



Hoover Street Lift Station Flood Protection Project

**Initial Study & Proposed Mitigated Negative
Declaration**

Humboldt Community Services District

July 30, 2026

→ **The Power of Commitment**



Initial Study & Proposed Mitigated Negative Declaration

Hoover Street Lift Station Flood Protection Project

Prepared for:



Humboldt Community Services District

5055 Walnut Drive
Eureka, CA 95503

T 707-443-4550 | E twilliams@humboldtcsd.org | humboldtcsd.org

Prepared by:



718 3rd Street
Eureka, CA 95501, United States
T 925-849-1022 | E Madalyn.Pierson@ghd.com | ghd.com

© GHD 2026

Contents

1.	Project Information.....	1
1.1	CEQA Requirements	1
1.2	Background, Need, and Purpose.....	1
1.3	Project Goals	2
1.4	Project Location	2
1.5	Project Elements.....	2
	Flood Protection Structure	3
	Utility Modifications	3
	Site Drainage	3
	Wetland Restoration	4
1.6	Project Construction	4
	Construction Schedule.....	4
	Construction Activities and Equipment	4
	Site Access	5
	Traffic and Access Control.....	5
	Stockpiling and Staging	5
	Vegetation Removal.....	5
	Groundwater Dewatering.....	5
1.7	Site Restoration and Demobilization.....	5
1.8	Maintenance and Operation	5
1.9	Regulatory Permits, CEQA, and NEPA	5
1.10	Compliance with Existing Regulations and Standard BMPs.....	6
	Stormwater Pollution Prevention Plan	6
	Implementation of Geotechnical Design Recommendations.....	6
1.11	Tribal Consultation	6
2.	Environmental Factors Potentially Affected	7
3.	Environmental Analysis	8
3.1	Aesthetics	8
3.2	Agriculture and Forest Resources	10
3.3	Air Quality	12
3.4	Biological Resources	17
3.5	Cultural Resources	24
3.6	Energy Resources	26
3.7	Geology and Soils.....	28
3.8	Greenhouse Gas Emissions	32
3.9	Hazards and Hazardous Materials	37
3.10	Hydrology and Water Quality	40
3.11	Land Use and Planning	43
3.12	Mineral Resources	44
3.13	Noise.....	45

3.14	Population and Housing.....	49
3.15	Public Services	50
3.16	Recreation	51
3.17	Transportation.....	52
3.18	Tribal Cultural Resources	53
3.19	Utilities and Service Systems	54
3.20	Wildfire	56
3.21	Mandatory Findings of Significance	58
4.	Report Preparers	60
4.1	Lead Agency.....	60
4.2	GHD	60
5.	References	61

Table index

Table 3.3-1	Annual Construction Regional Pollutant Emissions.....	15
Table 3.3-2	Daily Construction Regional Pollutant Emissions	15
Table 3.4-1	Wetlands Within the Delineated Area	20
Table 3.4-2	Temporary and Permanent Wetland Impacts.....	21
Table 3.8-1	County CEQA GHG Emissions Thresholds	32
Table 3.8-2	Consistency Analysis Between Project and 2022 Scoping Plan.....	34
Table 3.13-1	Humboldt County Land Use Noise Compatibility Standards	46
Table 3.13-2	Typical Vibration Levels for Construction Equipment Used During Project Construction (Caltrans 2020).....	47

Appendices

Appendix A Figures

Figure 1: Vicinity Map

Figure 2: Project Study Boundary

Figure 3: Project Overview

Appendix B CalEEMod Modeling Information and Results

Appendix C Biological Resources Technical Memorandum

Appendix D Web Soil Survey

1. Project Information

Project Title	Hoover Street Lift Station Flood Protection Project
Lead Agency Name & Address	Humboldt Community Services District 5055 Walnut Drive Eureka, CA 95503
Contact Person & Phone Number	Terrence Williams, General Manager, Humboldt Community Services District 707-443-4550 twilliams@humboldtcsd.org
Project Location	Eureka, CA
General Plan Land Use Designation	Natural Resources (NR) Residential/ Low Density (RL)
Zoning	Residential Single Family (RS-5) Coastal Wetland Area Regulations (W) Archaeological Resource Area Outside Shelter Cove (A)

1.1 CEQA Requirements

This project is subject to the requirements of the California Environmental Quality Act (CEQA). The lead agency is the Humboldt Community Services District (HCSD). The purpose of this Initial Study is to analyze potential environmental impacts and provide a basis for deciding whether to prepare an Environmental Impact Report, a Mitigated Negative Declaration, or a Negative Declaration. This Initial Study is intended to satisfy the requirements of CEQA (Public Resources Code [PRC], Div 13, Sec 21000-21177), and the State CEQA Guidelines (California Code of Regulations, Title 14, Sec 15000-15387). CEQA encourages lead agencies and applicants to modify their projects to avoid significant adverse impacts.

CEQA Guidelines Section 15063(d) provides the following content requirements for Initial Studies:

1. A description of the project including the location of the project;
2. An identification of the environmental setting;
3. An identification of environmental effects by use of a checklist, matrix, or other method, provided that entries on a checklist or other form are briefly explained to indicate that there is some evidence to support the entries;
4. A discussion of the ways to mitigate the significant effects identified, if any;
5. An examination of whether the project would be consistent with existing zoning, plans, and other applicable land use controls; and
6. The name of the person or persons who prepared or participated in the Initial Study.

1.2 Background, Need, and Purpose

The Hoover Street Lift Station Flood Protection Project (Project) is proposed by the HCSD to protect a critical sewer lift station in Eureka, California, from increasing coastal flood risks. The Project is funded by the Hazard Mitigation Grant Program through the Federal Emergency Management Agency (FEMA) and administered by the California Office of Emergency Services (Cal OES).

The lift station is located at the north end of Hoover Street adjacent to Eureka Slough at a ground elevation of approximately 9 to 10 feet (North American Vertical Datum of 1988; NAVD88). This low-lying location is vulnerable to

tidal inundation, especially under future sea-level rise (SLR) conditions. During high tide events (i.e. king tides), the lift station has experienced flooding which has resulted in sewage discharge into Eureka Slough. Flood modeling based on the Eureka Slough SLR adaptation study (ESA et al. 2021) found that by the year 2080 (with approximately 2.4 feet of SLR, per the Ocean Protection Council Intermediate scenario) even a relatively common high tide event (approximately two-year return interval) could inundate the site with approximately 3.7 feet of water, while a 100-year coastal flood could produce on the order of five feet of flooding at the lift station. These projections assume that still-water tidal flooding is the dominant flood source at the site (the contribution of fluvial flows in Eureka Slough is negligible). As sea levels continue to rise, the frequency and depth of flooding at the lift station would increase, potentially causing severe damage and service interruptions.

The purpose of the Project is to mitigate flood risk and ensure the continued operation of the Hoover Street lift station during extreme coastal flood events. Multiple flood protection alternatives were evaluated during preliminary design to identify an approach that would meet long-term flood protection objectives while minimizing impacts to surrounding wetlands and existing infrastructure.

By constructing a dedicated flood protection structure, the Project would safeguard the wastewater infrastructure from the one percent annual-chance (100-year) tidal flood under year 2080 SLR conditions, thereby reducing the likelihood of sewage service outages, environmental contamination, and costly damage to public infrastructure. Environmental sensitivities are an important consideration in Project design and permitting because the Project is a small, developed public utility site bordered by tidal wetlands that connect to Eureka Slough.

1.3 Project Goals

Project goals include:

- Goal 1: Protect the lift station from current tidal flooding
- Goal 2: Protect the lift station from future extreme tidal flood events driven by sea level rise and climate change
- Goal 3: Maintain operational reliability and public health protection for the Project's useful life

1.4 Project Location

The Project is in unincorporated Humboldt County within the Myrtle town U.S. Census Designated Place at the northern terminus of Hoover Street, adjacent to Eureka Slough and Humboldt Bay (**Appendix A – Figure 1** and **Figure 2**). It abuts Eureka Slough to the north and west and the Eureka Pentecostal Church to the southeast.

The HCSD service area is located within the central and southern portions of the greater Eureka area and includes several unincorporated communities adjacent to Eureka. Eureka is approximately 6.5 miles south of Arcata and approximately 3.5 miles southeast of the community of Manila.

The Project is located entirely within the coastal zone. Project elements are entirely within state coastal zone jurisdictions. Project elements within the coastal zone are regulated by the Humboldt Bay Area Local Coastal Plan (LCP) and the California Coastal Commission (CCC).

1.5 Project Elements

Project elements are shown in **Appendix A – Figure 3** and include:

- Flood protection structure
- Utility modifications
- Site drainage
- Wetland restoration

Flood Protection Structure

The central component of the Project is a steel sheet pile floodwall encircling the Hoover Street lift station. The wall would be constructed of PZ-series interlocking sheet piles, which are approximately 18 inches thick and would be driven roughly 20 feet into the ground to reach competent soil layers and to cutoff under seepage. Above ground, the wall would be a maximum of eight feet above grade, varying with site topography, to achieve a uniform top elevation of 16 feet NAVD88. At the highest ground (around 16 feet NAVD88) near the site entrance, the wall would taper to meet existing grade, thus tying into natural high ground and preventing floodwater from flowing behind the wall. The enclosed area would protect not only the main lift station structure but also an adjacent sewer manhole that was identified as a low point vulnerable to flooding (approximately eight feet elevation). By encompassing both structures and the access road entrance, the floodwall would form a continuous barrier against coastal floodwaters.

Utility Modifications

Utility modifications include shifting the eastern manhole west and realigning sewer and water lines within the access road and installing two new fittings on the existing force mains to facilitate temporary bypass pumping during construction.

Eastern Manhole Relocation

The inlet manhole to the east of the site would be relocated approximately 65 feet west to reduce impacts of the Project to tidal wetlands and to provide the necessary area for mitigation activities that would be completed on-site. The associated gravity sewers entering the existing manhole would be relocated to provide gravity flow through the new manhole.

