the archaeological resource. PV Water, or its designee, shall consult with appropriate Native American representatives in determining treatment of resources that are Native American in origin to ensure cultural values ascribed to the resource, beyond those that are scientifically important, are considered.

- **Procedures for Discovery of Human Remains and Associated Funerary Objects.** The CRMMP shall outline the protocols and procedures to be followed in the event that human remains and associated funerary objects are encountered during construction. These shall include stop-work and protective measures, notification protocols, and compliance with California Health and Safety Code Section 7050.5 and Public Resources Code Section 5097.98 (refer to Mitigation Measure CUL-2).

- **Reporting Requirements.** The CRMMP shall outline provisions for weekly, monthly, and final reporting. The qualified archaeologist shall prepare weekly status reports detailing activities and locations observed (including maps) and summarizing any discoveries for the duration of monitoring to be submitted to PV Water via e-mail for each week in which monitoring activities occur. Monthly progress reports summarizing monitoring efforts shall be prepared and submitted to PV Water for the duration of ground disturbance. The qualified archaeologist shall prepare a draft Archaeological Resources Monitoring Report and submit it to PV Water within 60 days after completion of the monitoring program or of treatment for significant discoveries should treatment extend beyond the cessation of monitoring. The final Archaeological Resources Monitoring Report shall be submitted to PV Water within 30 days of receipt of PV Water comments. The qualified archaeologist shall also submit the final Archaeological Resources Monitoring Report to the Northwest Information Center. If human remains are encountered, a confidential report documenting all activities shall be submitted to the California Native American Heritage Commission within 90 days after completion of any treatment (refer to Mitigation Measure CUL-2).

- **Curation Requirements.** Disposition of Native American archaeological materials shall be determined through consultation between Native American representatives, the qualified archaeologist, and PV Water. Disposition of human remains and associated funerary objects shall be determined through consultation between the Most Likely Descendant, landowner, and PV Water (refer to Mitigation Measure CUL-2).

Any historic-period archaeological materials that are not Native American in origin shall be curated at a repository accredited by the American Association of Museums that meets the standards outlined in 36 CFR 79.9. If no accredited repository accepts the collection, then it may be curated at a non-accredited repository as long as it meets the minimum standards set forth by 36 CFR 79.9. If neither an accredited nor a non-accredited repository accepts the collection, then it may be offered to a public, non-profit institution with a research interest in the materials, or donated to a local school or historical society in the area for educational purposes, to be determined by the qualified archaeologist in consultation with PV Water.

- **Protocols for Native American Monitoring and Input.** The CRMMP shall outline the role and responsibilities of Native American Tribal representatives. It shall include
communication protocols, an opportunity and timelines for review of cultural resources documents related to discoveries that are Native American in origin, and provisions for Native American monitoring. The CRMMP shall include provisions for full-time Native American monitoring of ground disturbance in the purple and green shaded areas shown on Figure 3.10-1 of the College Lake Integrated Resources Management Project EIR within agricultural fields (i.e., not within paved roadway right-of-ways), as well as during any subsurface investigation and data recovery for discovered resources that are Native American in origin (refer to Mitigation Measures CUL-1g).

**Mitigation Measure CUL-1d: Construction Worker Cultural Resources Sensitivity Training Program**

A worker cultural resources sensitivity training program shall be implemented for the Project. Prior to any ground-disturbing activity, an initial sensitivity training session shall be provided by the qualified archaeologist to all project employees, contractors, subcontractors, and other professionals prior to their involvement in any ground-disturbing activities, with subsequent training sessions occurring on a monthly basis to accommodate new personnel becoming involved in the Project (subsequent sessions can be coordinated with other Worker Environmental Awareness Program or safety training that may be required). Construction personnel shall be informed of the sensitivity of the Project area and given a tutorial providing information on how to identify the types of resources that may be encountered. They shall be instructed on the proper procedures to be enacted in the event of an inadvertent discovery of archaeological resources or human remains, confidentiality of discoveries, and safety precautions to be taken when working with cultural resources monitors. PV Water shall make it a requirement that construction personnel are made available for and attend training sessions and retain documentation demonstrating attendance.

**Mitigation Measure CUL-1e: Designation of Environmentally Sensitive Areas**

Prior to the start of ground disturbance, the portion of the boundary of CA-SCR-44/H nearest Project-related activities shall be marked as an Environmentally Sensitive Area. This area shall not be marked as an archaeological resource, but shall be designated as an “exclusion zone” on Project plans and protective fencing in order to discourage unauthorized disturbance or collection of artifacts. The qualified archaeologist, or his/her designee, shall periodically inspect this area for the duration of Project activities in the vicinity to ensure that protective fencing remains intact and no incursions into the exclusion zone have occurred. Upon completion of all Project-related activities in the vicinity, all protective fencing and signage shall be removed.

**Mitigation Measure CUL-1f: Archaeological Monitoring**

Project-related ground disturbance shall be subject to archaeological monitoring as outlined in Mitigation Measure CUL-1c. The archaeological monitor(s) shall be familiar with the types of resources that could be encountered and shall work under the direct supervision of the qualified archaeologist. The archaeological monitor(s) shall keep daily logs detailing the types of activities and soils observed, and any discoveries. Archaeological monitor(s) shall have the authority to halt and re-direct ground disturbing activities in the event of a discovery until it has been assessed for significance and treatment implemented, if necessary, based on the recommendations of the qualified archaeologist in coordination with PV Water, and the Native American representatives in
the event the resource is Native American in origin, and in accordance with the protocols and procedures outlined in the CRMMP (refer to Mitigation Measure CUL-1c). The qualified archaeologist shall have the authority to modify monitoring frequencies based on soil observations and/or discoveries.

Mitigation Measure CUL-1g: Native American Monitoring

Prior to the start of any ground-disturbing activity, PV Water shall retain a qualified Native American monitor to provide monitoring services as outlined in Mitigation Measure CUL-1c. The Native American monitor shall be from a Tribe that is culturally and geographically affiliated with the Project area (according to the California Native American Heritage Commission contact list for this project). If resources of Native American origin are discovered, the Native American monitor shall provide monitoring services in accordance with protocols and procedures outlined in the CRMMP (refer to Mitigation Measure CUL-1c).

Mitigation Measure CUL-1h: Inadvertent Discovery of Archaeological Resources

In the event that archaeological resources are encountered during ground disturbance, all activity in the vicinity of the find shall cease (within 100 feet), and the protocols and procedures for discoveries outlined in the CRMMP shall be implemented (refer to Mitigation Measure CUL-1c). The discovery shall be evaluated for potential significance by the qualified archaeologist. If the qualified archaeologist determines that the resource may be significant, the qualified archaeologist shall develop an appropriate treatment plan for the resource in accordance with the CRMMP (refer to Mitigation Measure CUL-1c). When assessing significance and developing treatment for resources that are Native American in origin, the qualified archaeologist and PV Water shall consult with the appropriate Native American representatives. The qualified archaeologist shall also determine if work may proceed in other parts of the Project area while treatment for cultural resources is being carried out, and whether additional archaeological and/or Native American monitoring is warranted.

Mitigation Measure CUL-1i: Long-Term Monitoring of CA-SCR-44/H and CA-SCR-150

PV Water shall retain a qualified archaeologist to conduct quarterly inspections of the portions of CA-SCR-44/H and CA-SCR-150 that overlap with the proposed lake storage area to ensure that lake water levels are not resulting in site erosion. If erosion or other indirect impacts are noted, PV Water shall work with the qualified archaeologist to develop a plan to protect the site(s) from further damage, or a plan to conduct data recovery of the affected portion(s) if protective measures are determined by PV Water to be infeasible. Quarterly inspections shall be conducted for two years, after which time they shall be reduced to semi-annual inspections for an additional three years. If after five years no erosion or other indirect impacts are noted, the long-term monitoring program shall be discontinued. After each inspection, the qualified archaeologist shall prepare a memorandum documenting the results of the inspection with photographs. Memoranda shall be submitted to PV Water within 30 days of the completion of each inspection.
Impact CUL-3: The Project could disturb human remains, including those interred outside of formal cemeteries. (*Less than Significant with Mitigation*)

There are archaeological sites with Native American burials, as well as formal cemeteries, in the vicinity of the Project. None of the sites or cemeteries overlap with proposed ground-disturbing activities and it is not anticipated that the Project would disturb human remains associated with these resources. However, given the prehistoric occupation of the area and the high sensitivity for buried prehistoric resources, there is a potential for Project-related ground disturbance to disturb human remains, including those outside of formal cemeteries. With implementation of Mitigation Measure CUL-2, which requires halting work and complying with Public Resources Code Section 5097.98 and Health and Safety Code Section 7050.5, impacts to human remains would be *less than significant*.

Mitigation Measure CUL-2: Inadvertent Discovery of Human Remains

If human remains are encountered, then PV Water shall halt work in the vicinity (within 100 feet) of the discovery and contact the County Coroner in accordance with Public Resources Code Section 5097.98 and Health and Safety Code Section 7050.5. If the County Coroner determines the remains are Native American, then the Coroner shall notify the California Native American Heritage Commission in accordance with Health and Safety Code subdivision 7050.5(c), and Public Resources Code Section 5097.98. The California Native American Heritage Commission shall designate a Most Likely Descendant for the remains pursuant to Public Resources Code Section 5097.98. Until the landowner has conferred with the Most Likely Descendant, the contractor shall ensure the immediate vicinity where the discovery occurred is not disturbed by further activity, is adequately protected according to generally accepted cultural or archaeological standards or practices, and that further activities take into account the possibility of multiple burials. If human remains are encountered, the qualified archaeologist, in consultation with the Most Likely Descendant shall prepare a confidential report documenting all activities and it shall be submitted to the California Native American Heritage Commission within 90 days after completion of any treatment.

**Cumulative Impacts**

**Impact C-CUL-1: The Project, in combination with past, present, and probable future projects in the Project area, could have cumulatively considerable impacts on cultural resources. (*Less than Significant with Mitigation*)**

This section presents an analysis of the cumulative effects of the Project in combination with other past, present, and probable future projects that could cause cumulatively considerable impacts. Related projects in the vicinity of the Project are presented in Table 3.1-1 and Figure 3.1-1 in Section 3.1 of this EIR.

The geographic scope for cumulative impacts to cultural resources (i.e., historical resources, unique archaeological resources, and human remains) consists of the Pajaro Valley. This geographic scope of analysis is appropriate because the historical resources, unique archaeological resources, and human remains within this area are similar and share a common
heritage with the resources in the vicinity of the Project. The temporal scope for cumulative impacts to cultural resources encompasses both the short-term and long-term cumulative impacts of the Project, in conjunction with other cumulative projects in the area.

**Historical Resources (not including archaeological resources)**

Cumulative impacts to historical resources evaluate whether impacts of the Project and related projects, when taken as a whole, substantially diminish the number of historical resources within the same or similar context or property type. Although impacts to historical resources tend to be site specific, cumulative impacts may involve resources that are examples of the same style or property type as those within the Project area. Cumulative impacts would also occur if the Project and related projects cumulatively affect historical resources in the immediate vicinity.

No historical resources would be directly affected by the Project. As described above under Impact CUL-1, use of certain construction equipment (e.g., vibratory pile drivers or drill rigs) less than 20 feet from historic resources (such as those with the Watsonville Historic District) could cause building damage, potentially resulting in a substantial adverse change in the significance of historical resources. Other projects within the Watsonville Historic District, such as the Main Street Improvement Project and Lincoln Street Safety Project, could also result in indirect effects to historical resources. The incremental impact of the Project combined with those of the cumulative projects could result in a significant cumulative impact on historical resources. However, Mitigation Measure NOI-2 (Vibration Monitoring Plan, described above) would ensure that the Project’s contribution toward cumulative effects on historical resources would not be cumulatively considerable.

**Archaeological Resources**

Table 3.1-1 and Figure 3.1-1 present multiple projects that would result in ground disturbance, including those within areas of high archaeological sensitivity, are proposed throughout the geographic scope of analysis. Cumulative impacts to archaeological resources could occur if any of these projects, in conjunction with this Project, would have impacts on archaeological resources that, when considered together, would be significant.

As described above under Impact CUL-2, two archaeological resources (CA-SCR-44/H and CA-SCR-150) partially overlap with the proposed lake storage area and could potentially be adversely affected due to prolonged inundation and erosion; and there is the potential for impacts to unknown archaeological resources during ground disturbance. Other projects described in Table 3.1-1 that include ground disturbance could result in similar impacts to known and unknown archaeological resources. The incremental impact of the Project combined with those of the cumulative projects could result in a significant cumulative impact on archaeological resources. However, Mitigation Measures CUL-1a through CUL-1i (described above) would ensure that the Project’s contribution toward cumulative effects on archaeological resources would not be cumulatively considerable.

**Human Remains**

As noted, multiple projects that would result in ground disturbance are proposed throughout the geographic scope of analysis (refer to Table 3.1-1 and Figure 3.1-1 for projects). Cumulative
impacts to human remains could occur if any of these projects, in conjunction with this Project, would have impacts on human remains that, when considered together, would be significant.

As described above under Impact CUL-3, given the prehistoric occupation of the area and the high sensitivity for buried prehistoric resources, there is a potential for Project-related ground disturbance to disturb undocumented human remains, including those outside of formal cemeteries. Other projects in the cumulative scenario that include ground disturbance could result in similar impacts to human remains. The incremental impact of the Project combined with those of the cumulative projects could result in a cumulative impact on human remains. However, Mitigation Measure CUL-2, which requires halting work and complying with Public Resources Code Section 5097.98 and Health and Safety Code Section 7050.5, would ensure that the Project’s contribution toward cumulative effects on human remains would not be cumulatively considerable.

Mitigation Measure NOI-2: Vibration Monitoring Plan (refer to Impact NOI-4 in Section 3.8, Noise and Vibration)

Mitigation Measure CUL-1a: Retention of a Qualified Archaeologist (refer to Impact CUL-2)

Mitigation Measure CUL-1b: Pre-Construction Phase I Cultural Resources Survey (refer to Impact CUL-2)

Mitigation Measure CUL-1c: Development of a Cultural Resources Monitoring and Mitigation Program (refer to Impact CUL-2)

Mitigation Measure CUL-1d: Construction Worker Cultural Resources Sensitivity Training Program (refer to Impact CUL-2)

Mitigation Measure CUL-1e: Designation of Environmentally Sensitive Areas (refer to Impact CUL-2)

Mitigation Measure CUL-1f: Archaeological Monitoring (refer to Impact CUL-2)

Mitigation Measure CUL-1g: Native American Monitoring (refer to Impact CUL-2)

Mitigation Measure CUL-1h: Inadvertent Discovery of Archaeological Resources (refer to Impact CUL-2)

Mitigation Measure CUL-1i: Long-Term Monitoring of CA-SCR-44/H and CA-SCR-150 (refer to Impact CUL-2)

Mitigation Measure CUL-2: Inadvertent Discovery of Human Remains (refer to Impact CUL-3)
3.11 Tribal Cultural Resources

This section presents an analysis of potential impacts related to tribal cultural resources that would result from implementation of the proposed College Lake Integrated Resources Management Project (Project). The analysis includes both site options (preferred and optional) for the water treatment plant as well as preferred and optional pipeline alignments for the College Lake pipeline. Because Tribal Cultural Resources were not analyzed in the 2014 Basin Management Plan Update Program Environmental Impact Report (2014 BMP Update PEIR), there are no adopted mitigation measures to be considered part of the Project for this environmental resource.

3.11.1 Setting

3.11.1.1 Ethnographic Setting

Based on a compilation of ethnographic, historic, and archaeological data, Milliken et al. \(^1\) describes a group known as the Ohlone, who once occupied the general vicinity of the Project sites. While traditional anthropological literature portrayed the Ohlone peoples as having a static culture, it is now better understood that many variations of culture and ideology existed within and between villages. While these static descriptions of separations between native cultures of California make it an easier task for ethnographers to describe past behaviors, this masks Native adaptability and self-identity. California’s Native Americans never saw themselves as members of larger cultural groups, as described by anthropologists. Instead, they saw themselves as members of specific villages, perhaps related to others by marriage or kinship ties, but viewing the village as the primary identifier of their origins.

Levy \(^2\) describes the language group spoken by the Ohlone, known as “Costanoan.” This term is originally derived from a Spanish word designating the coastal peoples of Central California. Today Costanoan is used as a linguistic term that references to a larger language family spoken by distinct sociopolitical groups that spoke at least eight languages (as different as Spanish is from French) of the same Penutian language group. The Ohlone once occupied a large territory from San Francisco Bay in the north to the Big Sur and Salinas Rivers in the south. The Project is in the greater Rumsen-speaking tribal area; their territory extended from Point Sur northward to the lower Pajaro River, and included the present-day cities of Monterey, Seaside, Marina, and Carmel. Dialects of the Rumsen language were spoken by four independent local tribes, including Rumsen in Monterey, Ensen of the Salinas vicinity, Calenda Ruc of the central shoreline of Monterey Bay, and Sargentaruc of the Big Sur Coast. Five villages were present in Rumsen territory at the time of Spanish contact: Achasta, Tucutnut, Soccorronda, Echilat and Ichxenta. \(^3\)

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Ohlone engaged in hunting and gathering. Their territory encompassed both coastal and open valley environments that contained a wide variety of resources, including grass seeds, acorns, bulbs and tubers, bear, deer, elk, antelope, a variety of bird species, and rabbit and other small mammals. The Ohlone acknowledged private ownership of goods and songs, and village ownership of rights to land and/or natural resources; they appear to have aggressively protected their village territories, requiring monetary payment in the form of clamshell beads for access rights, and even shooting trespassers if caught. After European contact, Ohlone society was severely disrupted by missionization, disease, and displacement. Today, the Ohlone, while not federally recognized, still have a strong presence in the Monterey Bay Area, and are highly interested in their historic and prehistoric past.

3.11.1.2 Identification of Tribal Cultural Resources

**Tribal Cultural Resources Definition**

Tribal cultural resources are defined as sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either included or determined to be eligible for inclusion in the California Register of Historical Resources (California Register) or included in a local register of historical resources, or a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant. A cultural landscape that meets these criteria is a tribal cultural resource to the extent that the landscape is geographically defined in terms of the size and scope of the landscape. Historical resources, unique archaeological resources, or non-unique archaeological resources may also be tribal cultural resources if they meet these criteria.

Refer also to Section 3.11.3.1, Significance Criteria, for additional detail regarding this definition.

**Native American Heritage Commission**

The California Native American Heritage Commission (NAHC) maintains a confidential Sacred Lands File (SLF) that contains sites of traditional, cultural, or religious value to the Native American community. The NAHC was contacted on April 5, 2018 to request a search of the SLF for the Project. The NAHC responded to the request in a letter dated April 24, 2018 indicating that a search of the SLF returned negative results.

**Native American Outreach**

No California Native American Tribes have requested notification of projects under the jurisdiction of Pajaro Valley Water Management Agency (PV Water) as required by Public Resources Code Section 21080.3.1(b)4, and formal consultation was not conducted. However, PV Water conducted informal Native American outreach in the form of certified letters, phone calls, and e-mail to solicit information and concerns about the Project and sensitive resources in the vicinity.

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4 Section 3.11.2.1 summarizes the consultation requirements of Public Resources Code Section 21080.3 and related code sections.
Letters were sent via certified mail on September 20, 2017 to all individuals listed on the NAHC contact list for the Project and follow-up phone calls were conducted on October 16, 2017. Follow-up e-mails were sent on April 18, 2018, informing recipients of Project updates and requesting additional information or concerns regarding Native American cultural resources that could be affected by the Project.

The respondents generally expressed concerns about prehistoric archaeological resources and human remains, and requested monitoring of ground disturbance. Aspects of their requests (such as establishment of Environmentally Sensitive Areas and provisions for Native American monitoring) have been incorporated into mitigation measures outlined in Section 3.10, Cultural Resources. None of the respondents identified a tribal cultural resource as defined by Public Resources Code Section 20174 within the Project area. Table 3.11-1 summarizes the results of all outreach and specific comments provided by each respondent.

### 3.11.2 Regulatory Framework

#### 3.11.2.1 Federal and State

**Assembly Bill 52 and Related Public Resources Code Sections**

Assembly Bill (AB) 52 was approved by California State Governor Edmund Gerry “Jerry” Brown, Jr. on September 25, 2014. The act amended California Public Resources Code Section 5097.94, and added Public Resources Code Sections 21073, 21074, 21080.3.1, 21080.3.2, 21082.3, 21083.09, 21084.2, and 21084.3. AB 52 applies specifically to projects for which a Notice of Preparation or a Notice of Intent to Adopt a Negative Declaration or Mitigated Negative Declaration will be filed on or after July 1, 2015. The primary intent of AB 52 was to include California Native American Tribes early in the environmental review process and to establish a new category of resources related to Native Americans that require consideration under the California Environmental Quality Act (CEQA), known as tribal cultural resources. Public Resources Code Section 21074(a)(1) and (2) defines tribal cultural resources as “sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American Tribe” that are either included or determined to be eligible for inclusion in the California Register or included in a local register of historical resources, or a resource that is determined to be a tribal cultural resource by a lead agency, in its discretion and supported by substantial evidence. On July 30, 2016, the California Natural Resources Agency adopted the final text for tribal cultural resources update to Appendix G of the CEQA Guidelines, which was approved by the Office of Administrative Law on September 27, 2016.

Public Resources Code Section 21080.3.1 requires that within 14 days of a lead agency determining that an application for a project is complete, or a decision by a public agency to undertake a project, the lead agency provide formal notification to the designated contact, or a tribal representative, of California Native American Tribes that are traditionally and culturally affiliated with the geographic area of the project (as defined in Public Resources Code Section 21073) and who have requested in writing to be informed by the lead agency (Public Resources Code Section 21080.3.1(b)). Tribes interested in consultation must respond in writing within 30 days from receipt of the lead agency’s formal notification and the lead agency must
### TABLE 3.11-1

**NATIVE AMERICAN OUTREACH**

<table>
<thead>
<tr>
<th>Individual</th>
<th>Affiliation</th>
<th>Date(s) Letter Sent</th>
<th>Date(s) of Follow-up Phone Call</th>
<th>Date(s) Follow-up E-mail Sent</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rosemary Cambra</td>
<td>Chairperson, Muwekma Ohlone Indian Tribe of the San Francisco Bay Area</td>
<td>9/20/17</td>
<td>10/16/17</td>
<td>-</td>
<td>Unable to reach Chairperson Cambra. The letter was returned (return to sender/unable to forward). Her voice message mailbox was full and could not accept additional voicemail. The other number provided by the NAHC has been disconnected.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- No response to date.</td>
</tr>
<tr>
<td>Valentin Lopez</td>
<td>Chairperson, Amah Mutsun Tribal Band</td>
<td>9/20/17</td>
<td>10/23/17</td>
<td>-</td>
<td>Chairperson Lopez requested formal consultation with PV Water, including a site visit, maps, and the scope of the Project. He also noted that the Project area is highly sensitive for the presence of prehistoric resources. Via an e-mail to PV Water dated 12/12/2017, Chairperson Lopez requested consultation regarding the construction of new recharge basins, weirs, intake pump stations, and associated pipelines, which are within the Tribe's traditional tribal territory. He further requested that a Native American monitor be used for any ground disturbance within 400 feet of known archaeological sites.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- In an e-mail dated 4/25/2018, Chairperson Lopez requested: (1) research on the natural waterways before European contact (pre-contact) to determine where they are in relationship to the Project area since ancestors lived along these waterways; (2) Native American monitoring by his Tribe for ground disturbance within 400 feet of pre-contact waterways; and (3) notification of all finding of cultural materials.</td>
</tr>
<tr>
<td>Patrick Orozco</td>
<td>Chairman, Costanoan Ohlone Rumsen-Mutsen Tribe</td>
<td>9/20/17</td>
<td>10/17/17</td>
<td>-</td>
<td>Chairman Orozco expressed concern regarding the number of previously documented and undocumented archaeological resources within the Project footprint. He recommended that all archaeological sites be avoided and that environmentally sensitive areas with 100 to 200-foot buffers be established around the archaeological sites prior to Project implementation. Chairman Orozco also requested that a more detailed map of the Project components be sent to him via e-mail.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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<td></td>
<td>- No response to date.</td>
</tr>
<tr>
<td>Ann Marie Sayers</td>
<td>Chairperson, Indian Canyon Mutsun Band of Costanoan</td>
<td>9/20/17</td>
<td>10/16/17</td>
<td>-</td>
<td>Chairperson Sayers recommended archaeological and Native American monitoring for all Project-related earth moving. She also inquired about the feasibility of reintering human remains on site, should they be encountered. She was very concerned about the disposition of human remains and would like them reinterred as close to where they were discovered as possible. She also inquired about where artifacts would be housed, should they be recovered. She also expressed an interest in speaking with PV Water regarding her concerns.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- No response to date.</td>
</tr>
<tr>
<td>Irenne Zwierlein</td>
<td>Chairperson, Amah Mutsun Tribal Band of Mission San Juan Bautista</td>
<td>9/20/17</td>
<td>10/16/17</td>
<td>-</td>
<td>Chairperson Zwierlein recommended that the equipment operators on site undergo training on how to identify archaeological resources and what to do when they are identified. She also recommended that monitors be present on site during Project-related construction activities.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- No response to date.</td>
</tr>
</tbody>
</table>
begin consultation within 30 days of receiving the tribe’s request for consultation (Public Resources Code Sections 21080.3.1(d) and 21080.3.1(e)).

Public Resources Code Section 21080.3.2(a) identifies the following as potential consultation discussion topics: the type of environmental review necessary; the significance of tribal cultural resources; the significance of the project’s impacts on the tribal cultural resources; project alternatives or appropriate measures for preservation; and mitigation measures. Consultation is considered concluded when either: (1) the parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or (2) a party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached (Public Resources Code Section 21080.3.2(b)).

If a California Native American tribe has requested consultation pursuant to Section 21080.3.1 and has failed to provide comments to the lead agency, or otherwise failed to engage in the consultation process, or if the lead agency has complied with Section 21080.3.1(d) and the California Native American tribe has failed to request consultation within 30 days, the lead agency may certify an EIR or adopt a Mitigated Negative Declaration (Public Resources Code Section 21082.3(d)(2) and (3)).

Public Resources Code Section 21082.3(c)(1) states that any information, including, but not limited to, the location, description, and use of the tribal cultural resources, that is submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public without the prior consent of the tribe that provided the information. If the lead agency publishes any information submitted by a California Native American tribe during the consultation or environmental review process, that information shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public.

**California Government Code Sections 6254(r) and 6254.10**

Section 6254(r) explicitly authorizes public agencies to withhold information from the public relating to “Native American graves, cemeteries, and sacred places maintained by the Native American Heritage Commission.” Section 6254.10 specifically exempts from disclosure requests for “records that relate to archaeological site information and reports, maintained by, or in the possession of the Department of Parks and Recreation, the State Historical Resources Commission, the State Lands Commission, the Native American Heritage Commission, another state agency, or a local agency, including the records that the agency obtains through a consultation process between a Native American tribe and a state or local agency.”

**3.11.2.2 Local**

Table 2-10 in Chapter 2, Project Description, identifies the approvals from Santa Cruz County and/or the City of Watsonville required for the Project. Table 3.11-2 presents pertinent local plans and policies regarding geology and soils to support County and City consideration of project
consistency with general policies. In some cases, local policies are used in this EIR as criteria to determine the significance of physical effects on the environment (e.g., Impact NOI-1 in Section 3.8, Noise and Vibration).

### Table 3.11-2

**LOCAL PLANS AND POLICIES RELEVANT TO THE PROJECT**

<table>
<thead>
<tr>
<th>SANTA CRUZ COUNTY PLANS AND POLICIES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Santa Cruz County General Plan/Local Coastal Program</strong></td>
</tr>
<tr>
<td><strong>5.19.1 Evaluation of Native American Cultural Sites.</strong> Protect all archaeological resources until they can be evaluated. Prohibit any disturbance of Native American Cultural Sites without an appropriate permit. Maintain the Native American Cultural Sites ordinance.</td>
</tr>
<tr>
<td><strong>5.19.5 Native American Cultural Sites</strong>. Prohibit any disturbance of Native American Cultural Sites without an archaeological permit.</td>
</tr>
<tr>
<td><strong>Santa Cruz County Municipal Code</strong></td>
</tr>
<tr>
<td><strong>16.40 Native American Cultural Sites</strong></td>
</tr>
<tr>
<td><strong>16.40.030 Archaeological assessments required.</strong></td>
</tr>
<tr>
<td>A. Archaeological Survey. An archaeological survey shall be required for any discretionary project which will result in ground disturbance and which will be located within a mapped archaeological sensitive area. In addition, an archaeological survey shall be required for any project which will result in ground disturbance within 500 feet of a recorded Native American cultural site. The archaeological survey shall be prepared according to procedures established by the Planning Director.</td>
</tr>
<tr>
<td>B. Archaeological Report. An archaeological report shall be required prior to the issuance of any project permits when a project site contains a culturally significant Native American cultural site and when development of the project will result in the disturbance of that site. In some cases, an archaeological report may be required before an archaeological site development permit is issued, pursuant to SCC 16.40.050.</td>
</tr>
<tr>
<td><strong>16.40.040 Site discovered during excavation or development.</strong></td>
</tr>
<tr>
<td>A. Presence of Artifacts and/or Human Remains. Any property owner who, at any time in the preparation for or process of excavating or otherwise disturbing the ground, discovers any human remains of any age, or any artifact or other evidence of a Native American cultural site which reasonably appears to exceed 100 years of age, shall:</td>
</tr>
<tr>
<td>1. Cease and desist from all further excavations and disturbances within 200 feet of the discovery.</td>
</tr>
<tr>
<td>2. Arrange for staking completely around the area of discovery by visible stakes no more than 10 feet apart, forming a circle having a radius of no less than 100 feet from the point of discovery; provided, however, that such staking need not take place on adjoining property unless the owner of the adjoining property authorizes such staking.</td>
</tr>
<tr>
<td>3. Notify the Sheriff-Coroner of the discovery if human remains have been discovered. Notify the Planning Director if the discovery contains no human remains.</td>
</tr>
<tr>
<td>4. Grant all duly authorized representatives of the Coroner and the Planning Director permission to enter onto the property and to take all actions consistent with this chapter.</td>
</tr>
<tr>
<td>B. Recent Human Remains. If the Coroner determines that the remains are of recent origin, and that they are not a part of a site, then the provisions of this chapter shall no longer apply, and the Coroner shall notify the property owner when excavation or development may proceed. If the Coroner determines that the remains are not obviously of recent origin, the Coroner shall forthwith notify the Planning Director of the discovery of said remains.</td>
</tr>
<tr>
<td>C. Property Inspection. Upon notification of the discovery, the Planning Director shall arrange for an inspection of the property. Said inspection shall take place within 72 hours of notice to the Director of the discovery. A representative of local Native California Indian groups, such as N.I.C.P.A., and the property owner shall be notified of the time of the inspection and both may accompany the Director and his/her representative at all times on the property. The purpose of the inspection shall be to determine whether the discovery is a site of cultural significance.</td>
</tr>
</tbody>
</table>

SOURCE: County of Santa Cruz, 1994 General Plan/Local Coastal Program, Chapter 5 – Conservation and Open Space, Effective December 19, 1994; County of Santa Cruz, Santa Cruz County Code, Chapter 16.40 Native American Cultural Sites, October 2, 2018.

California Government Code Section 53091 exempts agencies like PV Water from complying with local building and zoning ordinances when locating or constructing facilities for the production, generation, storage, treatment, or transmission of water. California Government Code Section 65402(c) requires that PV Water notify cities and counties of its plans to construct projects or to acquire or dispose of property. The planning agency then has 40 days to determine project consistency with its general plan. If the planning agency disapproves, the disapproval may be overruled by PV Water.
3.11.3 Impacts and Mitigation Measures

3.11.3.1 Significance Criteria

In accordance with the CEQA, state CEQA Guidelines (including Appendix G), relevant plans, policies, and/or guidelines, and agency standards, the Project could have a significant impact if it were to:

- Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:
  - Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k), or
  - A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

3.11.3.2 Methodology

As described in Section 3.1, this EIR provides an independent analysis of the Project’s potential environmental impacts. Because Tribal Cultural Resources were not analyzed in the 2014 BMP Update PEIR, there are no adopted mitigation measures to be are considered part of the Project for this environmental resource.

3.11.3.3 Impacts and Mitigation Measures

Impact TCR-1: The Project would not result in a substantial adverse change in the significance of a tribal cultural resource. (No impact)

No tribal cultural resources as defined in Public Resources Code Section 21074 and listed or eligible for listing in the California Register or local register were identified to be present within the Project area. As such, there would be no environmental impacts to tribal cultural resources as a result of the Project.

Mitigation: None required.

Impact TCR-2: The Project would not result in a substantial adverse change in the significance of a tribal cultural resource. (No impact)

No tribal cultural resources as defined in Public Resources Code Section 21074 and that have been determined by the lead agency to be significant pursuant to Public Resources Code Section
5024.1 were identified to be present within the Project area. As such, there would be no environmental impacts to tribal cultural resources as a result of the Project.

**Mitigation:** None required.

Cumulative Impacts

**Impact C-TCR-1:** The Project, in combination with past, present, and probable future projects in the Project area, would not result in significant adverse cumulative tribal cultural resources impacts. *(No Impact)*

Because the Project would not adversely affect tribal cultural resources, it would not contribute to any cumulative effects on tribal cultural resources.

**Mitigation:** None required.
3.12 Energy, Utilities, Public Services, and Recreation

This section presents an analysis of potential impacts related to energy, utilities, and public services that would result from implementation of the proposed College Lake Integrated Resources Management Project (Project). The analysis includes both site options (preferred and optional) for the water treatment plant (WTP) as well as preferred and optional pipeline alignments for the College Lake pipeline. Information from the 2014 Basin Management Plan Update Program Environmental Impact Report (2014 BMP Update PEIR) that remains relevant and accurate for the purposes of describing the physical or regulatory setting of energy, utilities, and public services has been incorporated as appropriate. The Project includes mitigation measures adopted by the Board of Directors to reduce the severity and magnitude of potential environmental effects. For impacts regarding emergency access, refer to Section 3.9, Transportation and Traffic.

3.12.1 Setting

3.12.1.1 Energy

Pacific Gas & Electric Co. (PG&E) provides gas and electric service to the Pajaro Valley area. The PG&E power mix for 2016 was as follows: 33 percent eligible renewables, 24 percent nuclear, 17 percent natural gas, 12 percent large hydroelectric, and 14 percent unspecified power.\(^1\) Natural gas is measured in British thermal units (BTUs), while electricity is measured in kilowatt hours (kWh). In 2016, total natural gas consumption in Santa Cruz County was 49.96 million BTUs, and total energy electricity consumption in Santa Cruz County was 1,224.13 million kWh.\(^2\)

3.12.1.2 Utilities

Water, Wastewater, and Stormwater

Six water districts supply water in the Pajaro Valley: City of Watsonville, Pajaro/Sunny Mesa Community Services District, California Water Service, Pajaro Valley Water Management Agency (PV Water), Aromas Water District, and the Soquel Creek Water District.\(^3\) The City of Watsonville Wastewater Treatment Facility collects and treats wastewater for the southern portion of Santa Cruz County (Watsonville, Freedom, and parts of Corralitos) and the northern portion of Monterey County (Pajaro), and has the capacity to treat 12 million gallons per day (mgd) average dry weather flow of wastewater to a secondary level of treatment. PV Water, in collaboration with the City of Watsonville, treats up to 4,000 acre-feet per year (approximately 7.5 mgd) to tertiary, Title 22 standards for recycled water. Santa Cruz County and the City of Watsonville maintain pipelines for stormwater drainage throughout the Pajaro Valley. Refer also


\(^3\) Although the majority of Soquel Creek Water District’s service area is outside of PV Water’s Statutory Boundary, it provides water service to an area within the PV Water boundary.
to Section 3.6.1 of the 2014 BMP Update PEIR, incorporated by reference, for additional environmental setting information related to water, wastewater, and storm drains in the Project area.

**Solid Waste**

Solid waste generated during Project construction, as well as sediment removed from water during the treatment process (described in Chapter 2, *Project Description*), would be disposed of at Buena Vista Landfill, which is operated by Santa Cruz County and located at 1231 Buena Vista Drive in Watsonville. The Buena Vista Landfill is a Class III landfill operating under State of California Solid Waste Facilities Permit, and accepts an average of 350 tons of solid waste per day. According to the County of Santa Cruz, the landfill has a remaining capacity of about 2.5 million cubic yards, or 10 to 12 years of continued use.4

**Other Utilities**

As described in the 2014 BMP Update PEIR beginning on page 3.6-2, AT&T, Pacific Gas and Electric Company, Caltrans, and Union Pacific Railroad maintain utilities within the PV Water service area.

### 3.12.1.3 Public Services

**Fire Protection and Emergency Services**

The Watsonville Fire Department services the City of Watsonville and areas around Watsonville, with a total service area of approximately 14 square miles and 60,000 residents.5 The Watsonville Fire Department has two stations: Station 1 is located at 115 2nd Street in Watsonville, approximately 2.5 miles south of College Lake, and Station 2 is located at 370 Airport Boulevard in Watsonville, approximately 2.9 miles east of College Lake.

Portions of unincorporated Santa Cruz County north of the City of Watsonville are also served by Pajaro Valley Fire Protection District. The Pajaro Valley Fire Protection District has two type 1 engines, one type 1 water tender, and one station located at 562 Casserly Road, approximately 3.3 miles north of College Lake.6

The California Department of Forestry and Fire Protection is the State of California's agency responsible for fire protection in State Responsibility Areas of California. Because the Project area is not within a State Responsibility Area, it would not directly be served by the California Department of Forestry and Fire Protection.

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4 E-mail communication between K. Kolassa, County of Santa Cruz, and A. Maudru, Environmental Science Associates, regarding remaining capacity at Buena Vista Landfill, March 26, 2018.
3. Environmental Setting, Impacts, and Mitigation Measures

3.12 Energy, Utilities, Public Services, and Recreation

Police and Criminal Justice Services

The Watsonville Police Department is staffed with 68 sworn police officers and 20 professional staff. The police station is located at 215 Union Street in Watsonville, approximately 2.4 miles south of College Lake. Project sites in Unincorporated Santa Cruz county are under the jurisdiction of the Santa Cruz County Sheriff. The closest office to the Project is the South County Sheriff’s Service Center at 790 Green Valley Road, approximately 1.2 miles north of College Lake.

Public Education Services

The City of Watsonville is served by the Pajaro Valley Unified School District. There are 16 public elementary schools, 9 secondary schools, and 9 charter schools in the District. The following schools are located within one-quarter mile of Project components: Ann Soldo Elementary, MacQuiddy Elementary, Mintie White Elementary, Radcliff Elementary, E.A. Hall Middle School, Lakeview Middle School, Watsonville High School, Ceiba College Prep Academy, and Linscott Charter.

Parks and Recreational Facilities

The City of Watsonville has 26 parks, totaling 143 acres of park land. The following parks are within one-quarter mile of Project components: Brentwood Park, City Plaza Park, Franich Park, Marinovich Park, Riverside Mini Park, and Victorian Park. The City of Watsonville also provides public access to more than 7 miles of trail with 29 entrances. The College Lake pipeline would be within one-quarter mile of trails along Watsonville Slough and Struve Slough.

3.12.2 Regulatory Framework

3.12.2.1 Federal and State

There have been no substantial changes in the federal or state regulations, policies, or plans relevant to the Project from the discussion set forth in the 2014 BMP Update PEIR, Section 3.6, Energy, Utilities, and Services (p. 3.6-2), which is incorporated by reference. The following descriptions supplement the information provided in the 2014 BMP Update PEIR.

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Energy and Utilities

National Energy Conservation Policy Act
The National Energy Conservation Policy Act serves as the underlying authority for federal energy management goals and requirements. Signed into law in 1978, it has been regularly updated and amended by subsequent laws and regulations. This act is the foundation of most federal energy requirements.

National Energy Policy Act of 2005
The National Energy Policy Act of 2005 sets equipment energy efficiency standards and seeks to reduce reliance on non-renewable energy resources and provide incentives to reduce current demand on these resources. For example, under the act, consumers and businesses can attain federal tax credits for purchasing fuel-efficient appliances and products, including hybrid vehicles; constructing energy-efficient buildings; and improving the energy efficiency of commercial buildings. Additionally, tax credits are available for the installation of qualified fuel cells, stationary microturbine power plants, and solar power equipment.

Executive Order 13423 (Strengthening Federal Environmental, Energy, and Transportation Management), signed in 2007, strengthens the key energy management goals for the federal government and sets more challenging goals than the Energy Policy Act of 2005. Executive Order 13693, which revoked Executive Order 13423, continued to promulgate the policy of the United States that agencies shall increase efficiency and improve their environmental performance, and requires principal federal agencies to ensure regional agency actions consider and are consistent with, sustainability and climate preparedness priorities of States, local governments, and tribal communities where agency facilities are located.

California Energy Action Plan
The State of California’s 2008 Energy Action Plan Update\textsuperscript{12} updates the 2005 Energy Action Plan II.\textsuperscript{13} The plan maintains the goals of the original Energy Action Plan, describes a coordinated implementation plan for state energy policies, and identifies specific action areas to ensure that California’s energy is adequate, affordable, technologically advanced, and environmentally sound. First-priority actions to address California’s increasing energy demands are to promote energy efficiency, demand response (i.e., reducing customer energy usage during peak periods to address power system reliability and support the best use of energy infrastructure), and use of renewable power sources. To the extent that these strategies are unable to satisfy increasing energy and capacity needs, the plan supports clean and efficient fossil fuel-fired generation. Passage of Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006, substantially influences the state’s energy policies; for that reason, the Energy Action Plan has not been updated since 2008.

Assembly Bill 32
California AB 32,14 the Global Warming Solutions Act of 2006, is the cornerstone of state efforts to reduce greenhouse gas (GHG) emissions. As described in greater detail in Section 3.5, Air Quality and Greenhouse Gases, the law requires the California Air Resources Board to establish a statewide GHG emissions cap for 2020 based on 1990 emission levels, develop a mandatory reporting program of GHG emissions, adopt regulations for discrete early actions to reduce GHG emissions, prepare a scoping plan to identify how emissions reductions will be achieved, and adopt a regulation that establishes a market-based compliance mechanism (also referred to as “Cap and Trade”).

2016 California Green Building Standards Code
The provisions of the 2016 California Green Building Standards Code apply to the planning, design, operation, construction, use and occupancy of every newly constructed building or structure, unless otherwise indicated in the code, throughout the State of California. Section 5.408, Construction Waste Reduction, Disposal, and Recycling, of the 2016 California Green Building Standards Code requires nonresidential development to meet a local construction and demolition waste management ordinance or recycle and/or salvage for reuse a minimum of 65 percent of the nonhazardous construction and demolition waste in accordance with one of the following:

- **Construction waste management plan.** The construction waste management plan must identify the construction and demolition waste materials to be diverted and how they will be sorted, the amount of construction and demolition waste materials diverted (calculated by weight or volume), and diversion facilities where construction and demolition waste materials will be taken.

- **Waste management company.** A waste management company that can provide verifiable documentation that the percentage of construction and demolition waste material diverted from the landfill complies with this section may be utilized.

- **Waste stream reduction alternative.** The combined weight of new construction disposal that does not exceed two pounds per square foot of building area may be deemed to meet the 65 percent minimum requirement as approved by the enforcing agency.

Santa Cruz County’s Building Regulations (Santa Cruz County Code, Chapter 12.10) adopts the 2016 California Green Building Standards Code, with exceptions, additions, and deletions as provided in Santa Cruz County Code Section 12.10.250.

California Integrated Waste Management Act – Waste Diversion
The California Integrated Waste Management Act of 1989,15 enacted through AB 939 and modified by subsequent legislation, requires all California cities and counties to implement programs to divert at least 50 percent of all solid waste generated by the year 2000 and establishes the goal of diverting at least 75 percent of generated waste (based on per capita disposal rates) by 2020. A jurisdiction’s diversion rate is the percentage of its total waste that it diverts from disposal through reduction, reuse, recycling, and composting programs. The law

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14 AB 32 is codified in California Health and Safety Code Division 25.5, Sections 38500 et seq.
15 California Public Resources Code Division 30, Sections 40000-49620.
requires all California counties in coordination with their respective cities to develop and implement integrated waste management plans. As part of their integrated waste management plans, counties must ensure that a minimum of 15 years of disposal capacity is available to serve the county and its cities. Since 2007, the achievement of waste diversion rates has been measured based on per capita disposal rates, expressed in pounds per person per day of wastes disposed of in landfills. To achieve the target waste diversion rates, the California Department of Resources Recycling and Recovery has established a target disposal rate of 7.9 pounds per person per day in Watsonville in 2016.16

**California Energy Commission**

The California Energy Commission (CEC) was established by the Warren-Alquist Act in 1974 and is the State’s primary energy policy and planning agency.17 The CEC has five major responsibilities: forecasting future energy needs and keeping historical energy data; licensing thermal power plants 50 megawatts or larger; promoting energy efficiency through appliance and building standards; developing energy technologies and supporting renewable energy; and planning for and directing state response to energy emergencies.

Administered by the CEC, the California Energy Action Plan (EAP) was adopted in 2003 and a second EAP was adopted by both the CEC and the California Public Utilities Commission (CPUC) in 2005.18 The EAP established shared goals and specific actions to ensure that adequate, reliable, and reasonably priced electrical power and natural gas supplies are achieved and provided through policies, strategies, and actions that are cost-effective and environmentally sound for California’s consumers and taxpayers. Also, incorporated in the EAP are specific actions reflecting the importance of transportation fuels to California’s economy and the need to mitigate the environmental impacts caused by their use, as well as the importance of taking actions in the near term to mitigate California’s contributions to climate change from the electricity, natural gas, and transportation sectors. In 2008, the EAP was updated to expand on the State’s actions in the context of global climate change and include the passage of AB 32, the California Global Warming Solutions Act of 2006.19

**California Public Utilities Commission**

The CPUC was established in 1911 as the Railroad Commission and was expanded in 1912 to regulate privately owned electric, natural gas, telecommunications, water, railroad, and marine transportation companies, including PG&E. The CPUC’s mission is to ensure that consumers

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19 Ibid.
receive safe and reliable utility services at reasonable rates, protect against fraud, and promote the health of California’s economy.\(^{20}\)

**California Independent System Operator**

The California Independent System Operator was established in 1998 and is a non-profit organization that independently manages the flow of electricity in California. It provides open access to the grid, ensuring equal access and a competitive energy market. In addition, it facilitates over 28,000 market transactions each day to ensure that enough power is available to meet demands.\(^{21}\)

**Utility Notification Requirements**

The regulations in Title 8 California Code of Regulations Section 1541 require excavators to determine the approximate locations of subsurface installations, such as sewer, telephone, fuel, electric, and water lines (or any other subsurface installations that may reasonably be encountered during excavation work) prior to opening an excavation. The California Government Code (Sections 4216 et seq.) requires owners and operators of underground utilities to become members of and participate in a regional notification center. According to Section 4216.1, operators of subsurface installations who are members of, participate in, and share in the costs of a regional notification center, such as Underground Services Alert of Southern California, more commonly referred to as DigAlert, are in compliance with this section of the code. DigAlert receives planned excavation reports from public and private excavators and transmits those reports to all participating members that may have underground facilities at the location of excavation. Members will mark or stake their facilities, provide information, or give clearance to dig. This notification requirement would apply to the Project because of the proposed excavation activities.

**Public Services**

**California Master Mutual Aid Agreement**

The California Master Mutual Aid Agreement is a framework agreement between the State of California and local governments for aid and assistance by the interchange of services and facilities, including but not limited to fire, police, medical and health, communication, and transportation services and facilities to cope with the problems of rescue, relief, evacuation, rehabilitation, and reconstruction.

**California Fire Code**

State fire regulations are set forth in Sections 13000, et seq. of the California Health and Safety Code, which includes regulations concerning building standards (as set forth in Title 24 of the California Code of Regulations, the California Building Code), fire protection and notification systems, fire protection devices (such as fire extinguishers and smoke alarms), high-rise building and child care facility standards, and fire suppression training.

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3. Environmental Setting, Impacts, and Mitigation Measures
3.12 Energy, Utilities, Public Services, and Recreation

3.12.2.2 Local

Table 2-10 in Chapter 2, Project Description, identifies the approvals from Santa Cruz County and/or the City of Watsonville required for the Project. Table 3.12-1 presents pertinent local plans and policies regarding energy, utilities, and public services to support County and City consideration of project consistency with general policies. In some cases, local policies are used in this EIR as criteria to determine the significance of physical effects on the environment (e.g., Impact NOI-1 in Section 3.8, Noise and Vibration).

### Table 3.12-1

<table>
<thead>
<tr>
<th>Relevant Goals, Objectives, and Policies</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CITY OF WATSONVILLE PLANS AND POLICIES</strong></td>
</tr>
<tr>
<td><strong>Watsonville 2005 General Plan</strong></td>
</tr>
<tr>
<td><strong>Goal 9.12: Energy.</strong> Promote the conservation of energy and the use of alternative energy resources in transportation and residential, commercial, and industrial development.</td>
</tr>
<tr>
<td><strong>Policy 9.J: Energy.</strong> The City shall strive to reduce non-renewable energy resource consumption and promote the use of alternative energy resources.</td>
</tr>
<tr>
<td><strong>Watsonville Municipal Code</strong></td>
</tr>
<tr>
<td><strong>Chapter 8-9.101: Adoption of the California Fire Code.</strong> That portion of the 2016 California Fire Code that imposes substantially the same requirements as are contained in the International Fire Code, 2015 Edition, published by the International Code Council and the California Building Standards Commission with errata, together with those portions of the International Fire Code, 2015 Edition, including Appendices B, BB, C, CC, I and N as published by the International Code Council not included in the California Fire Code, as deleted, added to, excepted, modified or amended, are adopted by this reference into this code, and are collectively declared to be the Fire Code of the City of Watsonville, in the State of California.</td>
</tr>
<tr>
<td><strong>Chapter 8-17: California Energy Code.</strong> The 2016 California Energy Code (Part 6, Title 24 of the California Code of Regulations) is adopted as the Energy Code of the City of Watsonville.</td>
</tr>
<tr>
<td><strong>SANTA CRUZ COUNTY PLANS AND POLICIES</strong></td>
</tr>
<tr>
<td><strong>Santa Cruz County General Plan/Local Coastal Program</strong></td>
</tr>
<tr>
<td><strong>Objective 7.27: Public Services and Facilities.</strong> To promote the improvement of public services and facilities in areas already committed to development, and to spread the costs of needed services and facilities equitably among present and future residents and others who benefit.</td>
</tr>
<tr>
<td><strong>Policy 7.25.7: Hazardous Wastes and Environmental Damaging Compounds in Landfills.</strong> Prohibit the disposal of radioactive waste, hazardous waste and ozone depleting compounds in County landfills.</td>
</tr>
</tbody>
</table>


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22 Government Code Section 53091 exempts agencies like PV Water from complying with local building and zoning ordinances when locating or constructing facilities for the production, generation, storage, treatment, or transmission of water. California Government Code Section 65402(c) requires that PV Water notify cities and counties of its plans to construct projects or to acquire or dispose of property. The planning agency then has 40 days to determine project consistency with its general plan. If the planning agency disapproves, the disapproval may be overruled by PV Water.
Zero Waste Plan for Santa Cruz County

The County of Santa Cruz has a history of progressive waste management policies, programs and facilities dating back to November 1999. The County of Santa Cruz met a 75 percent diversion rate goal in 2010 and continues to be a leader in the reduction in the amount of waste being disposed as well as spearheading efforts to minimize upstream impacts on materials through sustainable manufacturing and consumerism.

Zero Waste is a systems approach to avoid the creation of waste that follows a hierarchy, focusing first on reducing the volume and toxicity of waste by elimination, then focusing on reusing materials and products for their original intended uses, and then for alternative uses, before recycling. Zero Waste encourages local and regional public-private partnerships to provide the infrastructure and services needed to accomplish all of these functions. In a Zero Waste system, any materials that cannot be easily and conveniently reduced, reused, recycled or composted are either returned to the manufacturer directly or through retail channels, or no longer used. The Zero Waste Plan is intended to guide County of Santa Cruz officials in the planning and decision making process to achieve Zero Waste goals.23

3.12.3 Impacts and Mitigation Measures

3.12.3.1 Significance Criteria

In accordance with the California Environmental Quality Act (CEQA), state CEQA Guidelines (including Appendix G), relevant plans, policies, and/or guidelines, and agency standards, the Project could have a significant impact if it were to:

- Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation;
- Conflict with or obstruct a state or local plan for renewable energy or energy efficiency;
- Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects;
- Have insufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years;
- Result in a determination by the wastewater treatment provider which serves or may serve the project that it has inadequate capacity to serve the project’s projected demand in addition to the provider’s existing commitments;
- Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals;

23 County of Santa Cruz, Department of Public Works, Zero Waste Plan for Santa Cruz County, 2015.
• Fail to comply with federal, state, and local management and reduction statutes and regulations related to solid waste.

• Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:
  – Fire protection;
  – Police protection;
  – Schools;
  – Parks; or
  – Other public facilities.

• Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated; and/or

• Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

The following topics are not analyzed further in this section for the reasons described below:

• Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects. The Project includes construction of a WTP. PV Water proposes to construct solids drying beds to allow solids to settle out of the water prior to offhaul to the landfill. Decant water from the solids drying beds would be recycled to the head of the WTP treatment process. As a back-up to this process, settled solids may need to be diverted to the local sewer and a connection will be provided for this purpose. PV Water would comply with Salsipuedes Sanitary District and City of Watsonville water quality requirements for discharge of the solids. The City of Watsonville’s Wastewater Treatment Facility has capacity for secondary treatment of 12.1 mgd and tertiary treatment of 7.7 mgd, which is sufficient capacity to accommodate settled solids occasionally diverted from operation of the Project.\(^{24}\) The Project does not require relocation, construction, or expansion of stormwater drainage, electric power, natural gas, or telecommunications facilities. In addition, the Project would not induce significant population growth either directly (by constructing housing) or indirectly (for example, by reducing flood risk in currently undeveloped areas into which additional housing could be built). For these reasons, this criterion is not applicable to the Project.