Hoover Street Gravity Main and Water Service Realignment

An existing 12-inch vitrified clay pipe gravity sewer and two-inch water service feeding into the lift station from the south along Hoover Street would be realigned to be within the center of the access road. The sheet pile wall would run parallel to the sewer main on the west side of the access road, roughly along the existing curb line. This results in approximately two to three feet of clearance between the pipes and the piles. Given the age and material of the vitrified clay pipe sewer line, there is a risk of damage during the sheet pile installation. In addition, the pipes would be located on the exterior side of the proposed sheet pile floodwall where the bank drops off steeply, making future access difficult. Maintaining the current alignment would also require penetrating through the sheet pile wall. Realigning the pipes to the center of the access road would eliminate the risk of damaging the pipe during construction, provide future access to the pipe, and eliminate pipe penetration from the wall design. The existing and new alignment for the pipes would be trenched to allow for access. During trenching, any excavated material would be stockpiled on-site for eventual backfill and compaction once the new pipes are laid.

Bypass Pumping Connections

Two new fittings would be installed on the existing force mains to facilitate temporary bypass pumping during construction, as well as for future maintenance activities and emergency operations. Installation of the fittings would require localized excavation adjacent to the existing force mains, including areas outside the previously surveyed disturbance footprint. Any newly disturbed areas would be conservatively assumed to contain jurisdictional wetlands and would be mitigated on-site.

Site Drainage

With the installation of the sheet pile wall, precipitation falling on the site would be trapped behind the wall that would have previously drained to Humboldt Bay through Eureka Slough. To drain the site during heavy precipitation events, a perimeter valley gutter and drop inlets would be installed to drain the site to the lift station sewer system. The existing paved and grassed areas within the flood wall would be graded and repaved to promote drainage to the new

perimeter valley gutter. An additional valley gutter would be installed at the top of the access road to prevent runoff from the adjacent church parking lot entering the site.

Because the lift station is adjacent to Eureka Slough, direct discharge of site precipitation would route untreated runoff to a sensitive receiving water and introduce additional coastal permitting and water quality compliance burden. Routing captured on-site water to the sanitary system would convey it to the existing permitted treatment facility prior to discharge, minimizing environmental impact.

Wetland Restoration

The Project is designed to mitigate all wetland impacts on-site (**Appendix A – Figure 3**). The area surrounding the existing eastern manhole can be characterized as an elevated gravel pad with mowed grass which is bordered by low-lying wetland drainage channels. After the manhole is relocated, the gravel fill would be removed and restored to match the existing adjacent wetlands with grading and planting in coordination with regulatory agencies. Temporary construction impacts to wetlands would be restored in-place to equal or improved conditions.

1.6 Project Construction

Construction Schedule

Construction of the proposed Project would take approximately 6 months over the course of one construction season and is anticipated to start in May 2027 and end in October 2027. Construction start date depends on release of FEMA grant funding for the Project. Construction would need to take place during the summer months to reduce the risk of tidal flood events and high sanitary sewer flows occurring during construction. The anticipated construction duration for the major work components is as follows:

1. Flood protection sheet pile wall – 6 weeks
2. Utility modifications – 6 weeks
3. Site drainage – 6 weeks
4. Wetland restoration – 6 weeks

Construction Activities and Equipment

Construction would primarily include site preparation such as removal of vegetation, followed by excavation, grading, pile driving, and hauling. Water from legal sources would be used for dust control and compaction and revegetation. All construction activities would be accompanied by both temporary and permanent erosion and sediment control measures. Project construction would include the following activities:

- Clearing and grubbing – To clear work areas;
- Excavation – To access existing utility pipes for realignment and to install new fittings for the pumping connections;
- Pile driving – To install a new steel sheet pile floodwall;
- Hauling – Transport of existing road base, pavement, excavation, and other excess materials off-site; transport of imported material to the Project Area (e.g., pipes, manholes, fittings necessary for pipe installation, pipe bedding, and sheet piles).

Equipment required for construction would include tracked excavators, backhoes, dump trucks, bobcats, concrete trucks, and pick-up trucks. It is not anticipated that any temporary utility extensions, such as electric power or water, would be required for construction.

Site Access

Access to the Project Area would be from U.S. 101 via Myrtle Avenue and Hoover Street in Eureka, using the existing access road at the end of Hoover Street. Direct site access would occur via the existing access road at the end of Hoover Street. Construction and maintenance vehicles would use this established access route for the duration of Project activities. Following construction, site access would remain unchanged, and the access road would be retained in its current configuration.

Traffic and Access Control

Construction-related traffic would be limited to equipment mobilization to the Project Area and daily personnel travel. During the pipe realignment construction, the Hoover Street areas affected by the Project would be closed to traffic.

Stockpiling and Staging

Construction stockpiling and staging areas would occur within the mapped upland portions of the Project Area or within adjacent paved areas. Within the stockpiling and staging area, standard erosion control best management practices (BMPs) would be utilized to prevent soil, materials, and hazardous materials from impacting the environment.

Vegetation Removal

Project work areas are largely unvegetated, and vegetation removal would be limited to minor vegetation removal such as minor mowing and minor brush removal. No trees would be removed. To minimize potential impacts on birds, if feasible, vegetation would be removed prior to March 15 or after August 15 to avoid the nesting bird season.

Groundwater Dewatering

Groundwater dewatering is generally not expected to be required. However, if needed, temporary groundwater dewatering would involve pumping water out of a trench or excavation. Groundwater would typically be pumped to a settling pond, Baker tanks (or other similar type of settling tank), or into a dewatering bag. Dewatering water may also be percolated back into the ground (in uplands) or used for dust control and compaction, revegetation irrigation, or discharged to sanitary sewer.

1.7 Site Restoration and Demobilization

Following construction, the contractor would demobilize and remove equipment, supplies, and construction waste. The disturbed areas along the Project alignment would be restored to pre-construction conditions.

1.8 Maintenance and Operation

Following construction, lift station infrastructure would be maintained and operated by the HCSD. The Project has been designed to minimize long-term operational and repair costs.

Maintenance of the sewer and water pipelines would consist of periodic inspection and occasional cleanout to remove accumulated sediment and debris.

1.9 Regulatory Permits, CEQA, and NEPA

HCSD is the CEQA lead agency for the Project. An Initial Study/Proposed Mitigated Negative Declaration is the proposed CEQA pathway.

The Project Area is within the county and state jurisdiction of the Coastal Zone. A consolidated coastal development permit would be required from the CCC.

A wetland delineation has been completed for the Project (**Appendix C**). The Project would impact three-parameter wetlands; therefore, permits from the U.S. Army Corps of Engineering (USACE) under Section 404 of the Clean Water Act (CWA), and a corresponding Water Quality Certification from the North Coast Regional Water Quality Control Board (NCRWQCB) under Section 401 of the CWA would be required. Impact analysis specific to one- and three-parameter wetlands can be found in the CEQA Initial Study and Biological Resources Technical Memorandum (**Appendix C**) prepared for the Project.

The Project does not involve any waterways or impacts to riparian habitat; thus, a Lake and Streambed Alteration Agreement from the California Department of Fish and Wildlife would not be required. Similarly, the Project is not expected to require consultation with the U.S. Fish and Wildlife Service or the National Marine Fisheries Service/NOAA Fisheries, because potential impacts to federal special status plants, fish, or wildlife species are not anticipated.

1.10 Compliance with Existing Regulations and Standard BMPs

The Project would abide by the following regulations and industry-accepted BMPs to reduce or avoid potential adverse effects that could result from construction or operation of the Project. In addition to these BMPs, mitigation measures are presented in the analysis sections in Chapter 3, Environmental Analysis, to reduce potentially significant environmental impacts below a level of significance. The Project's Mitigation Monitoring and Reporting Program would include these actions to ensure implementation.

Stormwater Pollution Prevention Plan

The Project would not require a Stormwater Pollution Prevention Plan (SWPPP) because the Project Area is under 1-acre. Sediment and erosion control measures would be implemented to minimize soil loss and off-site transport during construction. Runoff would be managed using features such as sediment basins, silt traps, and stabilized construction entrances to reduce erosion, prevent sediment discharge, and avoid tracking mud onto public roadways.

Implementation of Geotechnical Design Recommendations

The Project would be designed and constructed in compliance with site-specific recommendations made in the Geotechnical Report (Crawford and Associates 2026). This would include design in accordance with recommendations for earthwork, such as site clearing, cut/fill slopes, subgrade preparation, material for fill, compaction requirements, trenches, and foundations. The geotechnical recommendations would be incorporated into the final plans and specifications for the Project and would be implemented during construction.

1.11 Tribal Consultation

Pursuant to PRC Section 21080.3.1, the HCSD contacted the California Native American Heritage Commission (NAHC) to obtain a list of tribes that are traditionally and culturally affiliated with the Project Area. The NAHC identified the Blue Lake Rancheria, Bear Band of Rohnerville Rancheria, and the Wiyot Tribe. HCSD issued tribal notification letters to these tribes on May 29, 2026; however, no responses have been received to date. Additional outreach efforts are documented in the Archaeological Survey Report (ASR), as discussed in Section 3.5 (Roscoe and Associates 2025).

2. Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages:

- | | | |
|--|--|---|
| ☐ Aesthetics | ☐ Greenhouse Gas Emissions | ☐ Public Services |
| ☐ Agricultural & Forestry Resources | ☐ Hazards & Hazardous Materials | ☐ Recreation |
| ☐ Air Quality | ☐ Hydrology/Water Quality | ☐ Transportation |
| ☐ Energy | ☐ Land Use/Planning | ☐ Tribal Cultural Resources |
| ☐ Biological Resources | ☐ Mineral Resources | ☐ Utilities/Service Systems |
| ☐ Cultural Resources | ☐ Noise | ☐ Wildfire |
| ☐ Geology/Soils | ☐ Population/Housing | ☐ Mandatory Findings of Significance |

DETERMINATION (To be completed by the Lead Agency)

On the basis of this initial evaluation:

- ☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION would be prepared.
- ☒ I find that although the proposed project could have a significant effect on the environment, there would not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION would be prepared.
- ☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
- ☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect: (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
- ☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect: (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Terrence Williams,
General Manager – Humboldt Community Services District

Date

3. Environmental Analysis

3.1 Aesthetics

	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Except as provided in PRC Section 21099, would the project:				
a) Have a substantial adverse effect on a scenic vista?				X
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?				X
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public view of the site and its surroundings? (Public Views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?			X	
d) Create a new source of substantial light or glare which would adversely affect day or night-time views in the area?				X

Views of the Project Area are limited to the Eureka Slough, the Eureka Pentecostal Church, and adjacent residences and are not considered to have exceptional scenic quality. Views of vegetation and the Eureka Slough are visible from some locations in Eureka.

a) Have a substantial adverse effect on a scenic vista? (No Impact)

A scenic vista is generally defined as a view that offers remarkable scenery or a broad, visually significant view of the natural landscape. The Humboldt County General Plan identifies scenic vistas primarily from U.S. 101, coastal access points, beaches, and state park lands (Humboldt County 2017).