• Have insufficient water supplies available to serve the Project and reasonably foreseeable future development during normal, dry, and multiple dry years. During construction, the Project would intermittently use water for dust control, pressure washing, and cement mixing. In total, construction processes would require about 3 million gallons of water spread out

over the 18-month construction period.\textsuperscript{25} Construction would also use relatively small amounts of potable water for some site needs such as drinking water, hand-washing, and other on-site sanitary needs. The small increase in potable water use would be temporary, terminating with the completion of construction. Water supplies are planned such that short-term spikes in potable use can be accommodated during normal, dry, and multiple dry years. For these reasons, this criterion is not applicable to the Project.

- **Result in a determination by the wastewater treatment provider that it has inadequate capacity to serve the project’s projected demand in addition to the provider’s existing commitments during operation.** During Project construction, new sources of wastewater discharges would include wastewater resulting from sanitary needs of construction workers. As described in Chapter 2, Project Description, the maximum construction work force would be approximately 26 workers per day. Assuming that each worker would generate 2.81 gallons per day of wastewater,\textsuperscript{26} the total increase in wastewater volumes would be less than 0.001 mgd, an increase well within the dry weather capacity of the existing wastewater system. The Project would generate even less wastewater during operations due to minimal number of staff necessary to operate the facilities proposed as part of the Project. For these reasons, this criterion is not applicable to the Project.

- **Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.** The Project does not include recreational facilities at this time and would not require the construction or expansion of recreational facilities because it does not displace any existing facilities. Inclusion of recreational facilities may be revisited in the future and would be separately subject to CEQA if proposed. For these reasons, this criterion is not applicable to the Project.

### 3.12.3.2 Methodology

As described in Section 3.1, this EIR provides an independent analysis of the Project’s potential environmental impacts. Table 3.12-2 presents mitigation measures from the 2014 BMP Update PEIR adopted by the Board of Directors (Resolution 2014-05) for the purpose of reducing impacts related to energy, utilities and public services. These adopted mitigation measures are considered part of the Project and thus are considered prior to any significance determinations. Potential impacts are evaluated in the following section. If warranted, additional mitigation is included and takes the form of (1) modifications to update the mitigation measures presented in Table 3.12-2 to reflect current conditions and site-specific impacts; or (2) new mitigation measures to replace or augment an adopted mitigation measure.

\textsuperscript{25} Schedule based on construction of grading and surcharging fill pad for the preferred WTP site. The duration of surcharging for the optional WTP site would be increased by 12 to 18 months to allow for consolidation of fill pad at that site. There would be no construction activity at the site during consolidation. The remainder of the construction phase durations for the WTP would be the same for both site options.

\textsuperscript{26} This calculation is based on compliance with the 2013 California Green Building Code water use baseline values provided in Table 5.3003.2.2 of the code. Construction workers are assumed to flush twice per day and the water use includes 1.28 gallons per flush and use of 0.125 gallons per flush for handwashing. The total per construction worker water use for sanitary purposes is 2.81 gallons per day.
TABLE 3.12-2
2014 BMP UPDATE PEIR MITIGATION MEASURES – ENERGY, UTILITIES, PUBLIC SERVICES, AND RECREATION

<table>
<thead>
<tr>
<th>ES-1:</th>
<th>A study to identify utilities along proposed alignments will be conducted by PVWMA during pre-design states of projects. The following mitigation measures are required for segments identified in final design as having potential conflicts with significant utilities:</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>Utility excavation and encroachment permits would be required from the appropriate agencies, including the Public Works Departments of Santa Cruz County, City of Watsonville, Caltrans, and Union Pacific Railroad. These permits include measures to minimize utility disruption. PVWMA and its contractors shall comply with permit conditions. Permit requirements shall be included in construction contract specifications.</td>
</tr>
<tr>
<td>b.</td>
<td>Utility locations would be verified through field survey (potholing) and use of an underground locating service.</td>
</tr>
<tr>
<td>c.</td>
<td>A detailed engineering and construction plan shall be prepared as part of the design plans and specifications. This plan shall include procedures for the excavation, support, and fill of areas around utility cables and pipes. All affected utility services would be notified of PVWMA construction plans and schedule. Arrangements would be made with these entities regarding protection, relocation, or temporary disconnection of services.</td>
</tr>
<tr>
<td>d.</td>
<td>In areas where the pipeline would parallel wastewater mains, engineering and construction plans shall include trench wall support measures to guard against trench wall failure, and possible resulting loss of structural support for the wastewater main.</td>
</tr>
</tbody>
</table>

Residents and businesses in the project area shall be notified in writing by the contractor of planned utility service disruption two to four days in advance, in conformance with state and County standards.

| ES-2: | PVWMA shall include in its construction specifications a requirement for the contractor to provide plans for recovering, reusing, and recycling construction, demolition, and excavation wastes and providing for composting of plant material, where feasible. |


3.12.3.3 Impacts and Mitigation Measures

Impact EUP-1: Implementation of the Project could result in wasteful, inefficient, or unnecessary consumption of energy during Project construction or operation, or conflict with or obstruct a state or local plan for renewable energy or energy efficiency. *(Less than Significant)*

Construction

Construction of the Project components would result in indirect energy consumption from construction traffic and the use of construction materials. Although the precise amount of construction-related energy demand cannot be predicted at this time, the primary energy demand during construction would occur from use of gasoline and diesel-powered mobile construction equipment and vehicles to transport workers and materials to and from the construction sites. Electricity would also be used for construction lighting, field services, and electrically driven construction devices such as air compressors, pumps and other equipment. Although Project construction would result in increased indirect energy consumption, the amount of transportation fuel and potential electricity use required for Project construction is not considered an inefficient or wasteful use of energy as fuel use would be consistent with current construction and manufacturing practices, energy standards that promote strategic planning, and building standards that reduce consumption of fossil fuels and enhance energy efficiency. During construction, the Project would comply with regulations in Section 3.12.2, and would not obstruct any state or local plans for renewable energy or energy efficiency. Therefore, the impact would be *less than significant*. 
Operation
Implementation of the Project would result in direct energy consumption associated with operations from an incremental increase in the demand for electrical energy. PV Water would divert a maximum of 3,000 acre-feet (978 million gallons) of water per year. The intake pump station would require .0071 kWh per gallon of water (1,662,000 kWh per year) to pump water from College Lake to the Coastal Distribution System. Although there are existing PG&E power lines located near the proposed facilities, operation of the Project would require PG&E to provide a service connection. A transformer would be needed, from which a power conduit would be routed underground to the electrical building for the facilities which would house the motor control center and electrical panels. The transformer would be located at the electrical building at the WTP. Construction of the WTP at the preferred WTP site could require an additional transformer and switchgear at the intake pump station and weir structure due to its farther distance than the optional WTP site.

Operation of the Project would add up to two new employees, which would generate approximately four new one-way daily trips (1,040 annual trips). The routine maintenance activities within College Lake (e.g., sediment and debris removal, vegetation management) described in Chapter 2, Project Description, would occur annually or semi-annually and would generate approximately 1,300 truck trips per year. Sediment removal at the WTP would require 52 off-haul truck trips per year.

While the Project would increase electricity demands and truck trips, as described above, the amount of transportation fuel and potential electricity use required for Project operation is not considered an inefficient or wasteful use of energy as fuel use would be consistent with current construction and manufacturing practices, energy standards that promote strategic planning, and building standards that reduce consumption of fossil fuels and enhance energy efficiency. Additionally, the Project would relieve groundwater overdraft in the Pajaro Valley, so energy use during operation would not be wasteful. During operation, the Project would comply with regulations in Section 3.12.2, and would not obstruct any state or local plans for renewable energy or energy efficiency. For these reasons, this impact is less than significant.

Mitigation: None required.

Impact EUP-2: Project construction and operation could result in a substantial adverse effect related to generating solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impairing the attainment of solid waste reduction goals. (Less than Significant)

Construction
The Project would generate solid waste requiring disposal from excavation and other earthwork activities. Construction activities would also include demolition of the existing weir structure and

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27 Carollo Engineers, Request for Information, e-mail from R. Gutierrez, November 16, 2018.
28 Ibid.
pump station. Material types to be disposed of are expected to include dirt, soil, rock, concrete, metal (e.g., rebar) and wood.

As described in Table 2-7 in Chapter 2, Project Description, after excavated soil has been reused as fill, the total volume of materials to be off-hauled and disposed of could be as high as approximately 30,300 cubic yards. The operating solid waste disposal facility that would receive these materials is the Buena Vista Landfill. As explained in Section 3.12.1.2, the remaining capacity of this facility is approximately 2.5 million cubic yards. There is thus adequate permitted capacity at the facility for the volumes and types of solid waste that would be generated. Additionally, in accordance with adopted Mitigation Measure ES-2, PV Water would include in its construction specifications a requirement for the contractor to provide plans for recovering, reusing, and recycling construction, demolition, and excavation waste and providing composting of plant material, where feasible. Project construction would also comply with regulations in Section 3.12.2, like Section 5.408 of the 2016 California Green Building Code, to ensure that solid waste is not generated in excess of state or local standards. With implementation of adopted Mitigation Measure ES-2 and compliance with regulations in Section 3.12.2, the impact would be less than significant.

Operation
During operations, the Project would generate approximately 200,000 pounds (468 cubic yards) of sediment from the WTP and 11,500 cubic yards per year of sediment and other debris from maintenance activities within the lake basin. Sediment and debris would be taken to Buena Vista Landfill. As discussed above, the facility is permitted for all types of waste that would be generated by Project operation and has a capacity of approximately 2.5 million cubic yards, which is sufficient to accommodate Project operational waste. Project operation would also comply with regulations in Section 3.12.2 to ensure that solid waste is not generated in excess of state or local standards. The impact would be less than significant.

Mitigation: None required.

Impact EUP-3: The Project would comply with federal, state, and local management and reduction statutes and regulations related to solid waste. (Less than Significant)

Construction
Buena Vista Landfill, where disposal and recycling of construction and demolition debris would occur, is permitted for all types of waste that would be generated by Project construction. As discussed in Section 3.12.2, the California Integrated Waste Management Act of 1989 requires municipalities to divert at least 50 percent of all solid waste generated by the year 2000 and establishes the goal of diverting at least 75 percent of generated waste (based on per capita disposal rates) by 2020. In addition, Section 5.408 of the 2016 California Green Building Standards Code requires all nonresidential construction and demolition projects to reuse or recycle at least 65 percent of materials generated. The Zero Waste Plan for Santa Cruz County ensures Santa

29 E-mail communication between K. Kolassa, County of Santa Cruz, and A. Maudru, Environmental Science Associates, regarding remaining capacity at Buena Vista Landfill, March 26, 2018.
Cruz County’s compliance with state recycling mandates and provides residents and businesses with information on Zero Waste Policy objectives, local recycling facilities, programs to assist with waste diversion, and green practices in schools and other areas of the county.30

Consistent with the 2016 California Green Building Standards Code and adopted Mitigation Measure ES-2, PV Water would require contractors to provide plans for recovering, reusing, and recycling construction, demolition, and excavation wastes and compost plant material, where feasible. Project construction would be in compliance with state or local statutes related to solid waste by reusing or recycling at least 65 percent of materials generated during construction and demolition, and disposing of additional debris at a landfill that is permitted for the waste and has adequate capacity. With implementation of these practices and adopted Mitigation Measure ES-2, the impact would be less than significant.

Operation
Refer to the operations discussion under Impact EUP-2, for operational solid waste quantities. Sediment and other debris removed during routine operations and maintenance activities would be sent to Buena Vista Landfill for disposal. This disposal would not result in an inconsistency or violation of permit conditions at this facility because the facility is permitted and has adequate capacity to accept these non-hazardous wastes. Project operations would also comply with the Zero Waste Plan for Santa Cruz County, which ensures Santa Cruz County’s compliance with state recycling mandates. Through compliance with applicable permits and federal, state, and local statutes related to solid waste, this impact would be less than significant.

Mitigation: None required.

Impact EUP-4: The Project could result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or increase the demand for new or increased staff and/or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for public services including, fire protection, police protection, schools, or other public facilities. (Less than Significant)

Construction
The Project sites currently receive services from the providers identified in Section 3.12.1, Setting. As described in Chapter 2, Project Description, construction of each Project component would occur over a period of several months at each site and would employ 11 to 26 construction workers. Construction workers would likely come from within Santa Cruz County or Monterey County. Construction workers who are residents of Santa Cruz County are currently being served by the existing county and individual city/town services, and thus would not represent an increase in demand for these services. While it is possible that some workers might temporarily relocate from other areas, the Project is not expected to result in a substantial increase in the local population and

30 County of Santa Cruz, Department of Public Work, Zero Waste Plan for Santa Cruz County, 2015.
thus not expected to result in increased response times such that new or physically altered facilities would be required to maintain service. Incidents could occur during construction requiring law enforcement, fire protection, or emergency medical services. However, this analysis presumes that any incremental increase in demand for these services during construction would be temporary, could be accommodated by existing services, and would not require construction of new or physically altered facilities to maintain service. Therefore, the impact of Project construction on public services would be less than significant.

**Operation**

The Project does not involve the construction of residences or businesses and would require a minimal increase in maintenance staff (two staff members); therefore, the Project would not result in a substantial permanent increase in the local population. The Project facilities would be constructed in compliance with all applicable fire codes and public safety standards. Operation of the Project thus would not result in substantial increases in demand for public services, including law enforcement, fire protection, emergency medical services, schools or libraries. Therefore, operation of the Project would not require new or physically altered governmental facilities, and the Project would have no impact on public services.

Because Project construction would not result in a substantial increase in the local population and Project operation would not result in a substantial permanent increase in the local population, the impact of construction and operation of the Project on public services would be less than significant.

**Mitigation:** None required.

**Impact EUP-5:** The Project could increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated. *(Less than Significant)*

**Construction**

Temporary, direct impacts on established recreational facilities (parks and trails) and resources could result if construction activities overlapped geographically with existing recreational facilities or trails. Marinovich Park is the only recreation facility that is located directly on the College Lake pipeline route. Construction activities would have minimal impacts to this and other nearby parks and recreation facilities due to the temporary nature of the activities, and the fact that parks would remain open during construction. Construction activities would not affect nearby trails because the existing trails in the vicinity would remain open and are far from the Project sites (over one-quarter mile away). Project construction activities associated with the College Lake pipeline could temporarily affect bicycle lanes along roadways; this issue is addressed under Impact TRA-3 in Section 3.9, Transportation and Traffic.
Operation

The Project does not include new recreational facilities and would not permanently affect existing recreational resources. The Project does not include new residential or other uses that would generate increased demand for parks or other recreational facilities. The project would require a minimal increase in maintenance staff (two staff members) at PV Water, so demand at existing recreational facilities would not substantially increase as a result of Project operations; ongoing demand would continue to be met by existing parks and recreational facilities. As such, operation of the Project would have less-than-significant impacts related to direct or indirect physical deterioration of recreational resources.

Mitigation: None required.

Cumulative Impacts

Impact C-EUP-1: The Project, in combination with past, present, and probable future projects in the Project area, would not result in significant adverse cumulative energy impacts. (Less than Significant)

The geographic scope for the analysis of potential cumulative impacts related to energy, fuel, and water resources encompasses the Project sites and the broader region, which generally would use the same fuel, water, and energy supply sources. All projects listed in Table 3.1-1 in Section 3.1, Overview, are considered in the cumulative impact analysis for both construction and operation.

Construction

Regarding construction-phase impacts related to energy and water use, all of the projects presented in Table 3.1-1 involve some level of construction. Some of the projects (e.g., Upper Struve Slough Habitat Enhancement Project, Bryant Habert Ecological Restoration Project) have already begun or completed construction, while the majority of the projects could be under construction during some portion of the 18-month construction period of the Project. Like the Project, construction of all projects cumulatively would require the use of fuel and energy, and could also require the use of water. The amount of fuel, energy and water consumed during construction would vary by project. The projects identified in Table 3.1-1 are within Santa Cruz County or the City of Watsonville, and would be subject to the same regulatory framework as the Project for the use of fuel, water, and energy during construction. These requirements include the California Green Building Standards Code, California Energy Action Plan, and Watsonville 2005 General Plan Policy 9.J Energy. Compliance with these existing regulations by the identified cumulative projects would ensure that fuel, water, or energy resources are not used wastefully during construction, and that construction of these projects would not result in a significant adverse, cumulative impact to which the Project could contribute. Accordingly, the cumulative effect would be less than significant.
Operation

Regarding operations-phase impacts related to energy and water use, many of the projects listed in Table 3.1-1 involve enhancement and/or replacement of existing roadways and related infrastructure, local trails, and habitat (e.g., Main Street Improvement Project, Lee Road Trail Connector, Middle Watsonville Slough Upland Enhancement Project); these projects generally would not increase consumption of energy and water above existing levels. Operation of the other projects listed in Table 3.1-1 would require the use of fuel, energy or water in varying quantities. For example, similar to the Project, pump stations, transformers, and other equipment that could be installed as part of the cumulative projects would use fuel, but these uses are generally required by safety regulations. As indicated above, the projects identified in Table 3.1-1 are within Santa Cruz County or the City of Watsonville and would be subject to the same regulatory framework as the Project for the use of fuel, water, and energy during operations. At a minimum, applicable regulations would include current State standards regarding energy consumption and conservation (e.g., energy efficiency standards and green building standards in Title 24 of the California Code of Regulations). The application of local energy and water efficiency requirements would vary by project type, size, and sponsor. Compliance with applicable energy and water use regulations would ensure that the identified cumulative projects in the region would not result in wasteful use of these resources. As a result, there would not be a significant cumulative impact from the wasteful use of fuel, energy, or water to which the Project could contribute. Accordingly, the cumulative effect would be less than significant.

Mitigation: None required.

Impact C-EUP-2: The Project, in combination with past, present, and probable future projects in the Project area, would not result in significant adverse cumulative utilities impacts. (Less than Significant)

The geographic scope for the analysis of potential cumulative impacts related to utilities encompasses the Project sites and the areas served by the City of Watsonville (water, wastewater, and stormwater), Buena Vista Landfill (solid waste), and other utilities described in Section 3.12.1.2. All projects listed in Table 3.1-1 in Section 3.1, Overview, are considered in the cumulative impact analysis for both construction and operation.

Construction and Operation

As discussed in Section 3.12.3.1, the Project would have no impact with respect to the following topics. The Project would not contribute to cumulative impacts related to these topics because it would not

- Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which would cause significant environmental effects;
- Have insufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years; or
• Result in a determination by the wastewater treatment provider which serves or may serve the project that it has inadequate capacity to serve the project’s projected demand in addition to the provider’s existing commitments.

As discussed in Impact EUP-3, Section 5.408 of the 2016 California Green Building Standards Code requires all nonresidential construction and demolition projects to reuse or recycle at least 65 percent of materials generated and adopted Mitigation Measure ES-2, PV Water would require contractors to provide plans for recovering, reusing, and recycling construction, demolition, and excavation wastes and compost plant material, where feasible. During operation, the project would also implement measures to achieve zero waste in accordance with the Zero Waste Plan for Santa Cruz County as discussed in Impact EUP-3. All projects within Santa Cruz County would be required to implement these or similar regulatory requirements, and there is sufficient landfill capacity at Buena Vista Landfill as discussed in Impacts EUP-2 and EUP-3. Therefore, cumulative impacts related to generating solid waste in excess of State or local standards, exceeding landfill capacity, impairing the attainment of solid waste reduction goals, and compliance with federal, state, or local management and reduction statutes and regulations related to solid waste would be less than significant.

Mitigation: None required.

Impact C-EUP-3: The Project, in combination with past, present, and probable future projects in the Project area, would not result in significant adverse cumulative public services impacts. (Less than Significant)

The geographic scope for the analysis of potential cumulative impacts related to public services encompasses the Project sites and areas served by the public service provider described in Section 3.12.1.3. All projects listed in Table 3.1-1 in Section 3.1, Overview, are considered in the cumulative impact analysis for both construction and operation.

Construction and Operation

Some of these projects identified in Table 3.1-1 would be under construction at the same time as the Project (Pajaro River Flood Risk Management Study, Corralitos Creek ADA Compliance). Incidents could occur during construction requiring law enforcement, fire protection, or emergency medical services. However, the Watsonville Fire Department includes two stations and the Pajaro Valley Fire Protection District has one station to serve the area, and the Watsonville Police Department has 68 sworn police officers. As described in Impact EUP-4, any incremental increase in demand for these services during construction would be temporary and could be accommodated by existing services. Additionally, the Project does not involve the construction of residences or businesses and would require a minimal increase in maintenance staff and would therefore not result in a substantial permanent increase in the local population. Project construction and operation would not result in a substantial increased need for law enforcement or fire protection services, and therefore would not considerably contribute to cumulative impacts resulting from the construction of new or physically altered governmental facilities that are not already planned. Therefore, the Project’s contribution to public services impacts would be less-than-significant.
Mitigation: None required.

Impact C-EUP-4: The Project, in combination with past, present, and probable future projects in the Project area, would not result in significant adverse cumulative recreational impacts. (Less than Significant)

The geographic scope for the analysis of potential cumulative impacts related to recreation encompasses the Project sites and recreational facilities within one quarter mile of the Project sites (Section 3.12.1.3 lists these facilities). All projects listed in Table 3.1-1 in Section 3.1, Overview, are considered in the cumulative impact analysis for both construction and operation.

Construction
Because the Project would not include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment, it would not contribute to any cumulative effects related to this impact.

Some of the projects identified in Table 3.1-1 would be under construction at the same time as the Project (such as the Pajaro River Flood Risk Management Study and Corralitos Creek ADA Compliance projects), and could result in short-term disruption of recreational facilities. The Project may include temporary impacts to Marinovich Park during construction of the College Lake pipeline, but because the park would remain open during construction, the use of the facility is not expected to be shifted to other recreational facilities with the City of Watsonville or in neighboring jurisdictions. Construction of Project components would occur during the same time frame and in the same vicinity as some other planned and proposed projects, which could cause temporary park closures or disruptions to bicycles lanes, and shift public access and recreational use to other facilities. This increased use of those facilities could cause congestion or other adverse effects. However, given the brief construction period of the College Lake pipeline (13 months) and the dynamic nature of the construction corridor (construction staging would move as pipeline construction progresses), there is a low probability of other projects listed in Table 3.1-1 that may include park closures or disruptions to bicycle lanes occurring simultaneously with this Project. Project construction activities associated with the College Lake pipeline are further addressed in Section 3.9, Transportation and Traffic. The Project in combination with other projects in the cumulative scenario would have a less-than-significant impact related to recreation.

Operation
The Project does not include new residential or other uses that would generate increased demand for parks or other recreational facilities and would require a minimal increase in maintenance staff. Project operation would not substantially increase the use of existing neighborhood and regional parks or other recreational facilities, and substantial physical deterioration of those facilities would not occur. Therefore, the Project’s contribution to impacts related to recreational facilities would be less than significant.

Mitigation: None required.
3.13 Aesthetic Resources

This section presents an analysis of potential impacts related to aesthetic resources that would result from implementation of the proposed College Lake Integrated Resources Management Project (Project). The analysis includes both site options (preferred and optional) for the water treatment plant (WTP) as well as preferred and optional pipeline alignments for the College Lake pipeline. Information from the 2014 Basin Management Plan Update Program Environmental Impact Report (2014 BMP Update PEIR) that remains relevant and accurate for the purposes of describing the physical or regulatory setting of aesthetic resources has been incorporated as appropriate. The Project includes mitigation measures adopted by the Board of Directors to reduce the severity and magnitude of potential environmental effects.

3.13.1 Setting

3.13.1.1 Concepts and Terminology

Visual or aesthetic resources are generally defined as both the natural and built features of the landscape that contribute to the public viewer’s experience and appreciation of the environment. Depending on the extent to which a project’s presence would alter the perceived visual character and quality of the environment, a visual or aesthetic impact may occur. Familiarity with the following terms and concepts will aid the reader in understanding the content of this section.

**Visual Character** is a general description of the visual attributes of a particular land use setting. The purpose of defining the visual character of an area is to provide the context within which the visual quality of a particular site or locale is most likely to be perceived by the viewing public.

**Visual Quality** is defined as the overall visual impression or attractiveness of a site or locale as determined by its particular landscape characteristics and aesthetic qualities (such as color, variety, vividness, coherence, uniqueness, harmony, and pattern). For this analysis, the visual quality of a site or locale is defined according to three levels:

- **Low.** The location is lacking in natural or cultural visual resource amenities typical of the region. A site with low visual quality will have aesthetic elements that are relatively unappealing and perceptibly uncharacteristic of the surrounding area.

- **Moderate.** The location is typical or characteristic of the region’s natural or cultural visual amenities. A site with moderate visual quality maintains the visual character of the surrounding area, with aesthetic elements that do not stand out as either contributing to or detracting from the visual character of an area.

- **High.** The location has visual resources that are unique or exemplary of the region’s natural or cultural scenic amenities. A site with high visual quality is likely to stand out as particularly appealing and makes a notable positive contribution to the visual character of an area.

**Viewshed.** A viewshed is an area of land, water, or other urban or environmental element that is visible to the human eye from a fixed vantage point.
3.13.1.2 Regional Setting

The Project would be located in the Pajaro Valley, a region characterized by the peaks and ridges of the Coast Range to the east, and the scenic coastline of Monterey Bay to the west. The floor of the Pajaro Valley features predominantly flat topography typical of inland valley landscapes. The visual character of the Pajaro Valley can be typified as rural agricultural croplands and orchards, interspersed with meandering creeks and sloughs, small lakes, and pockets of residential and institutional development, surrounding the urbanized landscape of the City of Watsonville.

There are several designated scenic roads in the region, described below in Section 3.13.2.2.

3.13.1.3 College Lake Vicinity

Agricultural uses, including croplands, fruit tree orchards, and low-lying agricultural buildings, visually dominate the area surrounding College Lake. Rural agricultural vistas of rolling croplands, orchards, unembellished square- and rectangular-shaped agricultural buildings, and occasional silos are interspersed with built features including institutional, commercial, and residential development.

Institutional uses in the area are generally located along the State Route (SR) 152 corridor, and include Our Lady Help of Christians Catholic Church, Valley Catholic Cemetery, St. Francis Catholic High School, Lakeview Middle School, and the Santa Cruz County Fairgrounds. The Our Lady Help of Christians Catholic Church is a two-story, mission revival-style building with a four-story, rectangular bell tower clad in a beige stucco facade. The Valley Catholic Cemetery features aboveground stone crypts and mausoleums, and forms an L-shape around the church. St. Francis Catholic High School and Lakeview Middle School feature late 20th-century one- and two-story academic buildings, generally clad in beige stucco or beige brick and stucco facades. The Santa Cruz County Fairgrounds have one- and two-story exhibit and museum buildings, a grandstand and race track, and a decorative four-story tank house tower. Commercial uses are clustered in the vicinity of the intersection of SR 152 and Holohan Road. Figure 3.13-1 presents a viewpoint map, and Figure 3.13-2 presents a photograph (Photo 1) looking toward Holohan Road from SR 152. Commercial development in the area is typically in one-story structures in stand-alone buildings or clustered in a small strip mall. Parking generally fronts these commercial uses. Residential developments are located to the north, west, and south of College Lake. Residences in the area tend to be single-family, ranch-style homes clustered in suburban-type developments.

There is a sidewalk on the east side of SR 152, between the high school and middle school and the commercial enterprises at the intersection of SR 152 and Holohan Road. Travelers along Holohan Road in the vicinity of the Project area have views of mixed-use commercial enterprises, and a small residential development (Orchard Park) near the intersection of Holohan Road and SR 152. As motorists travel west on Holohan Road, views become more agrarian and include agricultural fields, orchards, and single-story agricultural buildings.
Figure 3.13-1
Viewpoints Map

SOURCE: Carollo Engineers, 2017; ESRI World Imagery, 7/23/2016; ESA
Figure 3.13-2
Photos from Public Viewpoints

Photo 1: View of Holohan Road from State Route 152
Photo 2: View of Optional Water Treatment Plant Site from State Route 152
Photo 3: View of Preferred Water Treatment Plant Site from Holohan Road

SOURCE: ESA, 2018
College Lake, Weir Structure, and Intake Pump Station

The visual character of College Lake itself changes seasonally, depending on rainfall patterns and farming within the basin. Annually from approximately November through April (depending upon rainfall), College Lake typically appears as an irregularly-shaped water body brownish in color due to turbidity. As described in Chapter 2, Project Description, Reclamation District 2049 pumps water out of College Lake in the spring and portions of the lake basin, particularly in the southwest, are converted to croplands. The dense riparian forest in the northeastern portion of College Lake provides a visual contrast to the lake, cropland, and built environment. Long-range views across College Lake include Mt. Madonna and the Santa Cruz Mountains to the north, croplands to the west and east, and the City of Watsonville to the south. The figures in Appendix AG depict land uses within the College Lake basin based on surveys in the summer and fall and review of aerial imagery from Google Earth (dates vary) for years 2014 through 2018. The existing weir and pump station are located in a natural depression at the southern end of College Lake and are partially visible, but not prominent, from SR 152 and other neighboring land uses.

College Lake has moderate visual quality, which varies seasonally as described above. The visual attributes of College Lake are typical of the region’s agricultural visual character. Visually, College Lake is poorly exposed (i.e., there are few vantage points readily accessible to the public offering expansive views of the lake). College Lake is not readily visible from public viewsheds of nearby roadways including SR 152 and Holohan Road because it is located in a natural depression, and public views are screened by existing roadside vegetation, intervening terrain, and built structures.

Preferred Water Treatment Plant Site

The preferred WTP Site is located on Holohan Road, approximately 1,500 feet southwest of the existing weir and pump station. This site is currently operating as an orchard, and is visually characterized by symmetrical rows of apple trees (refer to Figure 3.13-2, Photo 3). An apple farming operation, characterized by one-story, utilitarian agricultural structures and including a ranch-style residence, is located on a separate parcel to the east of the orchard.

The preferred WTP site has moderate visual quality. As an apple orchard, the site has visual resources that are characteristic of the Pajaro Valley’s agricultural scenic amenities. The site has high visual exposure: the orchard is adjacent to and readily visible from Holohan Road (as well as nearby residences). The site is approximately 1,700 feet from the intersection of SR 152 and Holohan Road, and would not be visible from SR 152 due to landscape elevations, established roadside and agricultural windbreak vegetation, and existing buildings.

Optional Water Treatment Plant Site

The optional WTP site is located immediately south of College Lake, just southwest of the existing weir and pump station. The site is located in a natural topographic depression, and is visually characterized by agricultural croplands, including raspberries tended beneath hoop houses (arched frames periodically covered with white textile).
The optional WTP site has moderate visual quality. The site is typical of rural agricultural land uses in the Pajaro Valley. Berry cultivation on the site blends with the visual agricultural character of the surrounding area. The aesthetic attributes of the crops do not stand out as either contributing to or detracting from the visual character of the area. Visually, the optional WTP site is poorly exposed: the site is not readily visible from public viewsheds of nearby roadways, including SR 152 (refer to Figure 3.13-2, Photo 2) because the site is located in a natural depression, and views of the site are screened by topography, existing vegetation, and built structures. Similar intermittent views of the site from Holohan Road are largely obscured by the Orchard Park development south of the site, existing vegetation, site topography, and existing berry agricultural practices. Views of the site may also be available from the half-dozen residences along Laken Drive and Laken Court closest to the site, depending on the type of fencing along the residences’ northern boundary and agricultural practices on the intervening land (at present, the hoop houses covering berries grown on the land between these homes and the optional WTP site likely impede views of the site). Views of the site may also be available from a few residences northwest of the site.

3.13.2 Regulatory Framework

3.13.2.1 Federal and State

There are no applicable federal regulations related to aesthetics. The State Scenic Highway Program and the Green Building Code are discussed below.

Scenic Highway Program

In 1963, the State Legislature established the California Scenic Highway Program through Senate Bill 1467, which added Sections 260 through 263 to the Streets and Highways Code, to preserve and enhance the natural beauty of California. The State Highway System includes highways that either are eligible for designation as Scenic Highways or have been designated as such. There are no officially designated Scenic Highways within the County of Santa Cruz or the City of Watsonville, although SR 1 and SR 152, which extend through the Pajaro Valley, are both eligible for the official State Scenic Highway designation.1 Santa Cruz County and City of Watsonville scenic road designations are discussed below.

California Green Building Standards Code

The California Green Building Standards Code includes mandatory regulations for exterior light sources to reduce the amount of light and glare that extends beyond a property. Non-residential mandatory measures contained in Section 5.106.8, Light Pollution Reduction, require that exterior lights be shielded or meet “cutoff” lighting standards and meet specified backlight, uplight, and glare ratings designed to limit the amount of light that escapes beyond a site’s boundary.

3.13.2.2 Local

Table 2-10 in Chapter 2, Project Description, identifies the approvals from Santa Cruz County and the City of Watsonville required for the Project. Table 3.13-1 presents pertinent local plans and policies regarding the protection of visual resources to support County and City consideration of Project consistency with general policies.\(^2\) In some cases, local policies are used in this EIR as criteria to determine the significance of physical effects on the environment (e.g., Impact NOI-1 in Section 3.8, Noise and Vibration).

<table>
<thead>
<tr>
<th>TABLE 3.13-1</th>
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<tbody>
<tr>
<td>LOCAL PLANS AND POLICIES RELEVANT TO THE PROJECT</td>
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</tbody>
</table>

### CITY OF WATSONVILLE PLANS AND POLICIES\(^a\)

**Watsonville General Plan**

**Goal 5.1: Visual Resources.** Preserve and enhance the built and natural visual resources within Watsonville.

**Goal 5.2: Community Appearance.** Blend new development with recognized values of community appearance and scenic qualities, and ensure that new development enhances, rather than detracts from, its surroundings.

**Goal 5.5: Viewscape.** Preserve scenic rural qualities surrounding the urbanized portions of the Planning Area.

**Goal 5.9 Scenic Corridors.** Protect and enhance the views of and from the scenic streets and highways in Watsonville and the Planning Area.

**Goal 5.10: Natural Scenic Resources.** Conserve and enhance natural resources that contribute to the visual, recreational, and educational aesthetics of Watsonville. Such resources include: wetlands, sloughs, rivers, lakes, hillsides and stands of vegetation.

**Policy 5.A.5: Scenic Resources.** The City shall, through its design review process, consider the impact of the development on both the visual quality of the built environment and the scenic quality of natural features including sloughs, wetlands, rivers, lakes, hillsides and stands of vegetation.

### SANTA CRUZ COUNTY PLANS AND POLICIES\(^a\)

**Santa Cruz County General Plan/Local Coastal Program**

**Objective 5.10a: Protection of Visual Resources.** To identify, protect and restore the aesthetic values of visual resources.

**Objective 5.10b: New Development in Visual Resource Areas.** To ensure that new development is appropriately designed and constructed to have minimal to no adverse impact upon identified visual resources.

**Policy 5.10.2: Development within Visual Resource Areas.** Recognize that visual resources of Santa Cruz County possess diverse characteristics and that the resources worthy of protection may include, but are not limited to, ocean views, agricultural fields, wooded forests, open meadows, and mountain hillside views. Require projects to be evaluated against the context of their unique environment and regulate structure height, setbacks and design to protect these resources consistent with the objectives and policies of this [visual resources] section.

**Policy 5.10.3: Protection of Public Vistas.** Protect significant public vistas as described in policy 5.10.2 from all publicly used roads and vista points by minimizing disruption of landform and aesthetic character caused by grading operations, timber harvests, utility wires and poles, signs, inappropriate landscaping and structure design. Provide necessary landscaping to screen development which is unavoidably sited within these vistas.

**Policy 5.10.4: Preserving Natural Buffers.** Preserve the vegetation and landform of natural wooded hillside areas, which serve as a backdrop for new development.

**Policy 5.10.5: Preserving Agricultural Vistas.** Continue to preserve the aesthetic value of agricultural vistas. Encourage development to be consistent with the agricultural character of the community. Structures appurtenant to agricultural uses on agriculturally designated parcels shall be considered to be compatible with the agricultural character of surrounding areas.

\(^2\) California Government Code Section 53091 exempts agencies like PV Water from complying with local building and zoning ordinances when locating or constructing facilities for the production, generation, storage, treatment, or transmission of water. California Government Code Section 65402(c) requires that PV Water notify cities and counties of its plans to construct projects or to acquire or dispose of property. The planning agency then has 40 days to determine project consistency with its general plan. If the planning agency disapproves, the disapproval may be overruled by PV Water.
3. Environmental Setting, Impacts, and Mitigation Measures

3.13 Aesthetic Resources

### Table 3.13-1 (continued)

**LOCAL PLANS AND POLICIES RELEVANT TO THE PROJECT**

<table>
<thead>
<tr>
<th>SANTA CRUZ COUNTY PLANS AND POLICIES (cont.)</th>
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**Santa Cruz County General Plan/Local Coastal Program (cont.)**

**Policy 5.10.11: Development Visible from Rural Scenic Roads.** In the viewsheds of rural scenic roads, require new discretionary development, including development envelopes in proposed land divisions, to be sited out of public view, obscured by natural landforms and/or existing vegetation. Where proposed structures on existing lots are unavoidably visible from scenic roads, identify those visual qualities worthy of protection and require the siting, architectural design and landscaping to mitigate the impacts on those visual qualities.

**Policy 5.10.13: Landscaping Requirements.** All grading and land disturbance projects visible from scenic roads shall conform to the following visual mitigation conditions:

a) Blended contours of the finished surface with the adjacent natural terrain and landscape to achieve a smooth transition and natural appearance; and

b) Incorporate only characteristic or indigenous plant species appropriate for the area.

**Objective 8.5: Commercial and Industrial Design.** To achieve a well-defined hierarchy of neighborhood, community and regional commercial and industrial areas which harmonize and complement the unique characteristics of each neighborhood they serve, through coordinated circulation systems and architectural style, and appropriate landscaping and signage.

**Policy 8.5.1: Concentrate Commercial Uses.** Contain commercial and industrial uses in designated areas, avoiding new strip commercial uses, to minimize impacts on residential areas, adjacent roads, and property, and on the scenic setting of the County.

**Policy 8.5.2: Commercial Compatibility with Other Uses.** Ensure compatibility of commercial and industrial use with adjacent uses through application of the Site Architectural and Landscape Design Review or similar ordinance. Give careful attention to landscaping, signing, access, site and building design, visual impacts, drainage, parking, on site circulation, traffic patterns, and where applicable, availability of water, sewage system capacity, fencing and mitigation of potential nuisance factors, visual aspects, and traffic problems.

**Objective 8.6: Building Design.** To encourage building design that addresses the neighborhood and community context; utilizes scale appropriate to adjacent development; and incorporates design elements that are appropriate to surrounding uses and the type of land use planned for the area.

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**Santa Cruz County Municipal Code**

**Section 13.11.072(A): Site Design.** It shall be the objective of new development to enhance or preserve the integrity of existing land use patterns or character where those exist and to be consistent with village plans, community plans and coastal special community plans as they become adopted, and to complement the scale of neighboring development where appropriate to the zoning district context. New development, where appropriate, shall be sited, designed and landscaped so as to be visually compatible and integrated with the character of surrounding areas.

**Section 13.11.072(B)(2)(a): Views.** Development shall protect the public viewshed, where possible.

**Section 13.11.072(B)(2)(b): Views.** Development should minimize the impact on private views from adjacent parcels, wherever practicable.

**Section 13.11.073, Building Design, and Section 13.11.075, Landscaping,** provide planning and design objectives for new developments in Santa Cruz County.

**NOTES:**

- Note that the College Lake pipeline would be installed below ground; once constructed, the pipeline would be completely buried.

**SOURCE:** City of Watsonville, Watsonville 2005 General Plan, Adopted May 24, 1994; County of Santa Cruz, 1994 General Plan/Local Coastal Program, Chapter 5 – Conservation and Open Space, Effective December 19, 1994.

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**Scenic Road Designations**

SR 1 and SR 152 are both eligible for the official State Scenic Highway designation. Santa Cruz County and the City of Watsonville also have scenic road designations, as described in the 2014 BMP Update PEIR Section 3.1.1.2 (p. 3.1-2 et seq.). **Table 3.13-2** below identifies scenic roads in the vicinity of Project components.
### 3. Environmental Setting, Impacts, and Mitigation Measures

#### 3.13 Aesthetic Resources

**TABLE 3.13-2**

<table>
<thead>
<tr>
<th>Scenic Road Name</th>
<th>Scenic Road Designation</th>
<th>Relevant Project Component(s)</th>
</tr>
</thead>
</table>
| State Route 152  | • Eligible State Scenic Highway  
                   • County Scenic Road (Route 1 to Santa Clara County)  
                   • City Scenic Route (Main Street to Carlton Road) | • College Lake Water Storage Area  
                                                                 • Weir Structure and Intake Pump Station  
                                                                 • Optional Water Treatment Plant Site  
                                                                 • Portions of College Lake Pipeline construction |
| State Route 1    | • Eligible State Scenic Highway  
                   • County Scenic Road (San Mateo County to Monterey County)  
                   • City Scenic Route | • Portions of College Lake Pipeline construction |
| State Route 129  | • County Scenic Road (Route 1 to San Benito County)  
                   • City Scenic Route (State Route 1 to Salsipuedes Creek) |  |
| Beach Road       | • County Scenic Road (State Route 1 to Palm Beach)  
                   • City Scenic Route (East Beach Street from Main Street to Beck Street) |  |
| Main Street      | • City Scenic Route (State Route 1 to the Pajaro River) |  |
| Holohan Road\(a\) | • City Scenic Route (Paralleling Corralitos Creek, between Green Valley Road and East Lake Avenue) | • Water Treatment Plant  
                                                                 • Portions of College Lake Pipeline construction |

**NOTES:**

\(a\) Holohan Road is designated a City of Watsonville Scenic Route although it is outside the city boundary (the Watsonville 2005 General Plan includes Holohan Road in its Planning Area).


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### 3.13.3 Impacts and Mitigation Measures

#### 3.13.3.1 Significance Criteria

In accordance with the California Environmental Quality Act (CEQA), State CEQA Guidelines (including Appendix G), relevant plans, policies, and/or guidelines, and agency standards, the Project could have a significant impact if it were to:

- Have a substantial adverse effect on a scenic vista;
- Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within view of a state scenic highway;
3.13 Aesthetic Resources

3.13.3.2 Methodology

As described in Section 3.1, this EIR provides an independent analysis of the Project’s potential environmental impacts. Table 3.13-3 presents mitigation measures from the 2014 BMP Update PEIR adopted by the Board of Directors for the purpose of reducing impacts to aesthetic resources. These adopted mitigation measures are considered part of the College Lake Project and thus are considered prior to any significance determinations. Potential impacts are evaluated in the following section. If warranted, additional mitigation is included and takes the form of (1) modifications to update the mitigation measures presented in Table 3.13-3 to reflect current conditions and site-specific impacts; or (2) new mitigation measures to replace or augment an adopted mitigation measure.

### Table 3.13-3

<table>
<thead>
<tr>
<th>2014 BMP UPDATE PEIR MITIGATION MEASURES – AESTHETIC RESOURCES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AE-1a:</strong> PV Water shall use design elements to enhance visual integration of the proposed aboveground facilities with their surroundings. Proposed structures shall be painted low-glare, earth-tone colors that blend with the surrounding terrain, unless colors otherwise specified by regulatory agencies, such as purple facilities for recycled water systems.</td>
</tr>
<tr>
<td><strong>AE-1b:</strong> PV Water shall use design elements and landscaping to enhance visual integration of the College Lake pumping and filtration facilities with their surroundings. Proposed facilities shall be painted low-glare, earth-tone colors that blend closely with the surrounding terrain. Vegetation shall be planted at proposed facilities to provide screening from views of the facilities from SR 152.</td>
</tr>
<tr>
<td><strong>AE-1c:</strong> PV Water shall shield the weir with vegetation to minimize textural contrasts with the surrounding vegetation using grasses, shrubs and trees typical of the immediately surrounding area.</td>
</tr>
</tbody>
</table>


The visual quality impact analysis is based on review of Project maps and drawings, field observations conducted by ESA in 2017 and 2018, and review of a variety of data in the record, including the 2014 BMP Program EIR and the local plans and policies described in the preceding section. The analysis describes potential temporary (short-term) and permanent (long-term) impacts on scenic vistas or the visual character or quality of a site. Consistent with CEQA, the evaluation of impacts to visual quality focuses on publicly accessible views; effects on private views of the WTP sites (a subject raised in public comments) are discussed briefly under AES-3. The approach to evaluating the effect of the Project under each CEQA significance criterion is briefly clarified below:

- **Have a substantial adverse effect on a scenic vista.** For purposes of this evaluation, scenic vistas include broad, expansive, publicly-accessible views from roads in the Project area. This criterion applies only to projects that would be located on or disrupt access to a scenic vista, or result in visual changes within its viewshed. Scenic vistas may be officially recognized or

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3 Public views are those that are experienced from publicly accessible vantage point.
designated (e.g., within local planning documents or the California Department of Transportation (Caltrans) scenic highway program), or they may be informal in nature (e.g., mountain peaks or coastal bluffs). The Project’s effect would be considered substantial if it would appreciably damage or remove the visual qualities that make the view unique, unobstructed, and/or exemplary.

- **Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.** Damage to a scenic resource is substantial when it is reasonably perceptible to affected viewers, as seen from a scenic highway, and when it appreciably degrades one or more of the aesthetic qualities that contributes to a scenic setting. The presence of and potential damage to scenic resources in this analysis is considered along with Project-related effects on the existing visual character and quality of a site or surroundings (see next bullet).

- **In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings, or, if the Project is in an urbanized area, conflict with applicable zoning and other regulations governing scenic quality.** In non-urbanized areas (both WTP sites, the weir structure and intake pump station sites, portions of the College Lake pipeline), this criterion is applicable to all locations where the Project would result in either temporary or permanent visual change to public views. The Project is considered to “substantially degrade” the visual character or quality of public views of a site if it would have a strong negative influence on the public’s experience and appreciation of the visual environment. As such, visual changes are always considered in the context of a site or locale’s visual sensitivity (as described in the setting). Visual changes caused by the Project are evaluated in terms of their visual contrast with the area’s predominant landscape elements and features, their dominance in views relative to other existing features, and the degree to which they could block or obscure public views of aesthetically pleasing landscape elements. Visual changes are also evaluated in terms of potential damage to or removal of features of the natural or built environment that contribute to a scenic public setting. The magnitude of visual change that would result in a significant impact (i.e., substantial degradation) is influenced by its degree of permanence, and is inversely related to the visual sensitivity of a site. In urbanized areas (where portions of the College Lake pipeline are proposed to go through the City of Watsonville), this criterion would be applicable if the Project would conflict with applicable zoning and other regulations governing scenic quality.

- **Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.** This criterion is applicable to projects that require nighttime lighting (either during construction or operation), or that involve structures or finishes that could create substantial glare.

The Project includes pipelines and other components (e.g., sedimentation basins at the WTP) that would be located at or below grade. Following construction these facilities would not be visible to the public. The potential visual effects associated with the construction of proposed below-grade components such as removal of vegetation during construction are discussed below. Landscape plans for the proposed WTP have not yet been developed for either of the site options.
3.13.3.3 Impact Evaluation

Impact AES-1: Implementation of the Project could have a substantial adverse effect on scenic vistas. (Less than Significant with Mitigation)

Scenic vistas in the Project area are characterized by expansive agricultural fields in the foreground framed by the Santa Cruz Mountains in the background.

Construction (Daytime)

Regarding the effects of nighttime construction on aesthetic resources, refer to Impact AES-4.

Project Components Excluding College Lake Pipeline

Construction of the proposed WTP (at either the preferred or optional site), weir structure, and intake pump station would require removal of existing vegetation, including orchards and/or crops. The construction disturbance area for the preferred WTP site is approximately 6.5 acres (including 5 acres of permanent disturbance), while the construction disturbance area for the optional WTP site is approximately 6.9 acres (including 6 acres of permanent disturbance, refer to Table 2-9 in Chapter 2). Demolition of the existing weir structure and construction of the proposed weir structure and intake pump station would require disturbance of about 0.6 acres (refer to Table 2-9 in Chapter 2). Refer to Section 3.4, Biological Resources, regarding restoration of areas used for temporary construction staging.

Construction of the Project would be visible to a large number of people at certain locations (e.g., the preferred WTP site), but less noticeable to the general public at other locations (e.g., the optional WTP site, weir structure, and intake pump station) due to distance to viewers, topography, and screening provided by existing vegetation and structures. As shown in Table 2-5 (in Chapter 2), construction of the Project is expected to last 18 months. Construction would involve a variety of small- and large-scale construction equipment and a crew of up to 26 workers. Construction vehicles, materials, and equipment would be noticeable and visually unappealing; however, the equipment that would be used (listed in Table 2-6) is generally similar to or smaller in scale than equipment used regularly in the Project area, in farm fields (e.g., tractors) and for construction projects on and nearby City streets (e.g., equipment associated with roadwork and utility installation). Construction at the preferred WTP site would be visible by travelers along Holohan Road, but construction fencing around the perimeter of the preferred WTP site construction area would reduce the visual impacts of Project construction. Visual impacts related to construction of the proposed WTP, weir structure, and intake pump station would be temporary in nature, would be partially screened from view by construction fencing, and would be considered less than significant.

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4 Schedule based on construction of grading and surcharging fill pad for the preferred WTP site. The duration of surcharging for the optional WTP site would be increased by 12 to 18 months to allow for consolidation of fill pad at that site. There would be no construction activity at the site during consolidation. The remainder of the construction phase durations for the WTP would be the same for both site options.
College Lake Pipeline

While it would require about 13 months to build the College Lake pipeline, construction activities at any one location would progress at about 100 feet per day in urban areas, meaning that pipeline construction on a typical City block in Watsonville would last a total of approximately 5 to 10 days. Pipeline construction through farm fields (as shown on Figures 2-3a through 2-3e) would generally progress at about 250 feet per day. The equipment that would be used is generally similar to or smaller in scale than equipment used regularly in the Project area.

Given the visibility and scale of construction activities in the context of scenic vistas, degree of contrast with existing activities in the Project area, duration of construction activities, and number of affected viewers, daytime construction-phase impacts on scenic vistas from construction are considered less than significant.

Operation

Visual Attributes of Project Components After Construction

- **Weir Structure and Intake Pump station.** The proposed weir structure and intake pump station would occupy less than one-quarter acre within a topographic depression about 25 feet downstream of the existing weir and pump station. Refer to Figure 2-10 in Chapter 2 for a site plan of the proposed facilities; refer to Table 2-3 for estimated dimensions of the Project components. The facilities would be concrete with an industrial appearance.

- **College Lake.** With operation of the Project, the water surface elevation within College Lake would continue to vary seasonally and be based on rainfall and demand for delivered water, although water surface elevations would be higher for longer periods of time compared to existing conditions (refer to Section 3.3, Surface Water, Groundwater, and Water Quality). As described in Chapter 2, after water levels drop, Pajaro Valley Water Management Agency (PV Water) would manage vegetation within the College Lake basin to maintain desired vegetation conditions. Activities would include disking and mowing in the lower elevations of the lake basin (i.e., below 59 feet North American Vertical Datum of 1988 [NAVD88]). Farming is expected to continue to some extent above 59 feet NAVD88 (refer to Figure 3.2-4 in Section 3.2, Land Use and Agricultural Resources). The riparian forest in the eastern portion of College Lake would persist. Consequently, under future with-Project conditions, College Lake would continue to appear seasonally as an irregularly shaped water body or as bare ground or grassy fields, depending on time or year, bordered by the dense riparian forest in the northeastern portion.

- **Preferred WTP Site.** The five-acre preferred WTP site is currently planted as an apple orchard. The Project would replace the orchard with the WTP. Figure 2-14 depicts the site plan for the proposed WTP at the preferred site, Figure 2-15 depicts cross-sections of the proposed structures, indicating mass and height relative to existing and final grade, and Table 2-3 indicates the approximate dimensions and height above final grade of proposed structures at the WTP site. The proposed WTP elements would consist of small industrial-style buildings and storage silos with a maximum height of up to 18 feet above finished grade, set back about 15 feet from an eight-foot-tall chain-link fence at the site boundary, paved areas, and basins. Vehicles would enter and exit the site via a driveway off of Holohan Road at the southeast corner of the property. PV Water has not yet developed a landscape plan for the proposed WTP. The construction corridor for the pipeline connecting the intake pump station to the preferred WTP site follows farm roads and the Pinto Creek ditch. The
pipeline would be completely underground following construction. Removal of orchard trees required for pipeline construction could not be replanted, although the corridor could otherwise continue to be used for agriculture.

- **Optional WTP Site.** Raspberries, often tended beneath hoop houses periodically covered with white textile, are currently grown at the six-acre optional WTP site. Figure 2-16 depicts the site plan for the proposed WTP at the optional site, Figure 2-17 depicts cross-sections of the proposed structures indicating mass and height relative to existing and final grade, and Table 2-3 indicates the approximate dimensions and height above final grade of proposed structures at the WTP site. The proposed WTP elements at the optional WTP site would be as described above for the preferred WTP site, although the difference between existing and final grade would be greater with the optional WTP site than with the preferred WTP site in order to raise the optional WTP site out of the floodplain (refer to Figure 2-17). Vehicles would access the site from Holohan Road via a roadway west of the Orchard Park neighborhood to the southwest corner of the property.

- **College Lake Pipeline.** The College Lake pipeline would be completely underground following construction and generally would not affect the visual characteristics of the overlying land uses. No tree removal would be required for construction of the pipeline. Consequently, operation of the College Lake pipeline would not adversely affect scenic vistas, scenic resources, or the existing visual character of the area, and is therefore not discussed further in this section.

**State Route 152**

Vistas from SR 152 in the College Lake area include views of roadside trees and shrubs in the foreground intermixed with institutional and commercial built structures, and brief, intermittent views of agricultural fields through breaks in the roadside vegetation and between built structures along the highway.