No designated or recognized scenic vistas occur within or in the vicinity of the Project Area. The Project is located at a small, developed public utility site at the terminus of Hoover Street, surrounded by low-density residential development and tidal wetlands associated with Eureka Slough. Existing views of the site are limited and are not considered to have exceptional scenic quality.

The Project includes construction of a steel sheet pile floodwall that would extend approximately 8 feet above grade to protect the existing lift station from tidal flooding. While the wall would represent a new vertical feature, it would be constructed within an already developed utility site on a lower elevation and would not obstruct or degrade any recognized scenic vista. The site is not a scenic vista, nor does it contain or provide access to scenic vantage points. Therefore, the Project would not have a substantial adverse effect on a scenic vista, and no impact would result.

b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway? (No Impact)

The Project is not located on, near, or within view of a designated state scenic highway. U.S. 101 is eligible for scenic highway designation; however, it is not designated in the Project vicinity (Caltrans 2026). No impact would result.

c) In non-urbanized areas, substantially degrade the existing visual character or quality of public view of the site and its surroundings? (Public Views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality? (Less Than Significant Impact)

The Project Area is non-urbanized per the definition in PRC Section 21071. Proposed actions would not conflict with Humboldt County zoning and other regulations governing scenic quality. Construction and operation of the Project would not substantially alter the visual character of the site or its surroundings. The proposed sheet pile floodwall would be relatively low in height, finished to blend with the surrounding industrial and utility setting, and would not introduce tall or visually dominant features that would block or screen public views. Following construction, disturbed areas would be restored, and the site would remain consistent with its existing utility use.

Public views of the Project Area are limited and occur primarily from the terminus of Hoover Street, adjacent residential properties, and from Eureka Slough, which is occasionally used for recreation such as kayaking. Views toward the slough provide a localized visual experience of coastal wetland vegetation and open water; however, these views are not identified as designated scenic resources or protected scenic vistas under the Humboldt County General Plan. Public views are those experienced from publicly accessible vantage points and, in this case, are limited in extent and continuity. The Project is located within a small, developed utility site characterized by existing infrastructure, maintained access areas, and adjacent low-lying wetlands. The visual character of the area is therefore already influenced by utilitarian features rather than pristine or highly scenic conditions.

The Project would construct a steel sheet pile floodwall approximately 8 feet in height around the lift station. From certain vantage points, particularly for recreational users such as kayakers traveling along Eureka Slough, the wall would introduce a new vertical element along the shoreline edge. In these localized views, the floodwall may partially interrupt the visual continuity of the slough by creating a defined boundary between the developed utility site and the adjacent wetland and open water areas.

However, this effect would be limited in scope and scale for the following reasons:

- The floodwall would be located within an existing developed utility footprint and would not extend across or into the slough itself.
- Views from the waterway are transient and limited to a short segment adjacent to the Project site, and do not constitute long, uninterrupted scenic corridors.
- The surrounding setting already includes development and infrastructure, and the addition of the floodwall would be consistent with the existing utility character.

While the wall may locally alter the visual experience for recreational users on Eureka Slough by introducing a more defined and engineered edge, it would not substantially degrade the overall visual character or quality of public views in the area. The Project would not conflict with applicable zoning or policies governing scenic quality and would remain consistent with the existing visual context of the site and its surroundings.

Therefore, although the Project may introduce minor, localized changes to views from Eureka Slough, including partial segmentation of visual continuity for recreators such as kayakers, these changes would not rise to the level of a substantial degradation of visual character or public views. Therefore, a less than significant impact would occur.

d) Create a new source of substantial light or glare which would adversely affect day or night-time views in the area? (No Impact)

The Project does not include any new streetlights or other lighting elements. Night-time construction would not occur. No proposed Project elements would cause substantial new sources of glare. No impact would result.

3.2 Agriculture and Forest Resources

	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?				X
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?				X
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in PRC section 12220(g)), timberland (as defined by PRC section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?				X
d) Result in the loss of forest land or conversion of forest land to non-forest use?				X
e) 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?				X

The Project Area is adjacent to the Eureka Slough in Eureka. There are no agricultural or forestry land uses within the Project Area.

a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland)? (No Impact)

The Department of Conservation (DOC)'s Farmland Mapping and Monitoring Program has not been completed for Humboldt County. Therefore, lands within the Project Area have not been formally analyzed by the DOC to determine if they meet the criteria for being designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance.

For this analysis, "Agricultural Soils" and "Prime Agricultural Soils" designations via the Humboldt County WebGIS online mapping tool were utilized, which is based on soils data from the Natural Resources Conservation Service (NRCS). According to the Humboldt County WebGIS, the Project Area does not include Agricultural Soils or Prime Agricultural Soils (Humboldt County 2026a). The Project would not remove agricultural land from production or result in a change in land use, as there is no such land presently under agricultural use within the Project Area. No impact would result.

b) Conflict with Agricultural Zoning or Williamson Act Contract? (No Impact)

There are no agricultural zoning or active Williamson Act contracts within the Project Area (Humboldt County 2026b). Zoning within the Project Area is discussed in Section 3.11 (Land Use and Planning). Therefore, construction and operation of the Project would have no effect on agricultural zoning or Williamson Act contracts because none exist within the Project Area. No impact would result.

c, d) Conflict with Forest Land Zoning or Convert Forest Land? (No Impact)

There are no forest lands, timberland, or land zoned Timberland Production in the Project Area; therefore, no forest land or timberland would be converted to non-forest or non-timberland use. Zoning within the Project Area is discussed in Section 3.11 (Land Use and Planning). No impact would result.

e) Convert Farmland or Forest? (No Impact)

There are no other changes in the existing environment caused by the Project that would result in conversion of farmland or forest land in or adjacent to the Project Area. No impact would result.

3.3 Air Quality

	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?		X		
b) Result in a cumulatively considerable net increase in any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?		X		
c) Expose sensitive receptors to substantial pollutant concentrations?		X		
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?			X	

The Project is located within the Humboldt County portion of the North Coast Air Basin (Air Basin) which is managed by the North Coast Unified Air Quality Management District (NCUAQMD). The NCUAQMD monitors air quality, enforces local, state, and federal air quality regulations for counties within its jurisdiction, inventories and assesses the health risks of Toxic Air Contaminants (TACs), and adopts rules that limit pollution.

For construction emissions, the NCUAQMD has indicated that emissions are not considered regionally significant for projects whose construction would be relatively short in duration, lasting less than one year. For Project construction lasting more than one year or involving above average construction intensity in volume of equipment or area disturbed, construction emissions may be compared to the stationary source thresholds (NCUAQMD 2019). Construction would occur in one season and would occur in May 2027 and end in October 2027. Emissions related to construction were calculated using the California Emissions Estimator Model (CalEEMod) version 2022.1.1.44 and are discussed below (also see **Appendix B – CalEEMod Modeling Information and Results**).

a) Conflict with or obstruct implementation of the applicable air quality plan? (Less Than Significant with Mitigation Incorporated)

This impact relates to consistency with an adopted attainment plan. The NCUAQMD is responsible for monitoring and enforcing local, state, and federal air quality standards. Humboldt County is designated 'attainment' for all National Ambient Air Quality Standards. Humboldt County is designated attainment for all California Ambient Air Quality Standards except PM₁₀ (designated as "non-attainment" for the State's PM₁₀ standard).

PM₁₀ refers to inhalable particulate matter with an aerodynamic diameter of less than 10 microns. PM₁₀ includes emission of small particles that consist of dry solid fragments, droplets of water, or solid cores with liquid coatings. The particles vary in shape, size, and composition. PM₁₀ emissions include unpaved road dust, smoke from wood stoves, construction dust, open burning of vegetation, and airborne salts and other particulate matter naturally generated by ocean surf. Therefore, any use or activity that generates airborne particulate matter may be of concern to the NCUAQMD. The proposed Project would create PM₁₀ emissions in part through vehicles coming and going to the Project Area and the construction activity associated with the Project.

To address non-attainment for PM₁₀, the NCUAQMD adopted a Particulate Matter Attainment Plan in 1995. This plan presents available information about the nature and causes of PM₁₀ standard exceedances and identifies cost-effective control measures to reduce PM₁₀ emissions to levels necessary to meet California Ambient Air Quality Standards. However, the NCUAQMD states that the plan, "should be used cautiously as it is not a document that is required in order for the District to come into attainment for the state standard" (NCUAQMD 2021). Therefore,

compliance with applicable NCUAQMD PM₁₀ rules is applied as the threshold of significance for the purposes of analysis. NCUAQMD Rule 104 Section D, Fugitive Dust Emissions, is applicable to the Project.

Rule 104, Section D – Fugitive Dust Emissions is used by the NCUAQMD to address non-attainment for PM₁₀. Pursuant to Rule 104 Section D, the handling, transporting, or open storage of materials in such a manner, which allows or may allow unnecessary amounts of particulate matter to become airborne, is not permitted. Reasonable precautions are required to be taken to prevent particulate matter from becoming airborne, including, but not limited to covering open bodied trucks when used for transporting materials likely to give rise to airborne dust and the use of water during the grading of roads or the clearing of land.

During Project earth moving activities, fugitive dust (PM₁₀) would be generated. The amount of dust generated at any given time would be highly variable and is dependent on the size of the area disturbed at any given time, amount of activity, soil conditions, and meteorological conditions. Unless controlled, fugitive dust emissions during construction of the shared use pathway could be a potentially significant impact; therefore, Mitigation Measure AQ-1 would be incorporated to comply with NCUAQMD's Rule 104 Section D.

Operation of the Project would not include the handling, transporting, or open storage of materials in which particulate matter may become airborne. Due to the absence of handling, transport, or open storage of materials that would generate particulate matter, operation of the Project is not expected to conflict with NCUAQMD's Rule 104 Section D. No impact from operation of the Project would result.

Mitigation

Implementation of Mitigation Measures AQ-1 would reduce the potential impact related to PM₁₀ fugitive dust by requiring implementation of BMPs.

Mitigation Measure AQ-1: Measures to Reduce Air Pollution

The contractor shall implement the following measures during construction:

- All exposed surfaces (e.g., staging areas, soil piles, active graded areas, and excavations) shall be watered two times per day or as required by site conditions and current weather patterns.
- All visible mud or dirt track-out onto adjacent public roads shall be removed using street sweepers at least once per day, or as needed to alleviate dust and debris on the roadway.
- All vehicle speeds on unpaved roads shall be limited to 15 miles per hour, unless the unpaved road surface has been treated for dust suppression with water, rock, wood chip mulch, or other dust prevention measures.
- Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to five minutes.
- All construction equipment shall be maintained and properly tuned in accordance with the manufacturer's specifications.

With implementation of Mitigation Measure AQ-1, the Project would not conflict with applicable air plans. This impact would be reduced to a less-than-significant level with mitigation incorporated.

b) Result in a cumulatively considerable net increase in any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard? (Less Than Significant with Mitigation Incorporated)

The Project's potential to generate a significant amount of criteria pollutants of concern during Project construction and operation is assessed in this section. As noted above, Humboldt County is designated non-attainment for the state's PM₁₀ standard. The County is designated attainment for all other state and federal standards. Potential impacts of concern will be exceedances of state or federal PM₁₀ standards. Localized PM₁₀ is of concern during construction because of the potential to emit fugitive dust during earth-disturbing activities.

Construction

Localized PM₁₀

The Project would include clearing and grubbing, excavation activity, and hauling materials. Generally, the most substantial air pollutant emissions would be dust generated from site clearing and trenching, and hauling materials to and from the Project Area. If uncontrolled, these emissions could lead to both health and nuisance impacts. Construction activities would also temporarily generate emissions of equipment exhaust and other air contaminants. The Project's potential impacts from equipment exhaust are assessed separately below.

The NCUAQMD does not have formally adopted thresholds of significance for fugitive, dust-related particulate matter emissions above and beyond Rule 104, Section D which does not provide quantitative standards. For the purposes of analysis, this document uses the Bay Area Air Quality Management District (BAAQMD) approach to determining significance for fugitive dust emissions from Project construction. The BAAQMD bases the determination of significance for fugitive dust on a consideration of the control measures to be implemented. If all appropriate emissions control measures recommended by BAAQMD are implemented for a project, then fugitive dust emissions during construction are not considered significant. BAAQMD recommends a specific set of "Basic Construction Measures" to reduce emissions of construction-generated PM₁₀ to less than significant. Without incorporation of these Basic Construction Measures, the Project's construction-generated fugitive PM₁₀ (dust) would result in a potentially significant impact.

The Basic Construction Measure controls recommended by the BAAQMD are incorporated into Mitigation Measure AQ-1. These controls are consistent with NCUAQMD Rule 104 Section D, Fugitive Dust Emission and provide supplemental, additional control of fugitive dust emissions beyond that which would occur with Rule 104 Section D compliance alone. Therefore, with incorporation of Mitigation Measure AQ-1, the Project would result in a less than significant impact for construction period PM₁₀ generation and would not violate or substantially contribute to an existing or projected air quality violation.

Construction Criteria Pollutants

The NCUAQMD does not have established CEQA significance criteria to determine the significance of impacts that would result from projects such as the proposed Project; however, the NCUAQMD does have criteria pollutant best available control technology (BACT) thresholds for new or modified stationary source projects proposed within the NCUAQMD's jurisdiction. For construction emissions, the NCUAQMD has indicated that emissions are not considered regionally significant for projects whose construction would be of relatively short duration, lasting less than one year. NCUAQMD has indicated that it is appropriate for lead agencies to compare proposed construction emissions that last more than one year to its BACT thresholds for stationary sources identified in Rule 110(E)(1), which are:

- Nitrogen Oxides – 40 tons per year
- Reactive Organic Gases – 40 tons per year
- PM₁₀ – 15 tons per year
- Carbon Monoxide – 100 tons per year

CalEEMod version 2022.1.1.44 was used to estimate air pollutant emissions from Project construction (**Appendix B**). Construction of the Project is expected to begin in 2027 and would be completed within one construction season. Detailed material hauling volumes were provided by the Project's design team. The Project's estimated construction emissions are presented in **Table 3.3-1** and **3.3-2** for annual and daily emission rates, respectively. As shown in the tables, the Project would not exceed the NCUAQMD's thresholds of significance. Therefore, the Project's construction emissions are considered to have a less than significant impact.

Table 3.3-1 Annual Construction Regional Pollutant Emissions

Parameter	Annual Emissions (tons/year)			
	ROG	NOx	CO	PM ₁₀
Project Construction (2027)	0.2	1.5	1.3	<0.1
NCUAQMD Stationary Source Thresholds	40.0	40.0	100	15.0
Significant Impact?	No	No	No	No

Table 3.3-2 Daily Construction Regional Pollutant Emissions

Parameter	Average Daily Emissions (pounds/day)			
	ROG	NOx	CO	PM ₁₀
Project Construction (2027)	1.1	8.0	7.1	0.4
NCUAQMD Stationary Source Thresholds	50.0	50.0	500.0	80.0
Significant Impact?	No	No	No	No

Operation

Following construction, the Project would not include any stationary sources of air emissions. Vehicle trips associated with operation and maintenance of the proposed Project would include maintenance and monitoring as described in Section 1.8 and would be consistent with the maintenance and monitoring of the existing wastewater infrastructure. The Project would not result in substantial long-term operational emissions of criteria air pollutants. Therefore, Project-generated operational emissions would not result in a cumulatively considerable net increase of any criteria pollutant for which the region is in non-attainment. The Project's contribution to a cumulative impact would be less than significant.

c) Expose sensitive receptors to substantial pollutant concentrations? (Less Than Significant Impact with Mitigation Incorporated)

Sensitive receptors are people who may be at heightened risk of adverse health effects from exposure to air pollution, including children, the elderly, individuals with preexisting medical conditions, and those who exercise outdoors regularly. Sensitive receptor locations generally include places where these populations may congregate or where the public may be present, including residences, schools, community resource centers, childcare facilities, parks, playgrounds, health care facilities, hospitals, nursing homes, live-in housing, any building housing a business open to the public, and other locations identified by an air district board or the California Air Resources Board (California Health and Safety Code Section 42705.5(a)(5)). Sensitive receptors in the vicinity of the Project Area include nearby residential uses and the Eureka Pentecostal Church. The church is located approximately 100 feet from the Project Area, while the nearest residence is located approximately 300 feet away.

Project construction activities would result in temporary emissions of criteria air pollutants and TACs, including diesel particulate matter from construction equipment and fugitive dust (PM₁₀) generated during ground-disturbing activities. Diesel particulate matter has been identified as a toxic air contaminant with potential carcinogenic health effects, and therefore is typically evaluated when considering impacts to nearby sensitive receptors. However, the potential for adverse exposure depends on the intensity, duration, and proximity of emission sources relative to receptor locations. Construction activities associated with the Project would occur over a single construction season and would be temporary in nature, with relatively low equipment intensity and limited duration at any one location. Activities would occur across the Project Area and along portions of Hoover Street associated with utility realignment, which would limit the duration of emissions exposure at any individual receptor. Additionally, pollutant concentrations from construction equipment are subject to dispersion and dilution with distance, and emissions typically decrease substantially within short distances from the source under typical atmospheric conditions.

As demonstrated by CalEEMod modeling results presented above, construction emissions would be below applicable air district thresholds of significance and would not result in substantial localized concentrations of criteria pollutants. In addition, implementation of Mitigation Measure AQ-1 would reduce fugitive dust and equipment exhaust emissions through standard BMPs, including watering exposed surfaces and minimizing idling, consistent with NCUAQMD requirements. Taken together, the limited duration, relatively small scale of construction activities, dispersion of emissions, and required emission control measures indicate that the Project would not expose nearby sensitive receptors to substantial pollutant concentrations during construction. Therefore, the potential construction-related impact would be less than significant.

Following construction, the Project would not include any stationary sources of air emissions or new mobile source emissions that would result in substantial long-term operational emissions of criteria air pollutants. Therefore, Project operation would not expose nearby sensitive receptors to substantial levels of pollutants. The potential operation-related impact would be less than significant.

d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people? (Less Than Significant Impact)

Implementation of the Project would not result in major sources of odor. The Project involves improvements to an existing wastewater lift station; however, it would not result in the generation of objectionable odors. Minor odors from the use of equipment during construction activities would be intermittent and temporary and would dissipate rapidly from the source with an increase in distance. Therefore, the Project would not create objectionable odors affecting a substantial number of people. The impact would be less than significant.

3.4 Biological Resources

	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a) 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 the California Department of Fish and Game or U.S. Fish and Wildlife Service?		X		
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?				X
c) 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?		X		
d) 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?				X
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?		X		
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?				X

A Biological Resources Technical Memorandum was prepared to assess baseline environmental conditions within the Project Area and is included as **Appendix C**. The study evaluates the potential for any special status plants, wildlife species, sensitive natural communities (SNCs), or aquatic resources to occur. The Biological Study Area (BSA), or the area directly or indirectly impacted by the proposed Project, encompasses a 500-foot buffer around the Project Area.

- a) **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 the California Department of Fish and Game or U.S. Fish and Wildlife Service? (Less Than Significant with Mitigation Incorporated)**

Special Status Plant Species

Special status plant species include those listed as endangered, threatened, or as candidate species by the California Department of Fish and Wildlife (CDFW), under the California Endangered Species Act (CESA), and/or under the federal Endangered Species Act (ESA). Plant species on the California Native Plant Society's California Rare Plant Ranking (CRPR) Lists 1A, 1B, 2A, and 2B are also considered eligible for state listing as endangered or threatened pursuant to the California Fish and Game Code (FGC); the CDFW has oversight of these special status plant species as a trustee agency. As part of the CEQA process, such species should be considered, as they meet the definition of Threatened or Endangered under Sections 2062 and 2067 of the California FGC. There are occasions where CRPR List 3 or 4 species might be considered of special concern particularly for the type locality of a plant, for populations at

the periphery of a species range, or in areas where the taxon is especially uncommon or has sustained heavy losses, or from populations exhibiting unusual morphology.

A reconnaissance survey was conducted on October 18, 2024. No rare plants were observed in the site visit, and no suitable habitat was observed (**Appendix C**). Vegetation within the Project Area is actively maintained and mowed regularly, severely limiting habitat suitability for species status plant species.

Based on nearby occurrence records, no special status plants have moderate or high potential to occur within the Project Area (**Appendix C**). Vegetation is regularly mowed and there is no suitable habitat for special status plants. Therefore, the impact would be less than significant.