College Lake, the proposed weir structure and intake pump station site, and the optional WTP site are located in a topographic depression, naturally screening the sites from views from the highway. The preferred WTP site is not visible from SR 152. Views of College Lake, the proposed weir structure and intake pump station, and the WTP at the optional WTP site from SR 152 would be brief and intermittent through a visual foreground comprised of roadside vegetation and built structures. As described above, the appearance of the College Lake basin would generally be similar to existing conditions with seasonal variations depending on time or year. The proposed weir structure and intake pump station would be larger than the existing structures, but would look similar in nature. With implementation of adopted Mitigation Measures AE-1a and AE-1b, the proposed WTP at the optional site would not appreciably damage the visual qualities of the viewshed from SR 152 given the visibility and relative scale of Project components and the ability of the adopted mitigation measures to reduce visual contrast with the surrounding area. Presented below as **Mitigation Measures AES-1a** and **AES-1b** are revised versions of Mitigation Measures AE-1a and AE-1b that address site-specific, design-specific characteristics of the Project. Adopted Mitigation Measure AE-1c, requiring that the proposed weir structure be shielded with vegetation to minimize textural contrasts with the surroundings, is not warranted given the size, scale, anticipated appearance, and location of the proposed weir structure and intake pump station relative to viewers. With implementation of
Mitigation Measures AES-1a and AES-1b, the adverse impact on scenic vistas from SR 152 would be *less than significant with mitigation*.

**Holohan Road**
Although Holohan Road is located outside the City of Watsonville’s boundary, it is within the City’s designated Planning Area, and the City considers it a Scenic Route. Pursuant to the City of Watsonville’s General Plan, Holohan Road is valued because it provides uninterrupted views of orchards and agricultural uses outside the city and the hills that form the backdrop of Pajaro Valley. Scenic vistas from Holohan Road include broad, expansive views of agricultural fields, orchards, forested wind breaks, and riparian forest in the foreground, and the Santa Cruz Mountains in the background. Foreground agrarian views along Holohan Road are somewhat disrupted by existing built features, including nearby commercial and residential uses.

**College Lake, Weir Structure, Intake Pump Station, and Optional WTP Site**
As described above, the appearance of the College Lake basin would generally be similar to existing conditions with seasonal variations depending on time or year. The proposed weir structure and intake pump station and optional WTP site would be largely obscured from view from Holohan Road due to existing vegetation, site topography, existing agricultural practices periodically utilizing hoop houses, and the Orchard Park residential development. As a result, these Project components would not adversely affect expansive views of scenic vistas from Holohan Road and this impact would be *less than significant*.

**Preferred WTP Site**
The preferred WTP site is highly visible in the foreground of scenic vistas from Holohan Road. Without landscaping or other screening, the dominant features visible from Holohan Road would be the fence, the electrical/operation building, silos storing water treatment chemicals, and cylindrical tanks containing the pressure filters; three additional structures associated with potential future treatment operations would also be located along the Holohan Road frontage, if needed. The height of these structures would range from 2 to 18 feet above final grade. Built structures in the foreground of scenic vistas from Holohan Road are not incompatible with existing foreground features along this roadway: similar scale institutional, commercial, and residential development is located in the vicinity of the Project. However, replacing most of the foreground views of an orchard with the built facilities of the proposed WTP would have a substantial adverse effect on scenic vistas from nearby vantage points on Holohan Road. The Project would remove the scenic agrarian qualities of the orchard at this site, resulting in a significant impact on a scenic vista on Holohan Road. Consistent with the requirements of adopted Mitigation Measures AE-1a and AE-1b (in Table 3.13-3), PV Water has committed using landscaping to provide screening and design elements such as low-glare earth-tone paint to visually integrate the proposed aboveground structures of the WTP with their surroundings. Mitigation Measures AES-1a and AES-1b (below) are revised versions of adopted Mitigation Measures AE-1a and AE-1b that address site-specific, design-specific characteristics of the Project. With the incorporation of Mitigation Measures AES-1a and AES-1b, the adverse impact on scenic vistas from Holohan Road would be *less than significant with mitigation*. 
State Route 1

SR 1 in Santa Cruz County is an eligible State Scenic Highway due to its views of mountainous coast, rocky headlands, and the Pacific Ocean. Scenic vistas from SR 1 in the Project area include expansive views of agricultural fields extending toward the Pacific Ocean. College Lake pipeline construction is proposed in the vicinity of SR 1. As shown on Figures 2-3d and 2-3e (in Chapter 2), the proposed College Lake pipeline would be installed perpendicular to SR 1, either within West Beach Street (the preferred route) or adjacent to SR 129 and across open agricultural fields (the optional route). Pipeline construction occurring east of SR 1 would be visible to northbound motorists including those using the off-ramp for SR 129, while pipeline construction occurring west of the SR 1 would be visible to southbound motorists. College Lake pipeline construction would involve the use of conventional construction equipment, progressing along the alignment at a rate of between 100 and 250 feet per day; trenchless construction for the optional alignment would last about one week. Views of pipeline construction areas would be brief as motorists move past the construction site and would constitute a small portion of the expansive views available from the roadway. After pipeline installation, the pipeline would be below ground, and the natural and built environment would return to its prior appearance: streets would be repaired and agricultural fields would return to agricultural cultivation. Given the visibility and appearance of pipeline construction and the duration of views, construction of the College Lake pipeline in the vicinity of SR 1 would not have a substantial adverse effect on scenic vistas from SR 1, and the construction-related impact on scenic vistas from SR 1 would be less than significant.

The following mitigation measures would replace adopted Mitigation Measures AE-1a, AE-1b, and AE-1c:

**Mitigation Measure AES-1a: Aboveground Facility Treatment**

PV Water shall paint or otherwise treat aboveground facilities using low-glare paint that blends with predominant color(s) of the surrounding terrain, unless colors otherwise specified by regulatory agencies. Concrete structures need not be painted.

**Mitigation Measure AES-1b: Landscaping**

For the preferred WTP site, PV Water shall shift the site plan northward in order to preserve orchard trees along Holohan Road and several orchard trees northeast of 116 Holohan Road, to the extent feasible and in accordance with PV Water security requirements. Where preservation of orchard trees along Holohan Road is not feasible (e.g., due to the access road and the College Lake pipeline), PV Water shall use landscaping to reduce textural contrasts and enhance visual integration of the WTP with its surroundings. Landscaping shall include shrubs and other vegetation typical of the surrounding area.

For the optional WTP site, PV Water shall use landscaping to reduce textural contrasts and enhance visual integration of the WTP with its surroundings when viewed from SR 152. Landscaping shall include shrubs and other vegetation typical of the surrounding area.
Impact AES-2: Implementation of the Project could substantially damage scenic resources. *(Less than Significant)*

As stated above under Section 3.13.3.2, damage to a scenic resource is substantial when it is reasonably perceptible to affected viewers, as seen from a scenic highway; and when it appreciably degrades one or more of the aesthetic qualities that contribute to a scenic setting. Scenic resources visible from segments of SR 152 and SR 1 in the vicinity of the Project include agricultural fields, the Santa Cruz Mountains, trees and natural areas, and select built structures (e.g., the historic church at Our Lady Help of Christians Catholic Church).

Construction (Daytime)

For reasons stated under Impact AES-1, daytime construction activities would not substantially damage scenic resources.

Operation

SR 152

Development of the proposed WTP at either the preferred or optional site would adversely affect agricultural fields, a scenic resource; however, only the optional WTP site is visible from SR 152. Development of the optional WTP site would replace approximately six acres of land currently planted with berries, diminishing its scenic quality. Views of the optional WTP site, proposed weir structure, and intake pump station from SR 152 would be brief and intermittent through a visual foreground of roadside vegetation and built structures (refer to Photo 2 in Figure 3.13-2). Given the existing visual quality, visibility of the optional WTP site, proposed weir structure, and intake pump station from SR 152, and adopted mitigation measures, damage to scenic resources associated with these Project components are considered *less than significant*.

Operation of College Lake (including the water storage area component of the Project) would also affect agricultural fields. Water management operations are expected to result in land below 59 feet NAVD88 being inundated for longer periods of time, precluding farming, while less farming would occur between 59 feet NAVD88 and 63 feet NAVD88. Implementation of the Project would effectively convert one type of scenic resource to another, resulting in a reduction of seasonal agricultural fields and an increase in natural areas. Views of College Lake from SR 152 would be brief and intermittent through a visual foreground of roadside vegetation and built structures. Given the limited visibility of College Lake as well as other publicly accessible areas, and the nature of changes to land uses within the lake basin, effects on scenic resources associated with water management operations are considered *less than significant*.

State Route 1

The only Project component visible from SR 1, the College Lake pipeline, would be completely underground following construction and generally would not affect the visual characteristics of the overlying land uses. Consequently, operation of the Project would not affect scenic resources seen from SR 1 and this impact would be *less than significant*. 

_________________________
Impact AES-3: Implementation of the Project could degrade the existing visual character or quality of public views of the sites in non-urbanized areas. *(Less than Significant with Mitigation)*

**Construction (Daytime)**

For reasons stated under Impact AES-1, daytime construction would not substantially degrade the existing visual character or quality of public views of Project sites in non-urbanized areas (both WTP sites, the weir structure and intake pump station sites, portions of the College Lake pipeline). Construction of the College Lake pipeline within the City of Watsonville would progress at about 100 feet per day, meaning that pipeline construction on a typical city block in Watsonville would last 5 to 10 days. The equipment that would be used is generally similar to or smaller in scale than equipment used regularly in the Project area. Pipeline construction would be temporary in nature, and would not conflict with applicable zoning and other regulations governing scenic quality, including the State Scenic Highway Program. For these reasons, this impact would *less than significant* during Project construction.

**Operation**

**College Lake, Weir Structure, and Intake Pump Station**

As described above, College Lake has moderate visual quality. Because the location of the proposed weir structure and intake pump station is within a natural depression, topography shields the area from public view. The visual attributes of the site are typical of the region’s agricultural visual character. College Lake and the proposed weir structure and intake pump station areas are poorly exposed to public view. With moderate visual quality and poor exposure, the sites are considered to have moderate visual sensitivity.

**Weir Structure and Intake Pump Station.** The proposed weir structure and intake pump station would appear as small-scale human-made structures. As such, these facilities would not be inconsistent in appearance with the varied development nearby, which includes the existing weir and pump station about 25 feet upstream, as well as residential, institutional, commercial, and agricultural uses. Given that the site has moderate visual quality, poor exposure, and moderate visual sensitivity, these Project components would not have a substantial adverse effect on the visual character or quality of the public views of the site and its surroundings. Consequently, the effects of the proposed weir structure and intake pump station on the visual character and quality of public views of the site are considered *less than significant.*

**College Lake.** The visual character of College Lake with proposed water management operations would continue to have moderate visual quality and be poorly exposed to public views. Consequently, impacts to the existing visual character and quality of public views of College Lake under future with-Project conditions are considered *less than significant.*

**Preferred Water Treatment Plant Site**

The preferred WTP site located adjacent to Holohan Road is a highly visible site. This site has moderate visual quality and high exposure from Holohan Road, and is thus considered to have moderate to high visual sensitivity. The proposed structures, basins, and paving would
permanently change the visual character of the site from a rural, agrarian apple orchard to a developed site. Given that the site has moderate visual quality, high exposure, and moderate to high visual sensitivity, altering the visual character of the site from an orchard to a WTP would result in a substantial degradation of the existing visual character of the site and a significant adverse impact. Implementation of Mitigation Measures AES-1a and AES-1b would help enhance visual integration of the proposed aboveground facilities with the existing visual character of the area, partially screening structures from public view and reducing textural contrasts with the surroundings. Thus, the impact on existing visual character and quality of public views of the preferred WTP site would be reduced to less than significant with mitigation.

Views of the preferred WTP site are also available from nearby residences. The inset on Figure 2-14 in Chapter 2 shows residences nearest the preferred WTP site. Figure 2-15 in Chapter 2 shows cross-sections of the WTP at the preferred site depicting existing and finished grade and the height of proposed features at the WTP. Table 2-3 in Chapter 2 identifies the height above finished grade for the various structures at the WTP. Implementation of aboveground facility treatments and landscaping included in Mitigation Measures AES-1a and AES-1b would also help visually integrate the WTP at the preferred site in views from neighboring residences along Holohan Road.

Optional Water Treatment Plant Site

The optional WTP site has moderate visual quality, with limited and brief exposure from SR 152, and is thus considered to have moderate visual sensitivity. Views of the existing site are limited by topography, roadside vegetation, and existing built structures. The proposed structures, basins, and paving would permanently change the visual character of the site from agricultural crop use to a developed site. With implementation of Mitigation Measures AES-1a and AES-1b, the visual character of the optional WTP site would be consistent with the existing visual character of the area and this impact would be less than significant with mitigation.

Views of the site may also be available from the half-dozen residences along Laken Drive and Laken Court closest to the site, as well as from a few residences northwest of the site. The optional WTP site is about 200 feet north of the nearest properties on Laken Drive. Although the existing ground elevation at the optional site is about 3 feet lower in elevation than Laken Drive, development of the optional WTP site would require a fill pad to raise the WTP above flood elevation. Figure 2-17 in Chapter 2 presents cross-sections of the WTP at the optional site, and depicts existing and finished grades as well as the heights of proposed structures (refer to Figure 2-16 for the locations of the cross-sections). Table 2-3 in Chapter 2 identifies the height above finished grade for the various structures at the WTP. Several structures along the southern border of the WTP site would be 15 to 23 feet above the finished grade and could be visible from homes along Laken Drive and Laken Court (see Table 2-3 and Figure 2-17). The fact that these homes are single story and have fencing along the northern borders of their properties would limit visibility of these features from the residences. Implementation of aboveground facility treatments and landscaping included in Mitigation Measures AES-1a and AES-1b would help visually integrate the WTP at the optional site in views from neighboring residences.
Mitigation Measures AES-1a: Aboveground Facility Treatment and Mitigation Measure AES-1b: Landscaping (refer to Impact AES-1)

Impact AES-4: Project components could introduce significant new sources of light or glare. *(Less than Significant with Mitigation)*

**Construction**

Generally, construction of the Project would take place during daytime hours, and would not require construction lighting. However, as described in Section 2.6.1.2, Construction Hours, exceptions to standard construction hours would include weir structure and intake pump station construction and trenchless pipeline construction due to seasonal constraints on these construction efforts. Proposed weir structure and intake pump station construction could occur seven days a week between 7:00 a.m. and 7:00 p.m., and may require some morning and late afternoon lighting depending upon ambient light conditions. Similarly, potential trenchless pipeline construction (refer to Figures 2-3a through 2-3e) could require construction for up to 24 hours per day for up to several days in a row. Construction-related lighting would be temporary in duration. Implementation of Mitigation Measure AES-2 would require PV Water or its contractor to use shielded and hooded outdoor construction lighting directed to the area where the lighting would be required to minimize ambient light during Project construction. With the implementation of Mitigation Measure AES-2, visual impacts related to construction lighting would be less than significant with mitigation.

**Operation**

Existing residential, commercial, and institutional uses in the areas have existing lighting. Exterior security lighting proposed at the WTP facilities, weir structure, and intake pump station would be limited to security lighting. The proposed WTP would also include interior lighting that would be used during operation and maintenance activities described in Section 2.7 in Chapter 2, Project Description. Because lighting for these Project components would be required to comply with the California Green Building Standards Code, the amount of light that could extend beyond property boundaries would be limited. While exterior lighting could be visible from some nearby residences at either proposed WTP site (preferred or optional), new lighting sources would not substantially increase ambient light in the Project area. As identified in adopted Mitigation Measures AE-1a and AE-1b, proposed facilities would be painted in low-glare, earth-tone colors that blend closely with the surrounding terrain, further reducing the potential introduction of a new source of glare. This impact relating to the operational phase of the Project is less than significant.

**Mitigation Measure AES-2: Construction Lighting**

PV Water shall require contractors to direct nighttime lighting used during construction away from residential areas, use the minimum amount of night lighting necessary for construction and safety, and shield and hood outdoor lighting to prevent light spillover effects during Project construction.
Cumulative Impacts

Impact C-AES-1: The Project, in combination with past, present, and probable future projects in the Project area, would not result in significant adverse cumulative aesthetic impacts. (Less than Significant)

The cumulative analysis of aesthetic impacts uses a list-based approach and identifies probable future projects in the vicinity of the Project that could contribute to a cumulative impact. The geographic scope for the analysis of cumulative aesthetic impacts includes the viewsheds affected by the Project components near College Lake itself (as indicated in the preceding text, once constructed the College Lake pipeline would be entirely below ground). Table 3.1-1 and Figure 3.1-1 in Section 3.1, Overview, provide descriptions and locations of potential cumulative projects in the vicinity of the College Lake Project. The following cumulative projects are located near College Lake viewsheds affected by the Project:

- Corralitos Creek ADA Compliance (Caltrans)
- State Route 152 Improvements (Caltrans)
- State Route 152/Holohan Road/College Road Intersection Improvements (Santa Cruz County)

These projects are numbered 11, 12 and 13 on Figure 3.1-1. The Corralitos Creek ADA Compliance Project involves construction of a pathway on a segment of SR 152 that would have no view of any Project components. The other improvements include operational and geometric (widening) improvements at the intersection of SR 152 and Holohan Road, and drainage and transportation management system improvements to SR 152. None of these projects is expected to substantially alter views affected by the Project because of the nature of the projects and their location. Consequently, cumulative impacts to aesthetic resources would be less than significant.

Mitigation: None required.
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CHAPTER 4
Other CEQA Issues

4.1 Significant Unavoidable Impacts

In accordance with Section 21100(b)(2)(A) of the California Environmental Quality Act (CEQA) and with Sections 15126(b) and 15126.2(b) of the CEQA Guidelines, the purpose of this section is to identify Project-related environmental impacts that could not be eliminated or reduced to a less-than-significant level with implementation of mitigation measures identified in Chapter 3, Environmental Setting, Impacts, and Mitigation Measures. With the exceptions described below, all Project impacts would either be less than significant or reduced to less-than-significant levels with implementation of the identified mitigation measures:

- **Conversion of Important Farmland.** The Project would result in the conversion of Important Farmland to non-agricultural use. Even with implementation of Mitigation Measures LU-1a (Promote Farming), LU-1b (Compensate for Conversion of Important Farmland), and LU-1c (Replacement of Topsoil), these impacts would be significant and unavoidable on a project-specific and cumulative basis. (Impacts LU-1 and C-LU-1)

- **Exceedance of Construction Noise Standards.** Construction activities at the preferred WTP site, pipeline alignments (trench construction within 25 feet of residences and trenchless pipeline construction at select locations) would expose nearby sensitive receptors to noise levels that would exceed the County of Santa Cruz construction noise standard, or would occur outside the allowed construction hours identified in the City of Watsonville noise ordinance. Implementation of Mitigation Measure NOI-1a (Construction Noise Reduction Plan) is expected to attenuate construction noise levels; however, noise levels would not be reduced below the County construction noise standard. In addition, construction activities at boring sites within the city limits would occur outside of the allowed hours specified in the City of Watsonville noise ordinance (trenchless construction techniques require 24-hour construction). Therefore, impacts at these Project component locations would remain significant and unavoidable on a project-specific and cumulative basis even with implementation of Mitigation Measures NOI-1a (Construction Noise Reduction Plan) and NOI-1b (Off-site Accommodations for Substantially Affected Nighttime Receptors). (Impacts NOI-1 and C-NOI-1)

4.2 Significant Irreversible Environmental Changes

In accordance with CEQA Section 21100(b) (2) (B) and CEQA Guidelines Sections 15126(c) and 15126.2(c), the purpose of this section is to identify significant irreversible environmental changes that would be caused by the Project. Construction and operational impacts associated with implementation of the Project would result in an irretrievable and irreversible commitment.
of natural resources through the use of fossil fuels and construction materials. The Project would require the commitment of energy resources to fuel and maintain construction equipment (such as gasoline, diesel, and oil) during the construction period. Project construction would commit resources, such as concrete and steel, to be used for the proposed facilities and related improvements. Operation of project facilities would result in irreversible changes associated with increased energy demand due to energy usage and greenhouse gas emissions from operation of the Project facilities.

4.3 Areas of Known Controversy and Issues to be Resolved

Pursuant to CEQA Guidelines Section 15123(b)(1), environmental impact reports (EIRs) are required to identify areas of controversy known to the lead agency including issues raised by agencies and the public. Pajaro Valley Water Management Agency distributed a Notice of Preparation (NOP) to agencies and interested parties to begin the formal CEQA scoping process for the Project on November 28, 2017 and held two public meetings on Tuesday, December 12, 2017, to receive comments on the scope of the EIR. Issues raised in comments on the NOP and in the public meetings included the following:

- Adverse effects on farmland;
- Adverse effects on biological resources;
- Flooding in nearby communities;
- Alternatives to the Project;
- Project-related noise; and
- Effects on Reclamation District 2049 (RD 2049).

Refer to Appendix NOP, which contains all written comments received on the NOP.

Assuming the Board of Directors certifies the EIR as complete and adequate under CEQA, issues to be resolved would include selection of the WTP site and the College Lake pipeline alignment in the vicinity of SR 1; acquisition of properties, easements and/or rights-of-way; and disposition of RD 2049. As part of Project approval, the Board of Directors is expected to select a site for the WTP. The Board of Directors will base their decision on the contents of this EIR, including pertinent public comments on the Draft EIR as well as other information in the administrative record. The proposed College Lake pipeline alignment will be selected during the design phase of the Project. Regarding the acquisition of properties, easements and/or rights-of-way and the disposition of RD 2049, these issues are addressed in Section 2.8 in Chapter 2, Project Description.
CHAPTER 5
Alternatives

5.1 CEQA Requirements

This chapter presents the California Environmental Quality Act (CEQA) alternatives analysis for the proposed College Lake Integrated Resources Management Project (Project or College Lake Project). The CEQA Guidelines, Section 15126.6(a), state that an environmental impact report (EIR) must describe and evaluate a reasonable range of alternatives to the Project that would feasibly attain most of the project’s basic objectives but would avoid or substantially lessen any identified significant adverse environmental effects of the project. Specifically, the CEQA Guidelines (Section 15126.6) set forth the following criteria for selecting and evaluating alternatives:

- **Identifying Alternatives.** The selection of alternatives is limited to those that would avoid or substantially lessen any of the significant environmental effects of the project, are feasible, and would attain most of the basic objectives of the project. Factors that may be considered when addressing the feasibility of an alternative include site suitability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries, economic viability, and whether the proponent can reasonably acquire, control, or otherwise have access to an alternative site. An EIR need not consider an alternative whose impact cannot be reasonably ascertained and whose implementation is remote and speculative. The specific alternative of “no project” must also be evaluated.

- **Range of Alternatives.** An EIR need not consider every conceivable alternative, but must consider and discuss a reasonable range of feasible alternatives in a manner that will foster informed decision-making and public participation. The “rule of reason” governs the selection and consideration of EIR alternatives, requiring that an EIR set forth only those alternatives necessary to permit a reasoned choice. The lead agency (Pajaro Valley Water Management Agency [PV Water]) is responsible for selecting a range of project alternatives to be examined and for disclosing its reasons for the selection of the alternatives.

- **Evaluation of Alternatives.** EIRs are required to include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the Project. Matrices may be used to display the major characteristics and the potential environmental effects of each alternative. If an alternative would cause one or more significant effects that would not result from the project as proposed, the significant effects of the alternative must be discussed, but in less detail than the significant effects of the project.
5.2 Alternatives Screening and Selection

5.2.1 Previous Alternatives Screening and Analyses

This EIR incorporates by reference the alternatives analyses conducted for the 2014 Basin Management Plan Update Program EIR (2014 BMP Update PEIR),\(^1\) which in turn incorporates by reference all alternative analyses conducted in EIRs on PV Water’s Basin Management Plans (BMPs) and local water supply projects preceding the 2014 BMP Update PEIR, including the 1993 BMP EIR,\(^2\) the 1999 Local Water Supply EIR,\(^3\) and the 2002 Revised BMP EIR,\(^4\) each of which evaluated preliminary versions of the College Lake Project. Appendix ALTS of this EIR includes 2014 BMP Update PEIR Chapter 5, Alternatives to the BMP Update. Appendix ALTS summarizes the alternatives analyses of the EIRs listed above and also describes and evaluates the following alternatives:

- **No Project.** This alternative was defined as no implementation of any plans, policies, programs, projects or components by PV Water or others to meet the BMP objectives.

- **Demand Management Only.** This alternative assumed that only mandatory basin-wide pumping controls would be implemented to meet the BMP objectives.

- **Water Supply Facilities Alternatives.** This was a category of alternatives to the individual BMP projects and programs evaluated in the 2014 BMP Update PEIR, including the following: Coastal Distribution System Expansion; Winter Recycled Water Deep Aquifer Storage and Recovery (ASR); River Conveyance of Water for Recharge at Murphy Crossing; San Benito County Groundwater Demineralization at Watsonville WWTP; Expanded College Lake, Pinto Lake, Corralitos Creek, Watsonville Slough, and ASR; Seawater Desalination; and Bolsa De San Cayetano with Pajaro River Diversion.

- **Alternative Locations for BMP Update Components.** This alternative analyzed the potential for each project/program of the BMP Update to be located at a different site while still meeting BMP objectives. The projects/programs considered in this alternative included conservation, recycled water storage and treatment, Harkins Slough Recharge Facilities Upgrades, Watsonville Slough with Recharge Basins, Alternative Sloughs, College Lake with Inland Pipeline to CDS, and Murphy Crossing with Recharge Basins.

The 2014 BMP Update PEIR alternative analysis concluded that the proposed BMP Update would best meet the BMP Update objectives and would likely result in fewer and less severe environmental impacts overall.

The alternatives considered in the 2014 BMP Update PEIR addressed two potential projects specifically involving College Lake. The Expanded College Lake, Pinto Lake, Corralitos Creek, Watsonville Slough, and ASR would involve increasing the storage capacity of College Lake to 4,600 acre-feet with a main dam and saddle dam; increasing water supplies to College Lake by

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\(^1\) PV Water, *Final Environmental Impact Report for the Basin Management Plan Update*, February 2014. This document is available for review at PV Water’s offices, 36 Brennan Street, Watsonville, CA 95076.


diverting water from Corralitos Creek, Pinto Lake, and Watsonville Slough; and storing water seasonally in the groundwater basin via injection (ASR). The analysis in the 2014 BMP Update PEIR concluded that while that potential project may be technically feasible and could assist in meeting most of the basic objectives of the BMP Update, it would have the same or greater impacts as the College Lake Project and may not be financially feasible. With regard to alternative locations, the 2014 BMP Update PEIR concluded that the College Lake Project “cannot be replicated in another location due to uniqueness of the College Lake hydrologic conditions. Specifically, the lake is already seasonally drained by the Reclamation District [(RD) 2049] creating the potential for diversion of that water for another beneficial use …. As evidenced by the previous alternatives analyses, these conditions cannot be replicated at another location, making an alternative location infeasible.”

This EIR is based in part on information on the Project that was not available when the 2014 BMP Update PEIR was prepared. In some cases, the severity and magnitude of impacts (e.g., conversion of Important Farmland) are greater than those identified in the 2014 BMP Update PEIR. In light of this, some alternatives screened out in the 2014 BMP Update EIR and/or identified in the BMP Update itself were reconsidered during the alternatives screening process.