Special Status Mammals

No special status mammal species were observed in the Project Area during a reconnaissance level survey conducted on October 18, 2024 (**Appendix C**). Habitat within the Project Area was generally poor for wildlife species as it is actively maintained and mowed regularly. No trees exist within the Project Area, and an aggregate ground layer limits any ground nesting. Therefore, a less than significant impact could occur.

Special Status, Migratory, and Nesting Birds

A reconnaissance survey was conducted on October 18, 2024. No trees exist within the Project Area, and an aggregate ground layer limits any ground nesting.

Due to the lack of suitable habitat within the BSA, no special status bird species have a moderate or high potential to occur (**Appendix C**).

Although no special status or protected migratory birds were observed nesting within the BSA during surveys, suitable nesting habitat is present in the Project vicinity. Trees located near the Project Area, as well as trees along the adjacent roadway near the church, may support nesting birds. If native migratory birds are nesting in the BSA, or within 500 feet during construction activities, these protected migratory birds could be potentially displaced from habitat, resulting in a potentially significant impact.

Mitigation

Implementation of Mitigation Measure BIO-1 would reduce the potential impact to special status and protected migratory and nesting birds.

Mitigation Measure BIO-1: Protect Special Status, Migratory, and Nesting Birds

Ground disturbance and vegetation clearing will be conducted, where feasible, during the fall and/or winter months and outside of the avian nesting season (which is generally assumed to occur between March 15 – August 15) to avoid any direct effects to special status and protected birds. Ground disturbance and vegetation clearing that cannot be confined to the fall and/or winter outside of the nesting season, will require that a qualified biologist conduct pre-construction surveys within the vicinity of the BSA, to check for nesting activity of native birds and to evaluate the site for presence of raptors and special status bird species. The biologist will conduct at minimum a one-day pre-construction survey within the seven-day period prior to vegetation removal and ground disturbing activities. If ground disturbance and vegetation removal work lapses for seven days or longer during the nesting season, a qualified biologist will conduct a supplemental avian pre-construction survey before Project work is reinitiated.

If active nests are detected within the construction footprint, or within 500 feet of construction activities, the biologist will flag a buffer around each nest. Construction activities will avoid nest sites until the biologist determines that the young have fledged, or nesting activity has ceased. If nests are documented outside of the construction (disturbance) footprint, but within 500 feet of the construction area, buffers will be implemented as needed. In general, the buffer size for common species will be determined on a case-by-case basis in consultation with the CDFW and, if applicable, with USFWS. Buffer sizes will take into account factors such as (1) noise and human disturbance levels at the construction site at the time of the survey and

the noise and disturbance expected during the construction activity; (2) distance and amount of vegetation or other screening between the construction site and the nest; and (3) sensitivity of individual nesting species and behaviors of the nesting birds.

If active nests are detected during the survey, the qualified biologist will monitor all nests at least once per week to determine whether birds are being disturbed. Activities that might, in the opinion of the qualified biologist, disturb nesting activities (e.g., excessive noise), will be prohibited within the buffer zone until such a determination is made. If signs of disturbance or distress are observed, the qualified biologist will immediately implement adaptive measures to reduce disturbance. These measures may include, but are not limited to, increasing buffer size, halting disruptive construction activities in the vicinity of the nest until fledging is confirmed or nesting activity has ceased, placement of visual screens or sound dampening structures between the nest and construction activity, reducing speed limits, replacing and updating noisy equipment, queuing trucks to distribute idling noise, locating vehicle access points and loading and shipping facilities away from noise sensitive receptors, reducing the number of noisy construction activities occurring simultaneously, and/or reorienting and/or relocating construction equipment to minimize noise at noise sensitive receptors.

With the implementation of Mitigation Measure BIO-1, potential impacts to special status and protected migratory birds would be less than significant.

Special Status Amphibian and Reptile Species

No special status amphibian or reptile species were observed in the Project Area during reconnaissance level surveys on October 18, 2024; however, focused herpetological surveys were not conducted in the Project Area. There is no suitable aquatic or riparian habitat within or adjacent to the Project Area (**Appendix C**). Therefore, the potential for these species to occur is low, and impacts would be less than significant.

Special Status Fish

No special status fish species or aquatic habitat that could support fish species are present within the Project Area. However, small portions of the BSA intersect with the Eureka Slough, which is federally-designated Essential Fish Habitat for Groundfish, Coho Salmon, and Chinook Salmon.

The BSA includes the shoreline margin of Eureka Slough. All excavation and trenching would occur during low tide, and no in-water work is proposed; however, dewatering may be required due to groundwater seepage into trenches.

There is no potential for aquatic species to occur within the Project Area, but indirect impacts could occur to the BSA and the adjacent Eureka Slough. Without erosion and sediment controls implemented from a SWPPP, construction-related runoff could enter Eureka Slough and adversely affect aquatic species. In addition, encroachment into the slough during construction could result in potentially significant impacts to special status fish species. While direct impacts are avoided, the potential for indirect impacts remains without proper protective measures.

Mitigation

Implementation of Mitigation Measure BIO-2 would reduce the potential impact to special status fish.

Mitigation Measure BIO-2: Protect Special Status Fish

The following shall be implemented to protect special status fish:

- Temporary exclusion fencing will be installed along the shoreline near planned areas of ground disturbance, if any, to limit inadvertent disturbance near aquatic habitat. The temporary exclusion fencing will be shown in the final 100% construction plan set.
- Equipment maintenance or refueling will not occur within 100 feet of the Eureka Slough shoreline.
- Erosion control shall be installed for work in tidal drainages to avoid post construction turbidity inputs into the Eureka Slough. Erosion control measures shall be shown on the final 100% construction plan set.

Mitigation Measure BIO-2 requires practicable avoidance and protection measures for special status fish during construction, thereby reducing any potential impacts. With the implementation of Mitigation Measure BIO-2, potential impacts to special status fish would be less than significant.

Special Status Invertebrates

No species identified in the Biological Technical Memorandum (**Appendix C**) have a moderate or high potential to occur within the Project Area. The Project Area is primarily composed of regularly maintained non-native grasses and forbs with low habitat value.

b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service? (No Impact)

SNCs are habitats and plant communities designated by the CDFW and identified in the California Natural Diversity Database (CNDDDB) and the California Sensitive Natural Communities List. These communities are classified at the alliance and association levels based on vegetation types associated with California's ecological sections, with alliances and associations ranked S1 through S3 considered sensitive. As documented in the Biological Resources Technical Memorandum (**Appendix C**), no SNCs or Environmentally Sensitive Habitat Areas (ESHAs) occur within the Project Area. Wetland features are present within the Project Area; however, these areas are characterized primarily by *Distichlis spicata* (coastal salt grass) and other native species, and do not meet the criteria for SNC designation. No impact would occur.

c) 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? (Less Than Significant Impact with Mitigation Incorporated)

A wetland delineation was completed for the Project on October 18, 2024, to determine the extent of wetlands and other waters within the Project Area based on hydrophytic vegetation, hydric soils, and wetland hydrology using methods and indicators outlined in the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys and Coast Region (USACE 2010). The Project Area falls within the Coastal Zone; therefore, coastal wetlands and three-parameter wetlands were documented and are shown in **Appendix A – Figure 3**.

The Project Area contains three, three-parameter wetlands (**Table 3.4-1, Appendix C**).

Table 3.4-1 Wetlands Within the Delineated Area

Aquatic Resource Name	Wetland Type	Location (lat/long) of polygon center	Aquatic Resource Size (square feet)
Wetland 1	3-par emergent wetlands	Northern edge of the Project Area located within a visible subsidence from the main Project site, composed largely of Coastal Salt Grass	75
Wetland 2	3-par emergent wetlands	Northern edge of the Project Area located within a visible subsidence from the main Project site, composed largely of Coastal Salt Grass	80
Wetland 3	3-par Palustrine drainage ditch	Southwestern edge of the Project Area	40
Total Wetlands in Project Area			195

Temporary and permanent impacts to delineated wetlands are summarized in **Table 3.4-2**. Impacts to wetlands would result in a potentially significant impact.

Table 3.4-2 Temporary and Permanent Wetland Impacts

Impact Type	Total Within Project Area (square feet)	Temporary Impact (square feet)	Permanent Impact (square feet)
Three-Parameter Wetlands	970	635	120

Impacts would result from construction activities associated with the wastewater collection system improvements, including relocation of an existing manhole, realignment of the associated pipeline, and installation of bypass pumping connections. Two new fittings would be installed on the existing force mains to facilitate temporary bypass pumping during construction and to support future maintenance and emergency operations. Installation of the fittings would require localized excavation adjacent to the existing force mains, including areas outside the previously surveyed disturbance footprint. Any newly disturbed areas would be conservatively assumed to contain jurisdictional wetlands and would be mitigated on-site. Therefore, impacts to wetlands would be potentially significant.

Mitigation

Implementation of Mitigation Measure BIO-1 and BIO-2 would reduce the potential impact to wetlands.

Mitigation Measure BIO-3: Avoidance and Minimization Measures to Protect Adjacent Wetlands

The following avoidance and protection measures shall be implemented for Waters of the U.S. and Waters of the State adjacent to areas of planned disturbance that will not be impacted (filled or excavated) during Project construction:

- Impacts to wetlands/waters shall be avoided or minimized to the greatest extent feasible in the final design plans.
- Adjacent wetlands shall be clearly identified in the final construction documents (100% design plan set).
- Suitable perimeter control measures, such as silt fences, or straw wattles shall be placed below all construction activities at the edge of surface water features to intercept sediment before it reaches the waterway. These measures shall be installed prior to any clearing or grading activities.

Mitigation Measure BIO-4: Compensate for Loss of Wetlands

The HCSD shall avoid fill and conversion of seasonal wetlands and waters, to the extent feasible. If fill cannot be avoided, the Project shall compensate for the loss of seasonal wetland habitat to ensure there is no net loss in wetlands. The HCSD shall compensate for impacts to identified wetlands through restoration, rehabilitation, and/or creation of wetland at a ratio of no less than 1:1 and to the satisfaction of jurisdictional agencies.

A Habitat, Mitigation, and Monitoring Plan (HMMP) shall be prepared in coordination with the NCRWQCB, the USACE, and the CCC. The HMMP shall be acceptable to the regulatory agencies with jurisdiction over wetlands and waters and include the following elements: mitigation ratios, description and size of the restoration or compensatory area, site preparation and design, plant species, planting design and techniques, maintenance activities, irrigation requirements, success criteria, monitoring schedule, and remedial measures. Three-parameter wetland mitigation shall occur on-site. The HMMP shall be implemented by the HCSD.

The HCSD shall also compensate for impacts to other waters by obtaining required permits from the USACE, the NCRWQCB, and the CCC, and shall be received prior to the start of any on-site construction activity. The HCSD shall ensure any additional measures outlined in the permits are implemented.

With the implementation of Mitigation Measure BIO-3 and BIO-4, impacts to wetlands would be less than significant.

d) 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? (No Impact)

Wildlife corridors refer to established migration routes commonly used by resident and migratory species for passage from one geographic location to another. Maintaining the continuity of established wildlife corridors is important to: (a) sustain species with specific foraging requirements, (b) preserve a species' distribution potential, and (c) retain genetic diversity among many wildlife populations. Therefore, resource agencies consider wildlife corridors to be a sensitive resource.

No Essential Connectivity Areas have been identified within the BSA, and the nearest is approximately 20 miles east (CDFW 2026a). However, habitat adjacent to the BSA has the potential to function as a riparian corridor for bird species. Shrub cover along the roads may facilitate the movement of songbird species, provide nesting habitat, and provide cover from predator species by acting as a hedgerow. Although these features facilitate connectivity, this is a highly disturbed area by vehicular traffic along Hoover Street, which can negatively influence reproductive success. Residential roads may also be barriers to certain species' movement.

The BSA is in a developed setting and does not occur within a mapped regional wildlife corridor or Natural Landscape Block identified by the California Essential Habitat Connectivity Project (CDFW 2026a). While limited hydrologic connectivity to Eureka Slough is present via localized drainage or tidally influenced features, the BSA does not provide a functional terrestrial or aquatic movement corridor, and the Project would not impede use of nearby habitats for movement or nursery functions. The Project does not include any elements that would impede migration of native resident or migratory fish. The Project also does not include any elements that would result in new barriers to terrestrial wildlife movement. The existing fence around the lift station would remain unchanged, and the proposed flood wall would extend approximately eight feet above grade. The Project would not interfere with the migration of birds, bats, or other species. No impact would result.

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance? (Less Than Significant with Mitigation Incorporated)

The Project is located within the Humboldt Bay Area Plan of the Humboldt County LCP (Humboldt County 2022). The Humboldt Bay Area Plan identifies land uses and standards by which development would be evaluated within the Coastal Zone as defined by the California Coastal Act. The indicated uses and standards adopted by Humboldt County, and certified by the CCC, are in conformance and satisfy the policies and requirements for coastal land use contained in the California Coastal Act and other related legislation. Humboldt Bay Area Plan Section 3.30 describes the Natural Resources Protection Policies and Standards. The Humboldt Bay Area Plan defines ESHAs as "any area in which plant or animal life or their habitats are either rare, including locally 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." Humboldt Bay Area Plan Chapter 3 identifies the following environmentally sensitive habitats within the Humboldt Bay Planning Area:

- Wetlands and estuaries, including Humboldt Bay and the mouth of the Mad River
- Vegetated dunes along the North Spit to the Mad River and along the South Spit
- Rivers, creeks, gulches, sloughs and associated riparian habitats, including Mad River Slough, Ryan Slough, Eureka Slough, Freshwater Slough, Liscom Slough, Fay Slough, Elk River, Salmon Creek, and other streams
- Critical habitats for rare and endangered species listed on state or federal lists

The Project is not located on the North or South Spit and does not contain dune habitat, and it is not located within areas defined as critical habitat (**Appendix C**). However, the Project is located adjacent to Eureka Slough and contains wetlands. As wetlands located within the Project Area would not be significantly impacted by the Project with implementation of Mitigation Measure BIO-2, BIO-3, and BIO-4, the Project would not conflict with any policies in the Humboldt Bay Area Plan. Therefore, impacts to wetlands would be less than significant with mitigation.

f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan? (No Impact)

Currently there is not an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plans that cover the Project Area (CDFW 2026b). No impact would result.

3.5 Cultural Resources

	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?				X
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?		X		
c) Disturb any human remains, including those interred outside of formal cemeteries?		X		

Impact analysis related to cultural resources is based on the ASR prepared for the Project (Roscoe and Associates 2025). The study area in this section is termed the Area of Potential Effect (APE).

a) Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5? (No Impact)

The archaeological investigation identified no historic properties or historical resources (as defined in PRC Section 15064.5(a)) within the APE. Records searches of the California Historical Resources Information System archival research, aerial photos, and pedestrian survey confirmed that the APE was undeveloped until construction of the lift station in the early 1970s and does not qualify as a historical resource (Roscoe and Associates 2025). Therefore, the Project would not result a substantial adverse change in the significance of a historical resource pursuant to PRC Section 21084.1 (Roscoe and Associates 2025).

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5? (Less Than Significant Impact with Mitigation Incorporated)

Seven Wiyot archaeological sites were reported within 0.5 miles of the APE. No resources are documented in the direct APE; however, several sites are in very close proximity (within 100 feet). Within the APE, pedestrian field surveys conducted by Roscoe and Associates did not yield artifacts, features, sites or other archaeological cultural resources (Roscoe and Associated 2025). Because of historical development in this area, archaeological resources may not be observable during surface survey, and the extent of previously recorded resources may not be known.

Native American tribes and individuals and the NAHC were contacted by Roscoe and Associates to discuss the proposed Project. This correspondence resulted in recommendations for monitoring all excavation work related to this Project. The Wiyot Tribe Tribal Historic Preservation Officer (THPO) recommended that a tribal monitor be present during construction activities in specific locations within the Project Area. The ASR suggests working with the Wiyot Tribe to develop a monitoring plan that identifies postimplementation recording requirements, how discoveries would be addressed, and how collections would be curated or reburied. Coordination between the lead agency, the applicant, and the Wiyot Tribe was recommended prior to construction to confirm monitoring scope and procedures.

Although no archaeological resources were identified, the potential for inadvertent discovery during construction could result in a potentially significant impact.

Mitigation

Implementation of Mitigation Measure CR-1 would reduce the potential impact to archaeological resources or human remains by requiring a cultural monitor and providing procedures that shall be taken in the event of inadvertent discovery.

Mitigation Measure CR-1: Cultural Monitoring and Inadvertent Archaeological Discoveries

The HCSD will retain a qualified cultural resource monitor who is approved by the Wiyot Tribe to monitor ground disturbing activities related to this Project in areas the Tribes deem culturally sensitive, specifically any ground disturbance within 100 feet of a recorded site.

The HCSD will contact the THPO from the Wiyot Tribe or their functional equivalent to set up and implement a cultural monitoring contract when a construction schedule has been determined. Advanced coordination with the qualified cultural monitor is required. The HCSD shall provide written verification for compliance with this mitigation measure. If cultural or historic-era resources are encountered during construction activities, the contractor on-site shall cease all work in the immediate area and within a 66-foot buffer of the discovery location. A qualified archaeologist, as well as the THPO for the Wiyot Tribe shall be contacted to evaluate the discovery and, in consultation with the HCSD, develop a treatment plan in any instance where significant impacts cannot be avoided.

Implementation of Mitigation Measure CR-1 would reduce the potential impacts to a less-than-significant level during construction because a plan would be implemented to require a cultural monitor, address discovery of unanticipated archaeological resources, and to preserve and/or record those resources consistent with appropriate laws and requirements.

c) Disturb any human remains, including those interred outside of formal cemeteries? (Less Than Significant Impact with Mitigation Incorporated)

Archaeological resources are not expected to be present within the APE; however, inadvertent discovery of human remains may still occur. In the event human remains are encountered during construction, impacts would be potentially significant. Mitigation Measure CR-2 would be implemented to reduce the potential impact to related to the unanticipated discovery of human remains.

Mitigation

Implementation of Mitigation Measure CR-2 would reduce the potential impact to archaeological resources or human remains by establishing procedures that shall be followed in the event of inadvertent discoveries.

Mitigation Measure CR-2: Inadvertent Discovery of Human Remains

If human remains are discovered during Project construction, work will stop at the discovery location, within 66 feet, and any nearby area reasonably suspected to overlie human remains (PRC, Section 7050.5). The Humboldt County Coroner will be contacted to determine if the cause of death must be investigated. If the Coroner determines that the remains are of Native American origin, it is necessary to comply with State laws relating to the disposition of Native American burials, which fall within the jurisdiction of the Native American Heritage Commission (NAHC, PRC, Section 5097). The Coroner will contact the NAHC. The descendants or most likely descendants of the deceased will be contacted, and work will not resume until they have made a recommendation to the landowner or the person responsible for the excavation work for means of treatment and disposition, with appropriate dignity, of the human remains and any associated grave goods, as provided in PRC Section 5097.98.

Implementation of Mitigation Measure CR-2 would reduce the potential impacts to a less-than-significant level during construction because a plan would be implemented to address the discovery of unanticipated human remains and to preserve and/or record those resources consistent with applicable laws and regulatory requirements.

3.6 Energy Resources

	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a) Result in potentially significant environmental impacts due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?		X		
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?				X

a) Result in potentially significant environmental impacts due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation? (Less Than Significant with Mitigation Incorporated)

Construction of the Project would involve a variety of earthwork and construction processes involving the use of heavy equipment as discussed in Section 3.3 (Air Quality). Construction would require the use of fuels, primarily gas, diesel, and motor oil. Construction emissions were estimated using CalEEMod version 2022.1.1.44 and were estimated to be approximately 273 metric tons of carbon dioxide (MTCO₂e) from all construction activities (**Appendix B**). The Project's construction emissions equal 9.1 MTCO₂e per year when annualized over the assumed 30-year lifespan of the Project. Peak travel associated with Project construction would consist of approximately 38 vehicular round trips per day, and construction equipment would remain staged in the Project Area once mobilized. Excess soils and construction materials would be stored on-site within previously designated staging areas only. Excess soils may be re-used on-site for backfill and finished grading. Excess soils would not remain stockpiled on-site once the Project is complete. The contractor may haul additional excess soils off-site for legal use at other permitted sites.

The consumption of energy resources during construction would be reduced through the implementation of Mitigation Measure AQ-1 (Measures to Reduce Air Pollution). Equipment idling times would be minimized either by shutting equipment off when not in use or reducing the maximum idling time to five minutes or less (as required by Mitigation Measure AQ-1). Because construction would not encourage activities that would result in the use of large amounts of fuel and energy in a wasteful manner, and the incorporation of Mitigation Measure AQ-1 would reduce idling time, impacts related to the inefficient use of construction-related fuels would be less than significant with mitigation.