5.2.2 Water Treatment Plant and College Lake Pipeline Location Alternatives

This EIR evaluates in equal detail two alternative sites for the water treatment plant (WTP) and two alternative alignments for the College Lake pipeline in the vicinity of State Route (SR) 1. These alternatives are described and evaluated in detail in Chapters 2 and 3. Section 5.4 presents a comparison of the environmental effects of these alternatives.

5.2.3 Additional Alternatives Screening Conducted for the College Lake Project

The additional alternatives screening process conducted for this EIR involved reviewing significant impacts attributable to the Project’s implementation; identifying potentially impact-reducing or impact-avoidance concepts or strategies, including consideration of alternatives identified subsequent to the 2014 BMP Update PEIR; and screening out potential alternatives that failed to meet the following criteria:

- Is the alternative potentially feasible?
- Does the alternative reduce the severity of one or more of the project’s significant adverse impacts?
- Does the alternative meet most of the basic objectives of the project?
- Does the alternative foster informed decision-making and public participation?
5. Alternatives

5.2.3.1 Summary of Significant Impacts

Consistent with CEQA,\(^5\) PV Water incorporated consideration of environmental impacts as well as environmental benefits into conceptualization, planning and design for the Project as proposed. This included evaluation of the project in the 2014 BMP Update PEIR and subsequent adoption of mitigation measures to avoid or reduce the Project’s significant impacts, additional consideration of environmental constraints during Project planning and siting, and input from regulators and biological resource experts.\(^6\)

The alternatives analysis is intended to focus on eliminating, or reducing in magnitude or severity, impacts identified in this Draft EIR as significant and unavoidable. As described in Chapter 3, the Project was determined to have significant and unavoidable impacts related to the conversion of Important Farmland and construction-phase noise, as described below:

- **Conversion of Important Farmland.** The Project would result in the conversion of Important Farmland to non-agricultural use. Even with implementation of Mitigation Measures LU-1a (Promote Farming), LU-1b (Compensate for Conversion of Important Farmland), and LU-1c (Replacement of Topsoil), these impacts would be significant and unavoidable on a project-specific and cumulative basis. (Impacts LU-1 and C-LU-1)

- **Exceedance of Construction Noise Standards.** Construction activities at the preferred WTP site, pipeline alignments (trench construction within 25 feet of residences and trenchless pipeline construction at select locations) would expose nearby sensitive receptors to noise levels that would exceed the County of Santa Cruz construction noise standard, or would occur outside the allowed construction hours identified in the City of Watsonville noise ordinance. Implementation of Mitigation Measure NOI-1a (Construction Noise Reduction Plan) is expected to attenuate construction noise levels; however, noise levels would not be reduced below the County construction noise standard. In addition, construction activities at booming sites within the city limits would occur outside of the allowed hours specified in the City of Watsonville noise ordinance (trenchless construction techniques require 24-hour construction). Therefore, impacts at these Project component locations would remain significant and unavoidable on a project-specific and cumulative basis even with implementation of Mitigation Measures NOI-1a and NOI-1b (Off-site Accommodations for Substantially Affected Nighttime Receptors) (Impacts NOI-1 and C-NOI-1)

All other significant impacts could be reduced to less-than-significant levels through the incorporation of mitigation measures, including the following impact areas (refer to Chapter 3 for details):

- Surface Water, Groundwater, and Water Quality
- Biological Resources
- Geology and Soils
- Hazards and Hazardous Materials
- Noise and Vibration
- Transportation and Traffic
- Cultural Resources
- Aesthetics

\(^5\) CEQA Guidelines Section 15004(b)(1).

\(^6\) PV Water participated in College Lake Multi-Objective Management Project planning process described in College Lake Multi-Objective Management Project Final Report (RCD-SCC, prepared by cbec, November 14, 2014), as did several resource agencies, and wildlife strategies (e.g., bypass flow requirements) identified through that process have been incorporated into the College Lake Project.
5.2.3.2 Strategies and Concepts to Reduce Significant Impacts

Strategies identified to reduce the magnitude or severity of impacts on Important Farmland, based on an understanding of the scope and nature of the Project’s impacts and the findings of previous alternatives analyses include:

- **Lower weir.** Construct the proposed weir with a maximum crest height similar to the existing weir (60.1 feet instead of 62.5 feet).

- **Early drawdown.** Allow early drawdown of College Lake through direct releases to Salsipuedes Creek.

- **Deepen or recontour lake.** Deepen College Lake to reduce the areal extent of inundation without reducing water storage capacity.

Regarding strategies to address construction-phase noise impacts through an alternative, the impacts are associated with the preferred WTP site and pipeline construction. The severity of noise impacts associated with construction activities at the preferred WTP site is primarily due to the site’s proximity to the nearest sensitive receptor (a residence located 40 feet away). The EIR already includes an alternative that renders this impact less than significant: the optional WTP site (over 300 feet from the nearest sensitive receptor). With respect to trenchless pipeline construction within the City of Watsonville, the California Department of Transportation generally does not allow open-trench pipeline construction within state highways; consequently, the pipeline would have to be tunneled at highway crossings, necessitating nighttime construction work. With respect to unavoidable noise impacts from trench construction for the College Lake pipeline, the severity of the impact is due to the use of particularly noisy equipment (pavement saws and excavators) as close as 25 feet from sensitive receptors. The duration of the impact would be relatively short, occurring intermittently when that particular piece of equipment is in use, and would not be expected to occur during more than 1 or 2 days within 25 feet of any single residence. For these reasons, no other strategies (beyond the optional WTP site) for reducing construction-phase noise impacts through an alternative were identified.

5.2.3.3 Alternatives Identified Subsequent to the 2014 BMP Update PEIR

**College Lake Multi-Objective Management Project**

Alternatives screening for this EIR also included consideration of alternatives identified and evaluated in the *College Lake Multi-Objective Management Project Final Report*, which included consideration of the strategies identified above to reduce the effects of water management on agriculture. In 2014, the Resource Conservation District of Santa Cruz County received Integrated Regional Water Management funding and retained cbec, inc. eco engineering (cbec) to conduct the College Lake Multi-Objective Management Project. Under the direction of a Steering Committee that included PV Water and the County of Santa Cruz, cbec reviewed and reported on existing studies, conducted hydrologic and hydraulic modeling, developed water

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budgets, and solicited expert stakeholder and community input to develop and evaluate multiple alternatives for the management of College Lake. The guiding principles for developing the College Lake Multi-Objective Management Project were to advance the goals of the Pajaro River Watershed Integrated Watershed Management Plan and to address specific objectives regarding water supply, agriculture, flood management, and wildlife. The study used hydrologic and hydraulic modeling to analyze the ability of alternative management plans and physical configurations to meet stated goals and objectives.

The study developed four management alternatives focused on each management strategy (e.g., agriculture, fish and wildlife, flood control, and water supply) as an initial step toward the development of multi-objective alternatives capable of meeting the objectives of multiple management strategies. The report indicated that the greatest challenge to developing multi-objective alternatives was regarding the timing of the drawdown of the lake: in order to maximize the growing season (for the local agriculture alternative) the drawdown must occur in the spring, and this directly conflicts with the needs of steelhead, migratory waterfowl, and water supply.

Other Suggestions for Alternatives

Comments received during circulation of the NOP for the Project (presented in Appendix NOP of this EIR) included general requests for an alternative that would reduce the Project’s impacts on agriculture as well as suggestions for specific alternatives, including the following:

- Combine continued operation of RD 2049 facilities with water supply diversions;
- Divide lake into different management areas;
- Deepen the College Lake basin; and
- Location alternatives for water storage (i.e., storing College Lake water in recharge basins, Harkins Slough, or idled rail cars), the WTP, and College Lake pipeline.

Members of the Board of Directors also expressed an interest in a lake deepening alternative that was suggested by a commenter on the NOP and mentioned above.

5.2.3.4 Screening Results

After considering the scope and severity of the Project’s impacts and screening potential alternatives, including those previously evaluated or suggested, an alternative from the College Lake Multi-Objective Management Project Final Report (referred to in that report as Multi-Objective Alternative 3A) was determined to satisfy CEQA criteria for inclusion in the EIR. The alternative, described below in Section 5.3.2, is referred to as the Farmland Preservation-Lake Deepening Alternative. Other potential alternatives were eliminated from further consideration.
for CEQA purposes. Please refer to Section 5.5 for more information on other alternatives considered and the reasons each was eliminated from further consideration.

5.3 Selected CEQA Alternatives Evaluated in this Chapter

The alternatives to the Project selected for analysis in this EIR are:

- No Project Alternative
- Farmland Preservation-Lake Deepening Alternative

5.3.1 No Project Alternative

5.3.1.1 Description

As required by CEQA Guidelines Section 15126.6(e), the No Project Alternative is evaluated to allow decision-makers to compare the environmental effects of approving the project with the effects of not approving the project.

The No Project Alternative is defined as no College Lake Project. None of the actions described in Chapter 2, including construction and operation of the weir structure and intake pump station, WTP, and College Lake pipeline would occur. RD 2049 would presumably continue to pump College Lake dry in the spring so the lakebed could be used for crop production from July through October.

Groundwater, recycled water, and Harkins Slough diversions would continue to provide water for agricultural irrigation. Industrial, commercial, and domestic residential use of groundwater and limited surface water within the City of Watsonville and beyond would continue. PV Water would continue to pursue the Harkins Slough Recharge Facilities Upgrades and Watsonville Slough with Recharge Basins Projects. Because the College Lake Project represents the largest single source of surface water proposed as part of the 2014 BMP Update PEIR, PV Water would have to pursue other options in order to help balance the groundwater basin, prevent further seawater intrusion, and meet water supply needs. These actions would be necessary in accordance with the Agency’s mission, its commitments to implement the BMP Update, and its obligations as the designated Groundwater Sustainability Agency under the Sustainable Groundwater Management Act, California Water Code Section 10723. Other options could include one or more of the components of the Water Supply Facilities Alternative presented in the 2014 BMP Update PEIR.

5.3.1.2 Ability to Meet the Project’s Objectives

Table 5-1 summarizes the ability of the College Lake Project and the No Project and Farmland Preservation – Lake Deepening Alternatives to meet the Project objectives.
## 5. Alternatives

### TABLE 5-1
**SUMMARY OF ABILITY OF PROJECT AND ALTERNATIVES TO MEET PROJECT OBJECTIVES**

<table>
<thead>
<tr>
<th>Objectives from the 2014 BMP Update PEIR</th>
<th>College Lake Project</th>
<th>No Project</th>
<th>Farmland Preservation – Lake Deepening</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prevent seawater intrusion, long-term groundwater overdraft, land subsidence, and water quality degradation.</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Manage existing and supplemental water supplies to control overdraft and provide for present and future water needs.</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Create a reliable, long-term water supply, which has been identified as an important cornerstone of the long-term economic vitality of the Pajaro Valley.</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Develop water conservation programs.(^a)</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Recommend a program that is cost effective and environmentally sound.</td>
<td>Yes</td>
<td>No</td>
<td>Partial(^b)</td>
</tr>
</tbody>
</table>

**Project Specific Objectives for the College Lake Project**

<table>
<thead>
<tr>
<th></th>
<th>College Lake Project</th>
<th>No Project</th>
<th>Farmland Preservation – Lake Deepening</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design and implement reliable facilities to help achieve sustainable groundwater management of the Pajaro Valley Groundwater Subbasin by 2040, taking into account potential future hydrologic changes, including those associated with climate change.</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Substantially contribute to the Pajaro Valley’s water supply needs in a timely manner, consistent with the Basin Management Plan Update implementation goals.</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Use locally controlled surface water for agricultural purposes to offset groundwater pumping in a manner consistent with habitat preservation and enhancement, and in coordination with resource agencies, the public, and other stakeholders.</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Make efficient use of, and leverage federal, state, and local investments in, existing Agency infrastructure.</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Notes:

\(^a\) While the Project and Farmland Preservation-Lake Deepening Alternative would conserve groundwater by creating a reliable source of surface water to offset groundwater pumping, PV Water’s water conservation programs are designed to reduce water use in the Pajaro Valley. Information on PV Water’s water conservation programs is available at [https://www.pvwater.org/](https://www.pvwater.org/).

\(^b\) Refer to Section 5.3.2.2.

The No Project Alternative would fail to meet any of the Project or BMP Update objectives. The No Project Alternative would not: prevent seawater intrusion, long-term groundwater overdraft, land subsidence and water quality degradation; manage existing and supplement water supplies to control overdraft and provide for present and future water needs; create a reliable, long-term water supply; develop water conservation programs; or recommend a program that is cost effective and environmentally sound. The No Project Alternative would also not design and implement reliable facilities to help achieve sustainable groundwater management of the Pajaro Valley Groundwater Subbasin by 2040, substantially contribute to the Pajaro Valley’s water supply needs in a timely manner, use locally controlled surface water for agricultural purposes to offset groundwater.
pumping in a manner consistent with habitat preservation and enhancement, and in coordination with resource agencies, the public, and other stakeholders; or make efficient use of, and leverage federal, state, and local investments in, existing Agency infrastructure.

5.3.1.3 Evaluation

If the College Lake Project is not implemented, then none of the environmental impacts attributable to the Project (described in Chapter 3) would occur, including the significant and unavoidable impacts on Important Farmland and from construction noise.

As described in Section 3.4, Biological Resources, juvenile steelhead, a federal threatened species, have been shown to rear in College Lake in the winter and spring prior to their emigration to the ocean as smolts. The peak time of smolt emigration is April and May. Under current management practices, RD 2049 drains College Lake starting around mid-March each year to allow for farming on the lake bottom. This action lowers the water surface elevation of the lake below the elevation of the existing weir and prevents juvenile steelhead from migrating to the ocean. Juvenile steelhead become trapped immediately upstream of the weir, exposing them to rapidly declining water levels and dissolved oxygen concentrations, increased water temperatures, predation pressures, and potential pump entrainment or impingement. Moreover, as the lake continues to be drawn down over a period of several weeks, the pumped water becomes increasingly turbid. This high turbidity may have adverse effects on steelhead migrating through Salsipuedes Creek from the Corralitos Creek basin. The proposed fish bypass flows, weir design with fish passage, and water management operations associated with the Project would mitigate these adverse effects. In contrast, the adverse existing conditions for steelhead would be expected to persist under the No Project Alternative.

If the College Lake Project is not implemented and its supply is not replaced by another project, the Basin’s overdraft condition is anticipated to continue. Seawater intrusion would presumably continue to advance beneath the coastal lands. On coastal acreage that does not receive delivered water, irrigation with groundwater would continue until the salt content in the soils builds up to the point where existing agricultural crops typical of the area could not grow. Production of more salt tolerant crops may occur; however, the economy of the area could change. Wells would likely become unsuitable over time and lands would be fallowed, resulting in a significant loss of active farmland.

Implementation of any projects to replace the College Lake water supply would result in other, potentially more severe impacts on the environment. Refer to Sections 5.5 and 5.7 in the 2014 BMP Update PEIR (presented in Appendix ALTS of this EIR) for a description of impacts associated with the projects comprising the Water Supply Facilities Alternative.

5.3.2 Farmland Preservation-Lake Deepening Alternative

5.3.2.1 Description

This alternative involves deepening parts of College Lake and depositing the excavated materials to raise other parts of the lakebed. This alternative would effectively reduce the areal extent of College Lake water surface compared to that of the Project, resulting in a reduction of wetted area on June 1 during the modeled water years, thus increasing the amount of acreage suitable for
farming compared to those of the Project. **Table 5-2** summarizes key characteristics of this alternative in comparison to the Project.

**Project Components.** The Farmland Preservation-Lake Deepening Alternative would include the same components as the Project, including the proposed weir structure, intake pump station, and the College Lake pipeline. Implementation of this alternative would preclude construction of the WTP at the optional site due to a portion of the site being within the fill area (refer to Figure 5-2). Like the Project, mitigation measures from the 2014 BMP Update PEIR adopted by the Board of Directors would apply to this alternative.

**Physical Configuration.** A 78.5-acre area at the deepest part of College Lake would be lowered (excavated) by approximately 2.3 feet. The excavated material would be deposited in the southwestern portion of the lake at depths up to 6.2 feet; a transition between these two zones would be included. **Figure 5-1** shows a graphical comparison between this alternative and the Project and the resulting water depths at a lake level of 62.5 feet North American Vertical Datum of 1988 (NAVD88). At this elevation, the water surface area would be approximately 256 acres for this alternative, as opposed to 285 acres in the College Lake Project, resulting in a reduction of storage area of approximately 30 acres. The excavation would increase the lake volume below 60 feet NAVD88 by 88 acre-feet and increase the lake volume at 62.5 feet NAVD88 by 35 acre-feet. This alternative would result in a yield of approximately 1,900 to 2,350 acre-feet per year (AFY).

**Construction.** Construction activities for the Farmland Preservation-Lake Deepening Alternative would be the same as the Project, with the addition of the lake deepening. Approximately 260,000 cubic yards of materials would be excavated from the lake basin and moved approximately 0.2 miles to the southwestern bank of the lake. Cut and fill would be balanced, so no off-haul of material would be required. It is assumed that excavation and fill operations would occur when the weir structure and pump station were being constructed, after College Lake has been emptied and after the smolt outmigration season.

**Operations and Maintenance.** Operations and maintenance activities for the Farmland Preservation-Lake Deepening Alternative would generally be the same as the Project, but the topographic changes would reduce the inundation area and alter the configuration of proposed maintenance areas within the southwestern portion of the lake, as shown on **Figure 5-2**. Figure 5-2 shows Important Farmland that would be preserved through implementation of the Farmland Preservation – Lake Deepening Alternative in comparison to the College Lake Project.

### 5.3.2.2 Ability to Meet the Project’s Objectives

Table 5-1 summarizes the ability of the Farmland Preservation-Lake Deepening Alternative to meet the project objectives. As shown, this alternative would meet almost all of the project’s objectives. The earthwork (as well as changes needed to the tile drains in the lake) would increase capital costs in comparison to the Project. (A cost estimate has not been developed for the alternative, but the costs of moving 260,000 cubic yards of material within the College Lake basin would be in addition to the capital costs of the Project.) That, coupled with adverse effects on biological resources, would diminish this alternative’s ability to meet the following objective compared to the Project: *Recommend a program that is cost effective and environmentally sound.* The complexities of permitting this alternative could also delay implementation.
### TABLE 5-2
**KEY FEATURES OF FARMLAND PRESERVATION – LAKE DEEPENING ALTERNATIVE IN COMPARISON TO THE PROJECT**

<table>
<thead>
<tr>
<th>Key Feature</th>
<th>College Lake Project</th>
<th>Farmland Preservation – Lake Deepening Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Annual Yield</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normal Range&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Approximately 1,800 to 2,300 AFY</td>
<td>Approximately 1,900 to 2,350 AFY</td>
</tr>
<tr>
<td>Maximum</td>
<td>3,000 AFY</td>
<td>Same as Project</td>
</tr>
<tr>
<td><strong>Storage Capacity</strong> (at 62.5 feet NAVD88)</td>
<td>Approximately 1,800 AF</td>
<td>Approximately 1,800 AF</td>
</tr>
<tr>
<td><strong>Water Surface Area</strong> (at 62.5 feet NAVD88)</td>
<td>285 acres</td>
<td>256 acres</td>
</tr>
<tr>
<td><strong>Components</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fish Passage, Bypass of Casserly Creek Flows&lt;sup&gt;b&lt;/sup&gt;</td>
<td>Adult Steelhead Migration</td>
<td>Smolt Outmigration</td>
</tr>
<tr>
<td>Minimum flow between Corralitos—Salsipuedes Confluence and Pajaro River</td>
<td>Dec. 15 – Mar. 31</td>
<td>Apr. 1 – May 31</td>
</tr>
<tr>
<td>Minimum flow at weir&lt;sup&gt;c&lt;/sup&gt; and in Salsipuedes Creek between weir and Corralitos Creek</td>
<td>21 cfs</td>
<td>8 cfs</td>
</tr>
<tr>
<td>Minimum lake level</td>
<td>1.8 cfs</td>
<td>1.0 cfs</td>
</tr>
<tr>
<td></td>
<td>59.5 feet</td>
<td>59.3 feet</td>
</tr>
<tr>
<td><strong>Operations and Maintenance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fish passage, bypass of Casserly Creek Flows&lt;sup&gt;b&lt;/sup&gt;</td>
<td>Dec. 15 – May 31: would occur after minimum lake level and proposed fish passage flows have been achieved, and would be based on demand</td>
<td></td>
</tr>
<tr>
<td></td>
<td>May 31 – Dec. 14: would occur based on demand, considering water supply portfolio priorities</td>
<td></td>
</tr>
<tr>
<td><strong>Flood Hazards</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Weir height during wet season would be managed so as not to exacerbate upstream or downstream flooding (refer to Section 2.7, Operations and Maintenance)</td>
<td>Weir would be managed consistent with Project; Altered topography would alter flooding patterns. Refer to discussion under Section 5.3.2.3.</td>
</tr>
<tr>
<td><strong>Water supply diversions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Same as Project</td>
<td></td>
</tr>
<tr>
<td>Maintenance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Periodic inspections and maintenance of Project components</td>
<td>Within College Lake Basin at/below 63 feet NAVD88</td>
<td>Same management practices as Project but over a smaller area (because the footprint of the water management area would be smaller).</td>
</tr>
<tr>
<td>- Sediment and debris removal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Vegetation maintenance (disking/tilling, trimming and mowing, removal)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Vector control</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NOTES:**

- **AFY** = acre-feet per year  
- **AF** = acre-feet  
- **cfs** = cubic feet per second

<sup>a</sup> Average water yield for College Lake would vary year to year, depending on hydrologic conditions (e.g., rainfall), weir operations, and water demand.

<sup>b</sup> Instream flow requirements based on critical riffle surveys conducted in 2017 and 2018. Each minimum flow requirement would be the number specified in this table or the flow resulting from bypassing the total inflow into College Lake, whichever is less. Minimum flow between the Corralitos Creek-Salsipuedes Creek confluence and Pajaro River is for the combined flow from Corralitos Creek and College Lake.

<sup>c</sup> Refinements to fish passage assumptions and modeling may occur during permitting based on agency consultations.

**SOURCES:** cbec, *College Lake Integrated Resources Management Project, Hydrologic and Hydraulic Modeling Technical Memorandum, November 2018; E-mail correspondence from L. Tillmann, cbec, Information regarding Farmland Preservation – Lake Deepening Alternative, February 22, 2019.*
Modified Topography for Farmland Preservation - Lake Deepening Alternative

Figure 5-1

SOURCE: cbec eco engineering, inc., 2019; ESRI World Imagery, July 23, 2016; ESA
Figure 5-2

Farmland Preservation - Lake Deepening Alternative:
Effects on Important Farmland

Notes: 1. Numbers are rounded to the nearest acre.
2. NAVD88 = North American Vertical Datum of 1988
5.3.2.3 Evaluation

Table 5-3 compares the significant impacts of the Project with those of the Farmland Preservation – Lake Deepening Alternative. The table also lists impacts that would be less than significant for the Project but would be worse with this alternative. Impacts not listed in this table would be less than significant (or no impact) for the Project and the alternative. The primary differences between the environmental impacts of the Project and the Farmland Preservation-Lake Deepening Alternative are addressed below.

- **Important Farmland.** Figure 5-2 indicates land (shaded in lavender) that would essentially be raised above the 63-foot NAVD88 contour and therefore preserved for farming. Taking into account the potential of additional conversion of Important Farmland due to parcel division or fragmentation, this alternative could preserve up to an additional 36 acres of Important Farmland compared to the Project.

- **Flooding.** The placement of fill would constrict (narrow) the channel between College Lake and Salsipuedes Creek. As a result, implementation of this alternative would incrementally increase water surface elevations during the 10-year flood event along Salsipuedes Creek south of the weir, and during the 100-year flood event along Casserly Creek, Salsipuedes Creek upstream of the Corralitos Creek confluence, and at Corralitos Creek.

- **Biological Resources.** The earthwork and topographic changes associated with this alternative would adversely affect special status terrestrial and aquatic species (including steelhead), sensitive natural communities (state and federally protected wetlands), and the movement of wildlife (waterfowl, shorebirds and other wildlife) to a greater degree than with the Project. Cut and fill would increase the area of disturbance by about 153 acres. Impacts to state and federally protect wetlands would be greater than with the Project and would require a much larger area of compensatory mitigation. Because the area of farmed wetland between about 59 feet and 63 feet NAVD88 would be smaller, there would be a reduced benefit to migratory wildlife in the spring and early summer. The decrease in the extent of shallow water habitat may also adversely affect steelhead rearing habitat in comparison to the Project.

- **Air Quality.** The use of additional diesel-powered off-road construction equipment to move 260,000 cubic yards of material (as well as on-road truck trips) would substantially increase ozone precursor emissions such as nitrogen oxides (NOx), particulate matter, diesel particulate matter (a toxic air contaminant), and greenhouse gas emissions compared to the Project. Project-related construction emissions of NOx in the first year of construction are projected to be 102 pounds per day compared to a significance threshold of 137 pounds per day (see Table 3.5-6 in Section 3.5, Air Quality and Greenhouse Gas Emissions). The additional NOx emissions from earthwork under this alternative could exceed the NOx significance threshold. In addition, more dust would be generated under this alternative compared to the Project.