Operation of the Project would include maintenance and monitoring as described in Section 1.8 and would be consistent with maintenance and monitoring of the existing stormwater infrastructure. Operation and maintenance of the Project would not generate additional vehicle trips nor result in an increase in energy use above existing conditions. The potential for wasteful, inefficient, or unnecessary consumption of energy resources would be less than significant with the incorporation of Mitigation Measure AQ-1.

b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency? (No Impact)

The Project was evaluated for consistency with applicable state, regional, and local plans adopted for the purpose of promoting renewable energy, energy efficiency, and climate change mitigation. Based on this review, the Project would not conflict with or obstruct any such plans.

At the county level, the 2025 Humboldt County Regional Climate Action Plan establishes goals and strategies to reduce greenhouse gas emissions through energy efficiency, electrification of equipment and operations, reduced reliance on fossil fuels, and modernization of infrastructure to support cleaner energy systems (Humboldt County 2025). Key strategies include improving energy efficiency in existing and new facilities, electrifying transportation and industrial operations where feasible, and supporting infrastructure investments that enable a transition to lower

emission energy sources. The Project elements are consistent with these regional strategies and would not impede their implementation.

In addition to policy consistency, the Project would be subject to and required to comply with the California Building Energy Efficiency Standards (California Code of Regulations Title 24) and related provisions of the California Green Building Standards Code (CALGreen), which are primary statewide mechanisms for implementing energy efficiency and electrification goals. Compliance with these mandatory standards ensures that new and modified buildings and systems associated with the Project would meet or exceed state energy efficiency requirements, further supporting alignment with adopted plans. Therefore, no impact would result.

3.7 Geology and Soils

	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
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? Refer to Division of Mines and Geology Special Publication 42?				X
ii. Strong seismic ground shaking?			X	
iii. Seismic related ground failure, including liquefaction?				X
iv. Landslides?				X
b) Result in substantial soil erosion or the loss of topsoil?		X		
c) 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?				X
d) 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?				X
e) 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?				X
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?		X		

The Project Area is generally flat with regional geology likely influenced by seismic activity as a result of the relatively close proximity of the Mendocino Triple Junction to the Project. A spur of the Mad River Fault Zone is located approximately 8.28 miles northeast of the Project, and a spur of the Little Salmon Fault Zone is located approximately 6.5 miles south of the Project Area as mapped by the California Geological Survey (CGS 2026). Review of historical aerial photographs indicates that most of the Project Area has historically been part of Eureka Slough.

The Project Area is predominantly composed of Hydraquents mucky silt loam with strong salinity and zero to one percent slopes. A small portion of the southern extent consists of the lepoil–candymountain complex with slopes ranging from two to fifteen percent, as well as the Hookton–Tablebluff complex with slopes between two and nine percent (**Appendix D**). The hydraquents mucky silt loam consists of mucky silt loam from the ground surface to approximately 13 inches below ground surface, underlain by mucky silty clay loam to 51 inches, with deeper mucky silt loam extending to about 79 inches below ground surface. Soils formed in estuarine deposits are very poorly drained, strongly saline, and influenced by a shallow water table and frequent flooding.

a.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? Refer to Division of Mines and Geology Special Publication 42. (No Impact)

According to the California Geological Survey, there are no earthquake fault zones in the Project Area or vicinity. The closest fault zone is the Fickle Hill Fault, in the Mad River Fault Zone, located in Arcata approximately 5.4 miles north of the Project Area (CGS 2026). Thus, there is no risk of the Project to cause potential substantial adverse effects from the rupture of a fault. No impact would result.

a.ii) Strong seismic ground shaking? (Less Than Significant Impact)

The Project is situated within a seismically active area close to several seismic sources capable of generating moderate to strong ground motions. Because the Project is located within a seismically active area, the probability that strong ground shaking associated with large magnitude earthquakes would occur during the design life of the Project is high.

The Project Area is in proximity to numerous Quaternary faults located in both the onshore and offshore areas, including the Cascadia subduction zone, Gorda plate, and shallow upper plates (e.g., Mad River and Little Salmon fault zones). The Mendocino fault zone and San Andreas fault also have the potential to generate strong ground motion in the Project Area. The Humboldt County coast is a highly active tectonic region that has been subjected to numerous earthquakes of low to moderate strength and occasionally to very strong earthquakes. Seismicity in the region is attributed primarily to the Mendocino Triple Junction, the interaction between the Pacific, Gorda, and North American plates. The Project would be an isolated and contained flood protection improvement within an existing developed utility site and would not directly or indirectly increase exposure of people or structures to potential substantial adverse effects from strong ground shaking. Thus, a less than significant impact would result.

a.iii, aiv, c, d) Liquefaction, landslides, or otherwise unstable soils? (No Impact)

Liquefaction is a phenomenon involving loss of soil strength and resulting in fluid mobility through the soil. Liquefaction typically occurs when loose, uniformly sized, saturated sands or silts are subjected to repeated shaking in areas where the groundwater is less than 50 feet below ground surface. In addition to the necessary soil and groundwater conditions, the ground acceleration must be high enough, and the duration of the shaking must be sufficient for liquefaction to occur. The Project is in a mapped liquefaction hazard zone (Humboldt County 2026c). However, the Project does not contain elements that would be substantially impacted by liquefaction and would not directly or indirectly increase exposure of people or structures to potential substantial adverse effects from liquefaction. Therefore, no impact would occur.

The Project Area is located below a steep slope and has the potential for landslides. The floodwall design would be consistent with the Project's geotechnical recommendations. As a result, landslides within or near the Project Area are unlikely to occur, and the Project would not increase the potential for hazards as a result of a landslide. Therefore, no impact would occur.

Expansive soils, which can undergo shrink/swell behavior due to changes in moisture content, are present within portions of the Project Area. Soils with a Plasticity Index (PI) greater than 12 are generally considered expansive (Caltrans 2023). NRCS mapping indicates that the Hookton–Tablebluff complex contains relatively high clay content (approximately 27.6%) but exhibits a PI of 10.8, indicating low to moderate expansion potential. In contrast, the Lepoil–candymountain complex has a recorded PI of approximately 15.4 with a clay content of about 23.2%, indicating a moderate potential for expansion (**Appendix D**). Although some soils within the Project Area exhibit characteristics associated with expansiveness, the overall geologic conditions do not indicate a substantial risk of liquefaction, landsliding, or other forms of unstable soils. Compliance with standard engineering design and construction practices would ensure soil stability. Therefore, no impact would occur.

The Project would be designed and constructed in conformance with the site-specific recommendations contained in the geotechnical report prepared for the Project and any subsequent Project-related geotechnical reports (Crawford and Associates 2026). Project adherence to geotechnical design recommendations during construction and operation

would result in a no impact in hazards caused by the Project due to landslides, lateral spreading, subsidence, or collapse.

b) Result in substantial soil erosion or the loss of topsoil? (Less Than Significant with Mitigation Incorporated)

The Project Area is comprised of predominantly comprised Hydraquents mucky silt loam, and a small portion of the southern extent of the Project Area is comprised of lepoil–candymountain complex at depths less than seven feet from the surface (**Appendix D**). Construction activities, including excavation, grading, soil compaction, and operation of heavy machinery would disturb soil and have the potential to cause erosion. Erosion and sediment control provisions prescribed in the Humboldt County Municipal Code would be required to be implemented as part of the Project. Erosion prevention measures would include silt traps, straw wattles, soil stabilization controls, and site watering for controlling dust. Measures would be designed to stabilize soils and minimize the potential transport of sediment to receiving waters during and post construction. Implementation of BIO-3 would reduce potential soil erosion impacts from construction. The impact would be less than significant with mitigation.

e) 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? (No Impact)

The Project includes modifications to the wastewater collection system, consisting of the relocation of an existing manhole, realignment of the associated pipeline, and installation of two new force main fittings to support temporary bypass pumping during construction. The Project would not utilize septic tanks or alternative wastewater disposal systems; therefore, soil suitability for such systems is not applicable and no impact would occur.

f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature? (Less Than Significant with Mitigation Incorporated)

Paleontological resources are the remains or traces of prehistoric animals and plants. Paleontological resources, which include fossil remains and geologic sites with fossil-bearing strata are non-renewable and scarce and are a sensitive resource afforded protection under environmental legislation in California. Under California PRC § 5097.5, unauthorized disturbance or removal of a fossil locality or remains on public land is a misdemeanor. State law also requires reasonable mitigation of adverse environmental impacts that result from development of public land and affect paleontological resources (PRC § 30244).

It is unlikely that Project construction would impact potentially significant paleontological resources because most of the Project occurs in relatively newly deposited alluvium. However, the possibility of encountering a paleontological resource during construction cannot be completely discounted; therefore, the impact related to the potential disturbance or damage of previously undiscovered paleontological resources, if present, is potentially significant.

Mitigation

Implementation of Mitigation Measure GEO-1 would reduce the potential impact of construction activities on unknown paleontological resources to a less-than-significant level by addressing the discovery of unanticipated buried resources and preserving and/or recording those resources consistent with applicable laws and requirements.

Mitigation Measure GEO-1: Inadvertent Discovery of Paleontological Resources

In the event that fossils are encountered during construction (i.e., bones, teeth, or unusually abundant and well-preserved invertebrates or plants), construction activities shall be diverted away from the discovery within 50 feet of the find, and a professional paleontologist shall be notified to document the discovery as needed, to evaluate the potential resource, and to assess the nature and importance of the find. Based on the scientific value or uniqueness of the find, the paleontologist may record the find and allow work to continue, or recommend salvage and recovery of the material, if it is determined that the find cannot be avoided. The paleontologist shall make recommendations for any necessary treatment that is consistent

with currently accepted scientific practices. Any fossils collected from the area shall then be deposited in an accredited and permanent scientific institution where they will be properly curated and preserved.

Implementation of Mitigation Measure GEO-1 would reduce the potential impact of construction activities on unknown paleontological resources to a less-than-significant level by addressing the discovery of unanticipated paleontological resources and preserving and/or recording those resources consistent with applicable laws and requirements.

3.8 Greenhouse Gas Emissions

	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?			X	
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?				X

Evaluating climate impacts under CEQA can be challenging because global climate change is inherently a cumulative problem. Greenhouse gas (GHG) emissions are regulated and evaluated in California through a comprehensive framework of state law, CEQA requirements, and adopted regional and local climate plans.