- **Cultural and Paleontological Resources.** Given the area’s sensitivity for cultural resources, the excavation of 260,000 cubic yards of material would increase the likelihood of disturbing archeological and paleontological resources compared to the Project.
### COMPARISON OF ENVIRONMENTAL IMPACTS OF PROJECT TO FARMLAND PRESERVATION-LAKE DEEPENING ALTERNATIVE

<table>
<thead>
<tr>
<th>Environmental Resource</th>
<th>College Lake Project</th>
<th>Farmland Preservation – Lake Deepening Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Land Use and Agricultural Resources</strong></td>
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</tr>
<tr>
<td><strong>Impact LL-1:</strong> The Project would convert Important Farmland to non-agricultural use and could involve changes in the existing environment which, due to their location or nature, could result in conversion of important Farmland to non-agricultural use. <em>(Significant and Unavoidable with Mitigation)</em></td>
<td>Less than the Project. Like the Project, implementation of this alternative would result in the conversion of Important Farmland but to a lesser degree. The earthwork associated with this alternative would deepen the lake, and add to the southeastern portion of the lake, resulting in a reduction in the amount of Important Farmland inundated during water management operations. Under this alternative, the placement of fill in the southwestern area of the lake would raise about 30 acres of farmland above the 63-foot NAVD88 contour, and thus cause the influence of water management actions. As indicated in Table 2-2-4 in Section 3.2, Land Use and Agricultural Resources, the Project could result in conversion of up to about 198 acres of Important Farmland, taking into account additional conversion of Important Farmland that could occur through the division or fragmentation of parcels. Under this alternative, the amount of Important Farmland that could be converted would be reduced by an estimated 36 acres (taking into consideration the potential for additional conversion through the division or fragmentation of parcels). Like the Project, implementation of Mitigation Measures LL-1a, LL-1b, and LL-1c could reduce this effect, but it would still be considered unavoidable.</td>
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</tr>
<tr>
<td><strong>Impact C-LU-1:</strong> The Project, in combination with past, present, and probable future projects in the Project area, would have a cumulatively considerable impact on the conversion of Important Farmland to non-agricultural use. <em>(Significant and Unavoidable with Mitigation)</em></td>
<td>Less than the Project. For reasons stated under Impact LL-1, this alternative’s contributions on the cumulative conversion of Important Farmland in the Pajaro Valley would still be cumulatively considerable, but would be less than with the Project.</td>
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</tr>
<tr>
<td><strong>Impact HYD-1:</strong> Project construction could violate water quality standards and/or waste discharge requirements, or otherwise substantially degrade surface or groundwater quality. <em>(Less than Significant with Mitigation)</em></td>
<td>Similar to the Project. Due to the earthwork associated with this alternative, a larger area would be required to implement stormwater best management practices pursuant to the Construction General Permit. Pipeline locations would remain the same. Like the Project, implementation of Mitigation Measures BR-1b and HYD-1 would reduce impacts to water quality associated with construction of the College Lake pipeline.</td>
<td></td>
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<tr>
<td><strong>Impact HYD-2:</strong> Project operations could adversely affect surface water quantity. <em>(Less than Significant with Mitigation)</em></td>
<td>Similar to the Project. This alternative would retain similar volumes of water within College Lake for a similar period of time as the Project. Bypass of water would be conducted for similar reasons, and would be required to adhere to waste discharge requirements. Similar volumes of water would flow downstream to support fish passage. Pipeline locations would remain the same. Like the Project, implementation of Mitigation Measures HYD-2a and HYD-2b would be required to reduce impacts associated with operation of this alternative.</td>
<td></td>
</tr>
<tr>
<td><strong>Impact HYD-4:</strong> The Project would alter drainage patterns, changing erosion and sedimentation patterns in College Lake and downstream water bodies. <em>(Less than Significant with Mitigation)</em></td>
<td>Similar to the Project. This project would flow operations would be unchanged compared to the Project. Similar volumes of water would flow downstream to support fish passage. Pipeline locations would remain the same. Like the Project, implementation of Mitigation Measure HYD-2b would reduce impacts associated with the College Lake pipeline crossing of Pinto Creek.</td>
<td></td>
</tr>
<tr>
<td><strong>Hydrology and Water Quality</strong></td>
<td></td>
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</tr>
<tr>
<td><strong>Impact HYD-5:</strong> The Project would not substantially increase the rate or amount of surface runoff, but would impede or redirect flood flows and alter the seasonality of surface runoff. <em>(Less than Significant with Mitigation)</em> Of note: The College Lake Project would not result in any changes in surface water elevation greater than 0.1 foot during the 10-year flood event. The College Lake Project would not result in changes in water surface elevation greater than 0.1 foot during the 100-year flood event except for the vicinity of the proposed weir and a narrow weir structure in Salsipuedes Creek <em>(where an increase of 0.1 foot could occur)</em>.</td>
<td>Greater than the Project. This alternative would differ from the Project because it would result in a 0.1-foot increase in water surface elevation along Salsipuedes Creek south of the proposed weir during the 10-year event. This alternative would also differ from the Project because it would result in a 0.1-foot increase in flood water surface elevation along Casserly Creek and Salsipuedes Creek upstream of the Corralitos confluence, and a 0.2-foot increase in flood water surface elevation at Corralitos Creek during the 100-year event. This would be a significant impact that would require mitigation.</td>
<td></td>
</tr>
<tr>
<td><strong>Impact HYD-6:</strong> The Project could conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. <em>(Less than Significant with Mitigation)</em></td>
<td>Similar to the Project. This alternative would implement similar construction and operations water quality controls, and, like the College Lake Project, would support sustainable groundwater management of the Pajaro Valley Groundwater Basin. Like the Project, implementation of Mitigation Measures BR-1b, HYD-1, HYD-2a, and HYD-2b would reduce this alternative’s effects on water quality so that the project would not conflict with a water quality control plan.</td>
<td></td>
</tr>
<tr>
<td><strong>Impact C-HYD-1:</strong> The Project, in combination with past, present, and probable future projects in the Project area, would not result in significant adverse cumulative hydrology impacts. <em>(Less than Significant)</em></td>
<td>Greater than the Project. This alternative would result in a slightly higher (by 0.1 foot) flood water surface elevation along Salsipuedes Creek upstream of the Corralitos Creek confluence during the 10-year event, which could combine with increases in surface water elevation caused by the United States Army Corps of Engineers (USACE’s) project (refer to project 7 in Table 3-1-1) to result in a significant greater than the Project). This alternative would also result in a slightly higher (by 0.1 foot) flood water surface elevation along Salsipuedes Creek during the 100-year event, which could combine with increases in water surface elevation caused by the USACE project. Flood water surface elevations caused by this alternative could also combine with the increase in flood water surface elevation due to the USACE project along Corralitos Creek, a potentially significant impact.</td>
<td></td>
</tr>
<tr>
<td><strong>Impact BR-1:</strong> Construction of Project components could result in a substantial adverse effect on special-status species. <em>(Less than Significant with Mitigation)</em></td>
<td>Greater than the Project. The cut and fill of 260,000 cubic yards of material within the labeled would increase the construction disturbance area by about 153 acres. Construction-phase impacts on special-status habitat would include both spatially and temporally. Like the Project, implementation of adopted Mitigation Measures BIO-1a, 2a through 2k, and HWQ-1, implementation of revised adopted Mitigation Measures BIO-1c and 1d, and implementation of Mitigation Measures BR-1a through 1d would mitigate these impacts to less than significant. Habitat-related changes are discussed below under Impact BR-2. The alteration of topography within the labeled area would reduce the total habitat area available for use by migratory wildlife species, especially waterfowl and shorebirds, following the recurring water level in the spring and early summer and prior to crop planting. This alternative would not likely exacerbate the Project’s effects on habitat for steelhead, California red-legged frog, or western pond turtle because the affected areas are currently used for summer farming and do not support suitable habitat for these species. The total volume of water and period of available aquatic habitat for steelhead would not substantially differ from the College Lake Project.</td>
<td></td>
</tr>
</tbody>
</table>
## 5. Alternatives

### Table 5-3 (continued)  
**COMPARISON OF ENVIRONMENTAL IMPACTS OF PROJECT TO FARMLAND PRESERVATION-LAKE DEEPENING ALTERNATIVE**

<table>
<thead>
<tr>
<th>Environmental Resource</th>
<th>College Lake Project</th>
<th>Farmland Preservation – Lake Deepening Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impact BR-2: Construction of Project components would result in a substantial adverse effect on riparian habitat or other sensitive natural community or on state or federally protected wetlands or waters through direct removal, filling, hydrological interruption, or other means. (Less than Significant with Mitigation)</td>
<td>Greater than the Project</td>
<td>Ground disturbance for the cut and fill of 260,000 cubic yards of material in areas of farmed wetland and seasonal wetland in the existing lakebed would be a temporary impact, and the deepened area that would provide increased storage capacity would continue to support aquatic resources after construction, although the attributes of the aquatic resources may substantially change based on the changes in topography, which would result in changes in inundation frequency and duration and thus plant species composition (or lack of vegetative cover). The fill area (shown on Figure 5-2) would mostly be above the threshold wetland hydrology elevation of 63.5 feet (NAVD88; see Figure 5-1) and would no longer support wetland conditions, resulting in a net loss of aquatic resources. While the water surface area of the College Lake Project at 62.5 feet NAVD88 would be 285 acres, the water surface area of this alternative would be 268 acres; a reduction of similar magnitude would be seen at 63.5 feet (NAVD88). Ultimately, changes in the physical and biological conditions of farmed wetlands in areas where fill would be placed are considered minor since these areas would continue to be used for agriculture during the growing season. However, due to the more substantial decrease in total area that would support wetland conditions under this alternative, impacts to state and federally protected wetlands would be greater than the Project. While implementation of Mitigation measures BIO-1c (revised) and BIO-1d (revised) would address this impact, a much larger area of compensatory mitigation would be required to reduce this impact to less than significant. Because weir design, construction and operation would be the same as the Project, this alternative would have the same less-than-significant impacts to sensitive natural communities in Salsipuedes Creek, Pajaro River, and Pajaro Lagoon.</td>
</tr>
<tr>
<td>Impact BR-3: Construction of Project components could interfere substantially with the movement of any native resident or migratory wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. (Less than Significant)</td>
<td>Greater than the Project</td>
<td>As described under Impact BR-2, this alternative would replace the total area supporting wetland hydrology compared with the Project; therefore, the area of farmed wetlands between 59 feet and 63.5 feet (NAVD88) that would be used by migratory wildlife species, especially waterfowl and shorebirds, following the receding water level in the spring and early summer and prior to crop planting would also be reduced (refer to the green-shaded areas in Figure 5-2). This reduction in the area providing suitable conditions for movement and migration of waterfowl, shorebirds, and other wildlife, would be greater (and thus more adverse) than the Project. If the earthwork associated with the topographic modifications were to occur during the migratory season, it may impede the use of College Lake for bird movement and migration due to habitat- and equipment-related disturbances such as dust and noise. Similarly, under this alternative, construction within College Lake may affect the use of nursery sites. Although current farming activities include the use of farm equipment for tilling, discing, planting, and harvest throughout the summer months, earthwork associated with the topographic modifications could be more disruptive because of the greater scale of site disturbance.</td>
</tr>
<tr>
<td>Impact BR-4: Project operations could result in a substantial adverse effect on riparian habitat or other sensitive natural community or on state or federally protected wetlands or waters through direct removal, filling, hydrological interruption, or other means. (Less than Significant)</td>
<td>Similar to the Project</td>
<td>The cut and fill of 260,000 CY of material within College Lake would substantially alter the topography in a large portion of the lake basin. As discussed above under Impact BR-2, this would effectively reduce the total area that would support wetland hydrology in favor of keeping more area above 63 feet (NAVD88). However, once this construction-related conversion has taken place, water operations within College Lake would be the same as the Project. The same frequency and duration of inundation would be seen at the same elevations, since weir operations would be the same. Impacts to sensitive natural communities in Salsipuedes Creek, Pajaro River, and Pajaro Lagoon would be similar to the Project; releases for fish passage would be the same as the Project.</td>
</tr>
<tr>
<td>Impact BR-5: Project operations could result in a substantial adverse effect on terrestrial special-status species. (Less than Significant with Mitigation)</td>
<td>Similar to the Project</td>
<td>The lowest elevations within the lake basin, as well as the areas between elevations 59 feet and 63 feet NAVD88 (Figure 5-2) would still be routinely maintained and therefore impacts to special-status species during maintenance activities would be similar to the College Lake Project. Like the Project, this impact could be mitigated with Implementation of revised adopted Mitigation Measures BIO-2i, 2j and 2k.</td>
</tr>
<tr>
<td>Impact BR-6: Project operations could result in a substantial adverse effect on special-status fish species. (Less than Significant with Mitigation)</td>
<td>Potentially Greater than the Project</td>
<td>Under existing and Project conditions, the lake provides a balanced mix of shallow (less than 4 feet deep) and deep (greater than 6 feet deep) winter and spring habitat that has been shown to provide highly productive juvenile steelhead rearing habitat. Under the lake deepening alternative, the extent of shallow water habitat would decrease by an estimated 9-21% and the extent of deep water habitat would increase. Deep water habitat provides valuable juvenile steelhead refuge from avian predators, but shallow water habitat typically provides greater foraging opportunities. The degree to which the change in water depths under the lake deepening alternative would affect steelhead rearing habitat productivity is unknown, but qualitatively, the decrease in shallow water habitat may result in an adverse effect on special-status fish winter and spring rearing habitat quality in College Lake. The lake deepening alternative would include an area of approximately 78.5 acres that would remain inundated through the summer. This is the same inundation period as the Project and would therefore have the same effect on populations of non-native predatory fish as the Project.</td>
</tr>
<tr>
<td>Impact BR-7: Project operations could interfere substantially with the movement of native resident or migratory wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites. (Less than Significant)</td>
<td>Same as the Project</td>
<td>Water operations under the lake deepening alternative would be the same as the College Lake Project; therefore, the same inundation periods and drawdown schedule can be expected within the various elevation ranges. The continuation of farming in the farmland preservation area (Figure 5-2) does not represent a change from existing conditions because these areas are currently used for agricultural production and would be used for agricultural production with the Project as well. Construction-related changes to total available habitat for wildlife movement and migration are addressed above in BR-3.</td>
</tr>
</tbody>
</table>
### TABLE 5-3 (CONTINUED)  
**COMPARISON OF ENVIRONMENTAL IMPACTS OF PROJECT TO FARMLAND PRESERVATION-LAKE DEEPENING ALTERNATIVE**

<table>
<thead>
<tr>
<th>Environmental Resource</th>
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<th>Farmland Preservation – Lake Deepening Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Air Quality and Greenhouse Gases</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Impact AIR-1: | Construction and operational activities associated with the Project could generate criteria air pollutants emissions that would conflict with implementation of the Clean Air Plan. (Less than Significant) | Greater than the Project.  
With this alternative, the use of diesel-powered off-road construction equipment to cut and fill of 260,000 cubic yards of material within the lakebed would substantially increase ozone precursor emissions such as nitrogen oxides (NOx), particulate matter, diesel particulate matter (a toxic air contaminant), and greenhouse gas emissions, and would also incrementally increase these emissions from on-road truck trips. Project-related construction emissions of NOx in the first year of construction are projected to be 102 pounds per day compared to a significance threshold of 137 pounds per day. The additional NOx emissions under this alternative could exceed the significance threshold. Potential mitigation measures to reduce this impact include requiring contractors to use cleaner construction equipment (e.g., equipment that conforms to Air Resources Board Tier 3 or Tier 4 emissions standards). In addition, more dust would be generated under this alternative, which would be mitigated through implementation of adopted Mitigation Measure AQ-1.  
With this alternative, operations-phase emissions would similar to the Project. |
| Impact AIR-2: | The Project could expose sensitive receptors to substantial levels of pollutants. (Less than Significant) | Greater than the Project.  
For reasons described under Impact AIR-1, toxic air contaminant emissions such as diesel particulate matter would be greater under this alternative than with the Project, but this impact likely would remain less than significant. |
| Impact AIR-4: | The Project could lead to an increase of GHG emissions that are associated with global climate change; however, not at a cumulatively considerable level. (Less than Significant) | Greater than the Project.  
For reasons described under Impact AIR-1, greenhouse gas emissions would be greater under this alternative than with the Project, but this impact likely would remain less than significant. |
| **Air Quality and Greenhouse Gases (cont)** | | |
| Impact GEO-3: | The Project could be located on a geologic unit or soil that becomes unstable as a result of the Project or that could potentially result in landslides, lateral spreading, subsidence, liquefaction, or collapse for reasons caused or exacerbated by the Project. (Less than Significant) | Similar to the Project.  
This impact is associated with excavation activities associated with the Project and with this alternative, and could be mitigated through implementation of adopted Mitigation Measures HM-1 and HM-2, and Mitigation Measures HAZ-1a and HAZ-1b.  
Greater than the Project.  
The likelihood that paleontological resources would be encountered could be incrementally greater under this alternative given the additional excavation. Like the Project, implementation of Mitigation Measure GEO-1 could reduce this impact to a less-than-significant level. |
| Impact GEO-5: | The Project could directly or indirectly destroy a unique paleontological resource or site or unique geologic feature. (Less than Significant with Mitigation) | Greater than the Project.  
For reasons stated above under Impact GEO-5, the Project’s contribution to this cumulative impact could be incrementally greater. |
| Impact C-GEO-1: | The Project, in combination with past, present, and probable future projects in the Project area, could have cumulatively considerable impacts on a unique paleontological resource. (Less than Significant with Mitigation) | Greater than the Project.  
For reasons stated above under Impact GEO-5, the Project’s contribution to this cumulative impact could be incrementally greater. |
| **Hazards and Hazardous Materials** | | |
| Impact HAZ-4: | The Project could be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. (Less than Significant with Mitigation) | Same as the Project.  
This impact is associated with excavation for the College Lake pipeline, which would be the same under the Project and this alternative, and could be mitigated through implementation of adopted Mitigation Measures HM-1 and HM-2, and Mitigation Measures HAZ-1a and HAZ-1b.  
Greater than the Project.  
The Project could be located on a geologic unit or soil that becomes unstable as a result of the Project or that could potentially result in landslides, lateral spreading, subsidence, liquefaction, or collapse for reasons caused or exacerbated by the Project. (Less than Significant) |
| Impact HAZ-5: | Project construction and operation could impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. (Less than Significant with Mitigation) | Same as the Project.  
This impact is associated with construction of the College Lake pipeline in roadways, which would be the same under the Project and this alternative, and could be mitigated through implementation of Mitigation Measure TRA-1a. |
| **Noise and Vibration** | | |
| Impact NOI-1: | Construction of the Project would result in a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plans or noise ordinances. (Significant and Unavoidable with Mitigation) | Same as the Project.  
This impact is associated with construction activities at the preferred WTF site and the College Lake pipeline, which would be the same under the Project and this alternative. Construction equipment used for earthwork associated with this alternative would generate additional noise, but the activities would not be close enough to any receptors to exceed County of Santa Cruz construction noise standards. |
| Impact NOI-3: | Project construction would generate excessive groundborne vibration. (Less than Significant with Mitigation) | Same as the Project.  
This impact is associated with trenchless pipeline construction near historic structures, which would be the same under the Project and this alternative, and could be mitigated with implementation of Mitigation Measure NOI-2. |
| Impact C-NOI-1: | The Project, in combination with past, present, and probable future projects in the Project area, would have a cumulatively considerable impact associated with construction noise. (Significant and Unavoidable with Mitigation) | Same as the Project.  
For reasons stated under Impact NOI-1 and NOI-2, this alternative’s contributions to cumulative construction-phase noise impacts would be the same as with the Project: cumulatively considerable. |
| **Traffic and Transportation** | | |
| Impact TRA-1: | Construction of the Project would have temporary and intermittent effects on traffic and transportation conditions in the Project area. (Less than Significant with Mitigation) | Same as the Project.  
Although there would be an incrementally greater number of construction vehicles associated with earthwork, because cut and fill would balance within the lake basin, the magnitude of this impact for this alternative would be similar to the Project and could be mitigated through implementation of Mitigation Measures TRA-1a and TRA-1b.  
Similar to the Project.  
Because this impact is primarily associated with in-street pipeline construction, and for reasons stated under Impact TRA-1, this impact would be similar to the Project and could be mitigated through implementation of Mitigation Measures TRA-1a and TRA-1b. |
| Impact TRA-2: | Construction of the Project would temporarily disrupt circulation patterns near sensitive land uses (schools, hospitals, fire stations, police stations, and other emergency providers). (Less than Significant with Mitigation) | |
### Table 5-3 (continued)

<table>
<thead>
<tr>
<th>Environmental Resource</th>
<th>College Lake Project</th>
<th>Farmland Preservation – Lake Deepening Alternative</th>
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<tbody>
<tr>
<td><strong>Aesthetics</strong></td>
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<tr>
<td>Impact AES-1: Implementation of the Project could have a substantial adverse effect on scenic vistas. (Less than Significant with Mitigation)</td>
<td>Similar to the Project.</td>
<td>This impact on scenic vistas viewed from Holohan Road associated with the WTP at the preferred site under this alternative would be the same as under the Project and could be mitigated with implementation of Mitigation Measures AES-1a and AES-1b. Changes in landform would not be expected to meaningfully alter publicly accessible views of the lake given the location and scale of proposed changes and limited viewing opportunities.</td>
</tr>
<tr>
<td>Impact AES-3: Implementation of the Project could degrade the existing visual character or quality of public views of the sites in non-urbanized areas. (Less than Significant with Mitigation)</td>
<td>Same as the Project with Preferred WTP Site.</td>
<td>This impact, based on degradation of the visual character of the preferred WTP site, is the same under this alternative and the Project could be mitigated with implementation of Mitigation Measure AES-1a.</td>
</tr>
<tr>
<td>Impact AES-4: Project components could introduce significant new sources of light or glare during construction. (Less than Significant with Mitigation)</td>
<td>Same as the Project with Preferred WTP Site.</td>
<td>This impact, based on nighttime lighting required for construction of the weir structure and intake pump station and trenchless pipeline construction, is the same under this alternative as the Project and would be mitigated through implementation of Mitigation Measure AES-2.</td>
</tr>
<tr>
<td><strong>Cultural</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impact C-TRA-1: The Project, in combination with past, present, and probable future projects in the Project area, would have cumulatively considerable impacts on transportation and traffic. (Less than Significant with Mitigation)</td>
<td>Similar to the Project.</td>
<td>For reasons stated in the preceding impacts, this alternative's contributions to cumulative transportation and traffic impacts would be the same as the Project; less than significant with mitigation.</td>
</tr>
<tr>
<td>Impact CUL-1: The Project could cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines Section 15064.5. (Less than Significant with Mitigation)</td>
<td>Same as the Project.</td>
<td>This impact is associated with trenchless pipeline construction near historic structures, which would be the same under the Project and this alternative and could be mitigated with implementation of Mitigation Measure NOC-2.</td>
</tr>
<tr>
<td>Impact CUL-2: The Project could cause a substantial adverse change in the significance of an archaeological resource, including those determined to be a historical resource defined in Section 15064.5 or a unique archaeological resource defined in Public Resources Code 21083.2. (Less than Significant with Mitigation)</td>
<td>Greater than the Project.</td>
<td>Because College Lake has high sensitivity for archaeological resources (two previously recorded archaeological sites overlap slightly with the proposed inundation area), excavation within the lake basin would increase the likelihood of disturbing such resources. Like the Project, this impact could be mitigated through implementation of Mitigation Measures CUL-1a through CUL-1i.</td>
</tr>
<tr>
<td>Impact CUL-3: The Project could disturb human remains, including those interred outside of formal cemeteries. (Less than Significant with Mitigation)</td>
<td>Greater than the Project.</td>
<td>The Project could cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines Section 15064.5 or a unique archaeological resource defined in Public Resources Code 21083.2. (Less than Significant with Mitigation)</td>
</tr>
<tr>
<td>Impact C-CUL-1:</td>
<td>Greater than the Project.</td>
<td>For reasons stated under Impacts CUL-2 and CUL-3, potential contribution to cumulative impacts to archaeological resources would be incrementally greater under this alternative.</td>
</tr>
<tr>
<td><strong>Resources</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impact AES-1: Implementation of the Project would have temporary effects on alternative transportation and alternative transportation facilities in the Project area. (Less than Significant with Mitigation)</td>
<td>Similar to the Project.</td>
<td>Because this impact is primarily associated with in-street pipeline construction, and for reasons stated under Impact TRA-1, this impact would be similar to the Project and could be mitigated through implementation of Mitigation Measures TRA-1a and 1b.</td>
</tr>
<tr>
<td>Impact AES-2:</td>
<td>Similar to the Project.</td>
<td>Because this impact is primarily associated with in-street pipeline construction, and for reasons stated under Impact AES-2, this impact would be similar to the Project and could be mitigated through implementation of Mitigation Measures AES-2.</td>
</tr>
<tr>
<td>Impact AES-3:</td>
<td>Similar to the Project.</td>
<td>Because this impact is primarily associated with in-street pipeline construction, and for reasons stated under Impact AES-3, this impact would be similar to the Project and could be mitigated through implementation of Mitigation Measures AES-3.</td>
</tr>
<tr>
<td>Impact AES-4:</td>
<td>Similar to the Project.</td>
<td>Because this impact is primarily associated with in-street pipeline construction, and for reasons stated under Impact AES-4, this impact would be similar to the Project and could be mitigated through implementation of Mitigation Measures AES-4.</td>
</tr>
</tbody>
</table>
5.4 Comparison of Alternatives

The text below presents a comparison of the options considered for the WTP and College Lake pipeline components of the Project, as well as a comparison of the Project with the alternatives described and evaluated in this chapter.

5.4.1 Comparison of Preferred and Optional WTP Sites

This EIR analyzes two potential WTP sites at the following locations:

- Preferred WTP Site: North of Holohan Road between Laken Drive and Grimmer Road, southwest of College Lake (within Assessor Parcel Number 051-101-47).
- Optional WTP Site: West of the proposed weir structure (within Assessor Parcel Number 051-441-24).

As indicated in Chapter 2, PV Water prefers the WTP site on Holohan Road for geotechnical reasons. Refer to Figure 2-2 for the locations of the two WTP site options.

The preferred WTP site, shown on Figures 2-14 and 2-15, would occupy approximately five acres. The optional WTP site, shown on Figures 2-16 and 2-17, would occupy six acres. Development of the optional WTP site would require an elevated fill pad to raise the WTP site above flood elevation, which would require more area than the preferred WTP site. As shown on Figures 2-14 and 2-16, the configuration of the WTP at either site would be similar. The construction phase durations of the WTP at both sites would be the same with the exception of surcharging for the optional WTP site which would be increased by 12 to 18 months to allow for consolidation of fill pad at that site (there would be no construction activity at the site during consolidation).

Construction of the WTP at either site would have significant and unavoidable impacts due to conversion of Important Farmland. On the basis of direct impacts on Important Farmland, the preferred WTP site would affect one less acre of Important Farmland than the optional WTP site. Taking into account the additional conversion of Important Farmland that could occur through the division or fragmentation of parcels, construction of the WTP at the optional site could increase total conversion of Important Farmland by an estimated 4.8 acres (see Table 3.2-4 in Section 3.2).

Because the optional WTP site is within a floodplain, there is a potential higher risk of flooding than at the preferred WTP site. Regardless of which WTP site is selected, PV Water would implement adopted Mitigation Measure HWQ-4 from the 2014 BMP Update PEIR which would require that facilities be designed to comply with FEMA and County of Santa Cruz requirements to floodproof the facilities and not exacerbate upstream or downstream flood hazards on other properties.

Construction of the WTP at the preferred site would result in two significant impacts that would not occur at the optional WTP site. Short-term noise impacts due to construction would result in short-term exceedances of the County’s noise standard at the nearest sensitive receptor, a significant and unavoidable impact at the preferred WTP site even after implementation of
Mitigation Measure NOI-1a. Development of the WTP at the preferred site would also have long-
term significant impact on aesthetic resources, but these impacts could be mitigated to less-than-
significant levels with implementation of Mitigation Measures AE-1a and AE-1b.

Overall, given the difference in impact severity, magnitude and duration, the preferred WTP site
is considered environmentally superior to the optional WTP site.

5.4.2 Comparison of Preferred and Optional Pipeline Alignments

As described in Section 2.2, Project Location, the proposed College Lake pipeline would extend
from the proposed WTP to the CDS and the Recycled Water Facility at the Watsonville
Wastewater Treatment Facility (refer to Figures 2-3a through 2-3e). The proposed College Lake
pipeline alignment follows existing developed road rights-of-way and agricultural land. This EIR
analyzes two potential pipeline alignments at the SR 1 crossing: the preferred pipeline alignment
is in West Beach Street and the optional pipeline alignment goes through agricultural land south
of West Beach Street. The optional pipeline alignment was included because the number and
location of existing utilities in this segment of West Beach Street could complicate or preclude
pipeline construction. There are environmental tradeoffs between the preferred and optional
pipeline alignment with respect to temporary, significant, mitigable impacts to farmland,
transportation, and noise.

Unlike the preferred pipeline alignment at the SR 1 crossing, the optional pipeline route would
have a temporary significant impact on disruption of agricultural use during project construction
that could be mitigated with implementation of Mitigation Measure LU-1c. Following cessation
of pipeline construction activities, farming could resume within the construction corridor;
however, trees with roots extending more than three feet below ground would be prohibited
above the pipeline because deep roots could damage the pipeline and its cover. Replacing topsoil
would prevent a long-term adverse effect on Important Farmland resulting from pipeline
construction.

Because the preferred pipeline alignment would be installed in Beach Street instead of farmland,
temporary, intermittent impacts on traffic and transportation conditions and alternative
transportation modes, and the potential for accidents on Project area roadways, would be greater
with the preferred pipeline alignment, but could be mitigated with implementation of Mitigation
Measures TRA-1, TRA-3, and TRA-4. Construction along the optional pipeline alignment would
require trenchless construction at two additional locations (one at the SR 129 crossing and one at
the SR 1 crossing). As explained under Impact NOI-1 in Section 3.8, Noise and Vibration, since
construction activities at the SR 129 and SR 1 crossings would not exceed the County’s daytime
or nighttime noise standards, impacts related to exposure of sensitive receptors to noise levels in
excess of standards found in the local noise ordinance would be less than significant at these
crossings for both the preferred and optional pipeline alignment.

Given the trade-offs in temporary construction-phase impacts between the preferred and optional
College Lake pipeline alignments, neither is considered environmentally superior to the other.
5.4.3 Comparison of Project Alternatives and Environmentally Superior Alternative

The CEQA Guidelines require the identification of an environmentally superior alternative to the Project (Section 15126.6[e]). If it is determined that the “no project” alternative would be the environmentally superior alternative, then the EIR shall also identify an environmentally superior alternative among the other project alternatives (Section 15126.6[3]).

Compared to the Project as proposed, the No Project alternative’s adverse existing conditions for steelhead would be expected to persist, overdraft and seawater intrusion conditions would continue within the Pajaro Valley Groundwater Basin, potentially resulting in land fallowing and significant loss of farmland. Implementation of projects to replace the College Lake Project would result in other, potentially more severe environmental impacts than those associated with the Project as proposed. For these reasons, the No Project Alternative is not considered the environmentally superior alternative.

There are trade-offs, in terms of environmental impacts, between the Farmland Preservation-Lake Deepening Alternative and the Project. The Farmland Preservation-Lake Deepening Alternative would reduce the conversion of Important Farmland. This is a significant and unavoidable impact even with Mitigation Measures LU-1a (Promote Farming), LU-1b (Compensate for Conversion of Important Farmland), and LU-1c (Replacement of Topsoil) because of uncertainties associated with implementing agricultural easements to compensate for conversion of Protected Farmland. However, this alternative would also worsen impacts associated with biological resources, flooding, air quality, and cultural resources. In particular, the magnitude of impacts to state and federally protected wetlands would require a substantially larger area of compensatory mitigation to reduce the impact, complicating permitting. In addition, this alternative would incrementally increase water surface elevations in certain areas under the 10- and 100-year flood events.

5.5 Alternatives Considered but Eliminated from Further Analysis

5.5.1 Lower Weir Alternative

5.5.1.1 Description

This alternative was considered as a potential means of reducing the magnitude of loss of Important Farmland associated with water management operations. A Lower Weir Alternative would be the same as the Project with the exception that the proposed weir would be built to and operated at 60.1 feet NAVD88 (i.e., the elevation of the existing weir without sand bags) instead of having the ability to be raised to 62.5 feet NAVD88. Water management operations would otherwise be the same as the Project with respect to (for example) bypass flows and minimum lake level requirements for fish passage, water supply diversions, and maintenance activities. The Lower Weir Alternative would include the same components as the Project, including a proposed weir structure, intake pump station, WTP, and the College Lake pipeline. Like the Project,
mitigation measures from the 2014 BMP Update PEIR that were adopted by the Board of Directors would apply to this alternative.

This potential alternative was fully modeled by cbec and results are presented in Appendix HYD of this EIR. Modeling indicates that keeping the weir at 60.1 feet NAVD88 would reduce the Project yield by 500 to 600 AFY, on average.

5.5.1.2 Reasons for Rejection

This alternative would result in a substantial reduction in yield compared to the Project, compromising its abilities to satisfy the basic objectives of the Project and requiring that PV Water ultimately implement one or more additional projects to make up for this reduction in water supply. In addition, as discussed in Section 3.2, Land Use and Agricultural Resources, a key factor in estimating the conversion of Important Farmland caused by water management operations is the projected water surface elevation, as well as anticipated groundwater levels, around June 1. As with the Project, until May 31, the water surface elevation within College Lake would be at kept at approximately 59 feet NAVD88 to support fish passage during all water year types. Because of this factor and anticipated groundwater elevations, this alternative would not be expected to substantially reduce the potential conversion of Important Farmland in comparison to the Project or the Farmland Preservation-Lake Deepening Alternative. (Note that if water levels in the lake were operated solely for fish passage Important Farmland below approximately 59 feet NAVD88 would convert.) For these reasons, this alternative was eliminated from further consideration.

5.5.2 Continuation of Reclamation District 2049 Facilities and Operations; PV Water Acquires College Lake Water from Reclamation District 2049

5.5.2.1 Description

RD 2049 (referred to in this EIR by its legal name but self-identified as College Lake Reclamation District [CLRD] in the letter submitted on its behalf) requested that this EIR include an alternative involving PV Water contracting with RD 2049 “acquiring water from the continued reclamation and use of agricultural resource utilizing CLRD’s ongoing improvements and operations.” RD 2049 asserts that the Project’s objectives “can be adequately satisfied without significantly altering CLRD’s current improvements and operations,” and that it “regularly pumps enough water out of College Lake to provide the amount of water the project seeks to pipe down to the [CDS].” RD 2049’s letter puts forth the following regarding this proposed alternative:

- The alternative is required to comply with one of the objectives of PV Water established by the State legislature that “[a]gricultural uses shall have priority over other uses under this act within the constraints of state law.”
- “[PV Water’s] contract with CLRD shall require that a CLRD determine the date of commencement and rate of pumping and draining of College Lake in the manner it has done for the past 98 years….”
• “There would be no increased area of inundation at College Lake … and no reduction in the annual number of crop cycles. Therefore, there would be no reduction in agricultural productivity due to implementation of the Project utilizing current CLRD improvements and operations.”

• “Adverse environmental impacts to biological resources such as steelhead and waterfowl will be substantially reduced or eliminated.”

5.5.2.2 Reasons for Rejection

The suggested alternative is not supported by any objective evidence or credible analysis, and moreover does not provide the essential water storage function associated with the Project as proposed; consequently, it could not feasibly provide the water supply when it is needed: during the irrigation season. Implementation of this alternative without significantly altering RD 2049’s current improvements and operations would continue to result in the adverse effects to steelhead described under the No Project Alternative. The National Marine Fisheries Service and California Department of Fish and Wildlife have expressed concern regarding the impact of current operations on steelhead. This alternative would also be inconsistent with the Project objective to use surface water for agricultural purposes in a manner consistent with habitat preservation and enhancement, and in coordination with resource agencies. For these reasons, this alternative was eliminated from further consideration.

5.5.3 Basin Management Plan Update Alternatives

5.5.3.1 Description

As part of the BMP Update, PV Water considered several alternatives related to surface water that either involved College Lake or represented a potential alternative water supply and storage project. Appendix B of the BMP Update lists 44 projects that were identified by the Ad Hoc BMP Committee. Of these, several were revisited as part of the alternatives screening for this EIR. These alternatives include the following:

• S-4: Expanded College Lake, Pinto Lake, Corralitos Creek, Watsonville Slough, and Aquifer Storage and Recovery. This project is similar to College Lake Project as it would increase the total storage capacity of College Lake (to 5,600 acre-feet), add a seasonal storage component, and require construction of several of the same facilities (e.g., weir, pump station). This project would increase the water supplies to College Lake by diverting water from Corralitos Creek, Pinto Lake, and Watsonville Slough, and providing ASR injection during the winter, and recovery during the summer. A filtration and disinfection system (similar to the proposed WTP) would treat water from College Lake prior to entering the distribution pipeline. Two pipelines would be required; one to convey filtered water to the injection system wells, and a second to convey water from Watsonville Slough to College Lake in the winter and to convey College Lake and well water to the CDS during the irrigation season. This project would include the construction of College Lake main dam and saddle dam, filtration and disinfection facilities, pump stations, ASR wells, and approximately 15 miles of new conveyance pipeline.

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• **S-5: Bolsa de San Cayetano Dam with Pajaro River Diversion.** This project consists of two options. In Option 1, Bolsa De San Cayetano Dam and Reservoir would be constructed for storage of up to 5,000 acre-feet of Pajaro River water, which would be diverted and pumped to the reservoir in the winter and used to meet irrigation demand in the summer. The dam and reservoir site would be located in Monterey County on the south side of the Pajaro River and adjacent to Trafton Road, and is surrounded by 100- to 150-feet high terrace upland that has been eroded from a canyon. The earth fill dam would be located across the mouth of the canyon to form the reservoir. A small saddle dam would also be constructed on the north ridge. The Pajaro River diversion would consist of an infiltration gallery, filtration system, and pump station facilities (similar to the College Lake Project). The diversion would be located approximately 0.5 miles upstream of the confluence of Salsipuedes Creek and the Pajaro River. It is assumed the water would need to be filtered and disinfected after storage to meet user requirements. Option 2 involves using the Bolsa De San Cayetano Dam and Reservoir for both surface water and recycled water storage. In addition to the infrastructure needed for Option 1, Option 2 would also include lining the reservoir to comply with Regional Water Quality Control Board requirements for surface storage of recycled water. Having the availability to store recycled water increases the average project yield due to insufficient surface water being available for diversion in some years. Option 1’s yield would be 3,500 AFY, while Option 2’s would be 4,500 AFY.

• **S-9: College Lake Aquifer Storage and Recovery in Winter.** This project would filter and disinfect diverted water from College Lake during the winter through a new pipeline to groundwater injection wells. The facilities for this project would include injection wells, approximately one and a half miles of new 12-inch water main, a new pump station, a membrane filtration plant with disinfection, and monitoring wells. It is assumed membrane filtration would be needed to treat College Lake water for groundwater injection. Nitrate levels must meet the Surface Water Treatment Rule and UV disinfection may be required to meet Surface Water Treatment Rule Trihalomethane limits. This project’s yield would be 1,000 AFY.

• **S-10: Dams at Bolsa and Strawberry Hills with Pajaro Diversion.** This project involves the construction of earth fill dams across two natural depression areas south of the Pajaro River for the storage of water diverted from the river during winter months. Site 1 would use a portion of the Bolsa de Cayetano Canyon’s natural depression and would have a capacity of approximately 680 acre-feet. This southeastern portion the Bolsa Canyon would require the construction of a 75-foot high earth dam with a crest length of 1,200 feet, a spillway, and outlet works. Site 2 uses a smaller natural depression located on the Strawberry Hills Forever, LLC property south of Jensen Road, and has the capacity of approximately 130 acre-feet. The Strawberry Hills site would require a 25-foot high earth dam with a crest length of 500 feet, spillway, and outlet works. Similar to the College Lake Project, each location would require a pump station, filtration and disinfection system, and pipelines to connect to the CDS. The diversion facilities would consist of filtration facilities and a pumping station located approximately 0.5 miles upstream of the confluence of Salsipuedes Creek and the Pajaro River. This project’s yield would be 810 AFY.

• **S-12: College Lake to Recycled Water Treatment Plant in Summer.** Similar to the College Lake Project, this project would divert water from College Lake to be used for irrigation along the CDS. Water from College Lake and Pinto Lake would be diverted to the Watsonville sanitary sewer collection system during the summer for conveyance to the Watsonville Wastewater Treatment Facility, where it would be treated and pumped into the CDS. Approximately 4.3 miles of new pipe, dedicated to transmitting College Lake water to
the existing sewer, would need to be constructed. The project would also include a pump station, filtration facility, sewer system upgrades, and a 1 million-gallon storage tank. The recycled WTP at the Watsonville Wastewater Treatment Facility would need to be expanded to meet increased flow volumes from this project. This project’s yield would be 2,000 AFY.

- **S-14: Partial College Lake to Recycled Water Treatment Plant in Summer.** Similar to the College Lake Project, this project would divert water from College Lake to be used for irrigation along the CDS. This project would divert water from College Lake to the Watsonville sanitary sewer collection system during the summer for conveyance to the Watsonville Wastewater Treatment Facility, where it would be treated and pumped into the CDS. This project is sized to use the existing capacity of the recycled WTP and not require treatment expansion. Option 1 involves adding sufficient sewer capacity (4.3 miles of new sewer) to enable the unused nighttime treatment plant capacity to be fully utilized. Option 2 involves adding a relatively short length of new sewer (1.2 miles) to minimize construction costs and use a portion of the unused nighttime treatment plant capacity. The project would include the new conveyance pipeline, a pump station, and sewer system upgrades. Option 1’s yield would be 460 AFY, while Option 2’s would be 170 AFY.

- **S-20: College Lake with Pipeline to Adjacent Farmland.** Similar to the College Lake Project, this project would divert water from College Lake to be used for agricultural irrigation. Instead of water being sent to the CDS, this project would divert water from College Lake and Pinto Lake during the summer through a new pipeline to inland growers. Like the College Lake Project, the water pumped out of College Lake would go through filtration and disinfection at the lake prior to entering the pipeline. Construction would include approximately four miles of new 18-inch water main, a new pump station, and a filtration plant with disinfection. This project’s yield would be 2,400 AFY.

- **SEA-1: Saltwater Desalination.** This project includes construction and operation of a seawater desalination facility north of the State Route 1 and Elkhorn Slough crossing in unincorporated Monterey County that would produce potable water from seawater. This project consists of a seawater intake and pipeline, desalination plant, brine discharge and outfall facilities, product water conveyance pipelines to the recycled WTP clearwell and three City of Watsonville potable wells (8-miles of 24-inch pipe), and storage facilities. The treated water would be used for agricultural irrigation during the irrigation season via an expanded CDS, and as potable water for the City of Watsonville during the winter months. This project’s yield would be 7,500 AFY (6,500 AFY for coastal agriculture and 1,000 AFY for potable water for the City of Watsonville).

### 5.5.3.2 Reasons for Rejection

Of these projects, College Lake ASR in Winter, Dams at Bolsa and Strawberry Hills with Pajaro Diversion, College Lake to Recycled Water Treatment Plant in Summer, Partial College Lake to Recycled Water Treatment Plant in Summer, and College Lake with Pipeline to Adjacent Farmland were eliminated from further consideration in the BMP Update due to one or more of the following reasons: high capital costs, implementation timeline (i.e., 10 or more years to implement), environmental effects/regulatory uncertainty, and/or low yield. The BMP Update indicates that PV Water could potentially add the following projects to the BMP Update in the future if needed: Expanded College Lake, Pinto Lake, Corralitos Creek, Watsonville Slough, and Aquifer Storage and Recovery; Bolsa de San Cayetano Dam with Pajaro River Diversion; and/or Saltwater Desalination. These projects were evaluated as alternatives in the 2014 BMP Update.
PEIR and rejected for one or more of the following reasons: having the same or greater environmental effects, being financial infeasible, and/or having greater difficulty achieving regulatory compliance.

These eight alternatives were revisited to see if any could result in conversion of no or fewer acres of Important Farmland compared to the Project. Among these alternatives, the following could do so: Bolsa de San Cayetano Dam with Pajaro River Diversion (S-5), Dams at Bolsa and Strawberry Hills with Pajaro Diversion (S-10), College Lake to Recycled Water Treatment Plant in Summer (S-12), and Partial College Lake to Recycled Water Treatment Plant in Summer (S-14). All of these projects would be considered infeasible based on being cost prohibitive or not being as cost effective as the selected alternatives. Moreover, S-5, S-10, and S-14 would not meet the following basic objectives: not preventing long-term groundwater overdraft because of low yield, not being cost effective and environmentally sound, not helping to achieve sustainable groundwater management by 2040, and not substantially contributing to the Pajaro Valley’s water supply needs in a timely manner.

5.5.4 Multi-Objective and Early Drawdown Alternatives

5.5.4.1 Description

As described in Section 5.2, the College Lake Multi-Objective Management Project Final Report identified three basic alternatives (Multi-Objective Alternatives 1, 2 and 3) each with two different operating scenarios (A, involving extended inundation of College Lake and B, involving a drawdown of lake levels in June).\(^{11}\) Table 5-4 presents a basic description of each of these alternatives and the operating scenarios. Multi-Objective Alternative 3A was retained and updated (e.g., with updated modeling), and is presented as the Farmland Preservation-Lake Deepening Alternative described earlier in this chapter. Note that the flood protection improvements at College Lake described for these alternatives that were then being contemplated by the US Army Corps of Engineers are no longer being proposed.

5.5.4.2 Reasons for Rejection

The Multi-Objective Alternatives involving operating scenario B were rejected because they do not provide the essential water storage function of the Project. Multi-Objective Alternatives 1 and 2 were rejected because neither would reduce the potential for conversion of Important Farmland compared to Multi-Objective Alternative 3A.

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\(^{11}\) RCD-SCC, College Lake Multi-Objective Management Project Final Report, prepared by cbec, November 14, 2014.
### Table 5-4

**SUMMARY OF ALTERNATIVES CONSIDERED IN COLLEGE LAKE MULTI-OBJECTIVE MANAGEMENT PROJECT FINAL REPORT**

<table>
<thead>
<tr>
<th>Management Strategies</th>
<th>Physical Configuration</th>
<th>Operation Scenarios</th>
<th>Objectives Identified in Report Met?</th>
</tr>
</thead>
</table>
| **Water Supply**
  **Objectives.**
  - Provide longest growing season achievable within the lake bed (July through October), including lake bottom. Essentially represents a continuation of existing conditions.
  - Provide range of depths to support dabbling, diving ducks through migration season; provide conditions for adult migration and juvenile passage.
  - Include fish passage structure if a new higher weir is implemented.

  **Physical Configuration.**
  - MOA-1: Physical Configuration. Includes all components of water supply and flood management strategies and fish passage structure.
  - MOA-2: Physical Configuration. One compound weir structure that combines flood management and water supply weirs plus fish passage structure. Includes all other components of water supply and flood management strategies.
  - MOA-3: Physical Configuration. As described for MOA-1 plus recontouring of lake bottom; 78.5-acre area lowered by ~2-3 feet with excavated material placed in southwestern portion of lake to raise elevation. Increases lake volume below 60 feet NAVD88 by 88 acre-feet.

  **Operation Scenarios.**
  - A: Extended inundation; meets minimum lake elevation and release criteria for fish passage; water supply extractions meet 100% of demand while remaining storage in lake can support this level of extraction.
  - B: Early Drawdown: same as A but additional pumping (‘Other Release’) occurs in order to drain lake by end of June.

| **Wildlife**
  **Objectives.**
  - Steelhead: maintain or enhance conditions for adult migration and juvenile passage. Birds: provide range of depths to support dabbling, diving ducks through migration season; provide conditions for emergent wetland habitat, waterfowl food plants, and waterfowl and other wetland species; use adaptive management to minimize adverse effects on waterfowl, shorebirds, and prey for select predatory species.

  **Physical Configuration.**
  - MOA-1: Physical Configuration. Includes all components of water supply and flood management strategies and fish passage structure.

  **Operation Scenarios.**
  - A: Extended inundation; meets minimum lake elevation and release criteria for fish passage; water supply extractions meet 100% of demand while remaining storage in lake can support this level of extraction.
  - B: Early Drawdown: same as A but additional pumping (‘Other Release’) occurs in order to drain lake by end of June.

**NOTES:**
- √ = objectives are met
- X = objectives are not met
- = objectives are partially met or not all objectives are met
- A: The report also identified three primary alternatives that helped provide a basis for the multi-objective alternatives. The primary alternatives included Local Agriculture, which involved a continuation of existing conditions; Water Supply (and wildlife), which coupled the water supply strategy with a fish passage structure to meet water supply and wildlife objectives; Flood Management (and local agriculture) which combined the flood management and Local Agriculture strategies; and Natural Condition, which involved removal of existing weir with no pumping or extraction.

**SOURCE:** Resource Conservation District of Santa Cruz County (RCD-SCC), College Lake Multi-Objective Management Project Final Report, prepared by cbec, November 14 2014.
5.5.5 Divided Lake Alternative

5.5.5.1 Description

Two commenters on the NOP suggested that the College Lake basin be divided into two management areas, with one side functioning as a wetland, and the other functioning as a reservoir. This division would occur along the natural topography within the lake, such that when water levels are low the different areas can be managed with different goals (i.e. survival of fish, wildlife habitat, and water storage). Dividing the drainage areas with small berms and canals would allow for draining or even flooding the areas separately. These berms may be lower than the high-water level, becoming submerged when the lake is full. Pumps would be strategically placed to move water between areas. A graphic showing the divided lake is included in Appendix NOP as part of the submittal from Frank “Ted” Remde.

5.5.5.2 Reasons for Rejection

This potential alternative is based on the assumption that a conflict would result between water management operations under the Project and habitat within the lake, with division of the lake being a solution to that conflict. Refer to Section 3.4, Biological Resources, for the Project’s effects on biological resources, including wetlands and other waters of the U.S. Figure 3.4-4a in Section 3.4 shows a map of existing habitat within the lake. The analyses presented in Section 3.4 (in particular, Impacts BR-3 and BR-4) indicate that operation of College Lake as proposed is not incompatible with continued wildlife habitat within and fish passage through the lake. Consequently, this alternative is not warranted by the findings of the impact evaluation in the EIR.

This alternative was also considered in College Lake Multi-Objective Management Project Final Report. With the lake levels that would occur with the proposed weir, the berms compartmentalizing the lake would need to be greater than six feet, depending on the area of isolation. The berms would pose the risk of overtopping during large runoff events, which could allow fish to be carried into these areas and then isolated from the stream. Standing water in the “wet” compartments could significantly impact the ability to cost-effectively farm adjacent “dry” components due to increase surface and subsurface moisture. The College Lake Multi-Objective Management Project Final Report considered this alternative likely infeasible due to physical constraints (berm construction and management and increased subsurface moisture).

5.5.6 Water Treatment Plant Location Alternatives

5.5.6.1 Description

Two alternative locations for the WTP have been considered:

- The southwest lot of Our Lady Help of Christian’s Church’s land

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• A floating treatment plant within College Lake.

5.5.6.2 Reasons for Rejection

PV Water considered the southwest lot of Our Lady Help of Christian’s Church’s land as a potential WTP site during initial planning. This site was eliminated from further consideration because it is too small to accommodate the proposed WTP and because there are known sensitive archaeological resources at that location that site development would directly impact. The WTP requires 5 acres and the design includes sedimentation basins, solids drying beds, buildings, equipment (filters), and water treatment chemical storage. Constructing a floating treatment plant was eliminated from further consideration as infeasible based on cost and overly complex design and construction issues.

5.5.7 Water Storage Alternatives

5.5.7.1 Description

Another alternative concept considered as part of the alternative screening process was the concept of pumping water from College Lake, treating it, and conveying the treated water to basins in the vicinity of the CDS for recharge and subsequent recovery (similar to how the existing Harkins Slough project is operated). This water management approach would allow for early drawdown of College Lake and (presumably) continued farming and migratory wildlife benefits within the lake basin. At Board meetings, it was also suggested that a dam be constructed on Harkins Slough to create a reservoir to store College Lake water.

A commenter on the NOP suggested that “in the event of the need for emergency supplemental water storage, consideration could be given to using rail tank cars which are idled due to low oil demand.” It was suggested that the rail tank cars be decontaminated for the purpose of water storage as the average tank car holds approximately 30,000 gallons.

5.5.7.2 Reasons for Rejection

The use of remote recharge basins or Harkins Slough as a potential alternative was eliminated from further consideration due to greater impacts on Important Farmland, biological resources, and cost. Proposed operations include keeping the water surface elevation of the lake at or above about 59 feet NAVD88 through May 31 in order to provide sufficient flows for smolt outmigration. Pumping water from College Lake after required lake level and bypass flow requirements are met would not fully restore current farming practices nor completely prevent conversion of Important Farmland from water management operations. The recharge basins would need to be located in areas with favorable hydrogeologic characteristics in order for recharge and recovery of recharged water to be productive. Moreover, land in the vicinity of the CDS that could be used for recharge basins is mapped almost entirely as Important Farmland. Consequently, the use of remote recharge basins could actually increase the amount of Important Farmland converted to other uses.
An alternative involving storage of water in rail cars was eliminated from further consideration based on infeasibility. Storing water in rail tank cars could not feasibly provide sufficient water storage in a practical manner in lieu of the Project. With implementation of the Project, PV Water could store about 1,764 acre-feet of water (when the water surface elevation is at 62.5 feet NAVD88), which is equivalent to about 575 million gallons, and deliver that water to irrigators during the growing season. Assuming a typical rail tank car has storage capacity of about 30,000 gallons, this would equate to approximately 19,000 cars.

5.5.8 Pipeline Alignment Alternatives

5.5.8.1 Description

Carollo Engineers prepared the *College Lake to CDS Pipeline Routing Study* to select a preferred route for the College Lake pipeline.\(^\text{13}\) Factors considered included pipeline length and cost, major pipeline constraints (including the California Department of Transportation’s prohibition on open-trenching in SR 129 and SR 152, geohazards, waterways, and railroad tracks), and traffic disruption. Environmental factors (presence of cultural resources, hazardous materials and sensitive land uses) was also considered. Multiple routes through the City of Watsonville as well as use of Salsipuedes Creek for conveyance, were considered. PV Water consulted with the City of Watsonville Public Works Department and the Pajaro Valley Unified School District in identifying the proposed alignment reflected in the EIR.

A commenter on the NOP suggested that the College Lake pipeline follow Salsipuedes Creek and the Pajaro River as it brings water from the WTP to the Watsonville Wastewater Treatment Facility.

5.5.8.2 Reasons for Rejection

All but one alternative alignment (the optional pipeline route shown on Figure 2-1) for the College Lake pipeline was eliminated based on one or more of the following factors: length/cost, major pipeline constraints, environmental factors, and/or input from the City of Watsonville Public Works Department or Pajaro Valley Unified School District.

A potential alignment following Salsipuedes Creek and the Pajaro River was eliminated from further consideration based on several reasons. Construction of the pipeline along the Pajaro River would increase impacts on biological resources, specifically impacts on riparian habitat. This potential alternative would also conflict with the United States Army Corps of Engineers Pajaro River Flood Risk Management Study (described in Table 3.1-1 and shown on Figure 3.1-1), which consists of levee and channel improvements on the Pajaro River and Corralitos and Salsipuedes Creek. In addition, this alignment would be about one-half mile longer than the proposed College Lake pipeline, which would increase construction costs.

\(^{13}\) Carollo Engineers, *College Lake to CDS Pipeline Routing Study, Final*, August 2017.
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CHAPTER 6
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