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment? (Less Than Significant Impact)

The Project is located within the jurisdictional boundaries of NCUAQMD. The NCUAQMD have not adopted regulations regarding the evaluation of GHG emissions in a CEQA document and has not established CEQA significance criteria to determine the significance of impacts regarding GHGs. Therefore, the following analysis focuses on the Humboldt Regional Climate Action Plan (RCAP) GHG thresholds related to specific project design elements. Implementation of the Project would incrementally add to overall greenhouse gas emissions in the region. Construction GHG emissions are a one-time release and are, therefore, not typically expected to generate a significant contribution to global climate change.

Pursuant to CEQA Guidelines Section 15183.5, a project that is consistent with a qualified GHG reduction plan, such as the RCAP, may rely on that plan for CEQA streamlining and would not result in a significant GHG impact. This involves determining consistency with land use and zoning designations, as well as consistency with the County's CEQA GHG Emissions Streamlining Checklist. The County has also adopted CEQA GHG thresholds to evaluate whether future development projects may have significant greenhouse gas impacts. These thresholds apply when a project cannot demonstrate consistency with the RCAP and therefore requires a project-specific GHG analysis. Thresholds and summarized in **Table 3.8-1** below.

Table 3.8-1 County CEQA GHG Emissions Thresholds

Project Type	New Residential	New Non-Residential	New Mixed-Use ¹
Urban	5.28 MT CO ₂ e per full-time equivalent employee	5.28 MT CO ₂ e per full-time equivalent employee	3.37 MT CO ₂ e per service person ²
Rural	2.38 MT CO ₂ e per resident	5.30 MT CO ₂ e per full-time equivalent employee	3.30 MT CO ₂ e per service person

Notes: MT CO₂e = metric tons of carbon dioxide equivalent.

1: GHG emissions from new mixed-use development would count against the total remaining GHG emissions budget for both new residential and new non-residential development rather than as a function of the number of new service people expected in 2030. This avoids double counting.

2: The service population is equal to the residential population plus the number of full-time equivalent employees.

As described in Section 3.11, Land Use and Planning, the Project is consistent with the land use and zoning regulations. The Project is also consistent with the RCAP for purposes of CEQA Guidelines Section 15183.5 and would not result in a significant GHG impact on this basis.

Additionally, construction GHG emissions were modeled over an assumed 30-year Project lifespan and added to operational emissions. Based on CalEEMod modeling (attached as **Appendix B**), Project construction activities would result in a small, temporary increase in GHG emissions, including exhaust emissions from on-road trucks, worker commute vehicles, and off-road heavy-duty equipment. Construction would require clearing, earthmoving, and delivery equipment, as used for similar projects, and which have been accounted for in the State's emission inventory and reduction strategy for both on and off-road vehicles. Construction emissions were estimated using CalEEMod version 2022.1.1.44 and were estimated to be approximately 273 MTCO_{2e} from all construction activities. The Project's construction emissions equal 9.1 MTCO_{2e} per year when annualized over the assumed 30-year lifespan of the Project. For purposes of applying the thresholds in Table 3.8-1, the Project is most appropriately characterized as a new non-residential infrastructure improvement because it would modify and protect an existing public wastewater utility facility. The new non-residential threshold is expressed in MT CO_{2e} per full-time equivalent employee. However, the Hoover Street lift station is an unmanned facility and would not create new permanent employment or require full-time on-site staffing. Following construction, the site would only be occupied intermittently during routine inspection, maintenance, and repair activities, consistent with existing operation of the facility. Because the Project would not add full-time equivalent employees, the per-employee non-residential threshold is not directly applicable as a measure of ongoing operational emissions. Operational GHG emissions would therefore remain limited to occasional maintenance vehicle trips and would not represent a substantial new source of GHG emissions. Accordingly, the Project would be consistent with the RCAP and would not exceed or conflict with the new non-residential GHG threshold identified in Table 3.8-1. Therefore, the Project's GHG emissions would be less than significant.

b) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases? (No Impact)

The Project was evaluated for consistency with applicable plans, policies, and regulations adopted for the purpose of reducing GHG emissions, including the RCAP (Humboldt County 2025). Projects that are consistent with the RCAP would not conflict with the County's ability to achieve its GHG reduction targets. The Project would not interfere with implementation of the RCAP because it does not introduce new development, population growth, or operational characteristics that would conflict with the land use assumptions, emissions reduction strategies, or performance targets established in the plan. As discussed in Section 3.11, the Project is consistent with applicable land use designations and zoning and maintains the existing public utility use. The Project involves improvements to an existing, unmanned wastewater lift station and would not generate additional employment, vehicle trips beyond intermittent maintenance, or long-term operational emissions. Furthermore, the Project does not conflict with or obstruct any RCAP measures related to energy use, transportation, land use, or infrastructure planning. As such, it is consistent with the RCAP. Therefore, the Project would not result in a significant impact related to GHG emissions, and impacts would be less than significant.

The California Air Resource Board (CARB) 2022 Scoping Plan identifies a path to meet the SB 32 GHG emission reduction goals, as well as reducing anthropogenic GHG emissions to 85% below 1990 levels by 2045, and achieving carbon neutrality by 2045 or earlier, consistent with Assembly Bill 1279 (AB 1279). The 2022 Scoping Plan includes measures to move to a zero-emissions (decarbonized) transportation sector and phasing out the use of natural gas in residential and commercial buildings. The 2022 Scoping Plan would also reduce emissions of short-lived climate pollutants and includes mechanical CO₂ removal and carbon capture and sequestration actions, as well as natural working lands management and nature-based strategies. The plan's measures are identified in Table 2-2 and Table 2-3 of the 2026 Scoping Plan. The measures are statewide and programmatic in nature. The 2022 Scoping Plan is largely advisory, as CARB does not directly regulate many of the sectors identified by the plan's measures.

The 2022 Scoping Plan states that local action by municipalities can support and amplify efforts to reduce GHGs. Local government decisions play a critical role in supporting state-level measures to contain the growth of GHG emissions associated with the transportation system and the built environment. Local actions, provided in Appendix D of the 2022 Scoping Plan, are not required by statutory or gubernatorial direction, and are not binding, but contain guidance and information regarding actions that other jurisdictions may choose to take that complement the 2022

Scoping Plan measures. However, the 2022 Scoping Plan measures are broad policy and regulatory initiatives that would be implemented at the state-level and do not relate to the construction and operation of individual projects such as the Project.

Project construction would cause a temporary increase in GHGs; however, as discussed above, Project emissions would not exceed the identified emission thresholds. The Project is analyzed for consistency with the 2022 Scoping Plan in **Table 3.8-2**. As shown in the table, the Project is consistent with the actions for the Scoping Plan scenario outlined in the 2022 Scoping Plan for AB 32 GHG inventory sectors. Therefore, the Project would not conflict with SB 32, AB 1279, or the 2022 Scoping Plan and would result in no impact.

Table 3.8-2 Consistency Analysis Between Project and 2022 Scoping Plan

Scoping Plan Sector and Action	Consistency/Applicability Determination
GHG Emissions Reductions Relative to the SB 32 Target – 40% below 1990 levels by 2030.	Not Applicable. This is a statewide measure that cannot be implemented by the Project or lead agency.
Smart Growth / Vehicle Miles Traveled (VMT) – VMT per capita reduced 25% below 2019 levels by 2030, and 30% below 2019 levels by 2045.	Not Applicable. This is a statewide measure and VMT reduction goal that is not applicable to all individual projects due to regional variations and growth projections. Additionally, the Project would not generate new or increased operational trips.
Light-duty Vehicle (LDV) Zero Emission Vehicles (ZEVs) – 100% of LDV sales are ZEV by 2035.	Not Applicable. This is a statewide measure that cannot be implemented by the Project or lead agency. However, the standards would be applicable to the light-duty vehicles that would access the Project Area during construction and operation.
Truck ZEVs – 100% of medium-duty (MDV)/HDV sales are ZEV by 2040 (AB 74 University of California Institute of Transportation Studies report).	Not Applicable. This is a statewide measure that cannot be implemented by the Project or lead agency.
Aviation – 20% of aviation fuel demand is met by electricity (batteries) or hydrogen (fuel cells) in 2045. – Sustainable aviation fuel meets most or the rest of the aviation fuel demand that has not already transitioned to hydrogen or batteries.	Not Applicable. This is a statewide measure that cannot be implemented by the Project or lead agency. The Project does not involve an aviation uses.
Ocean-going Vessels (OGV) – 2020 OGV At-Berth regulation fully implemented, with most OGVs utilizing shore power by 2027. – 25% of OGVs utilize hydrogen fuel cell electric technology by 2045.	Not Applicable. The Project does not involve OGV.
Port Operations – 100% of cargo handling equipment is zero emission by 2037. – 100% of drayage trucks are zero emission by 2035.	Not Applicable. The Project does not involve a port.
Freight and Passenger Rail – 100% of passenger and other locomotive sales are ZEV by 2030. – 100% of line haul locomotive sales are ZEV by 2035. – Line haul and passenger rail rely primarily on hydrogen fuel cell technology, and others primarily utilize electricity.	Not Applicable. The Project does not involve freight or passenger rail.
Oil and Gas Extraction – Reduce oil and gas extraction operations in line with petroleum demand by 2045.	Not Applicable. The Project does not involve oil or gas extraction.
Petroleum Refining	Not Applicable. The Project does not involve or petroleum refining.

Scoping Plan Sector and Action	Consistency/Applicability Determination
– CCS on majority of operations by 2030, beginning in 2028. – Production reduced in line with petroleum demand.	
Electricity Generation – Sector GHG target of 38 million metric tons of carbon dioxide equivalent (MMTCO₂e) in 2030 and 30 MMTCO₂e in 2035. – Retail sales load coverage. – 20 gigawatts (GW) of offshore wind by 2045. – Meet increased demand for electrification without new fossil gas-fired resources.	Not Applicable. This measure would apply to electricity providers. The Project is not an electricity provider.
New Residential and Commercial Buildings – All electric appliances beginning 2026 (residential) and 2029 (commercial), contributing to 6 million heat pumps installed statewide by 2030.	Not Applicable. The Project does not include new residential or commercial buildings.
Existing Residential Buildings – 80% of appliance sales are electric by 2030 and 100% of appliance sales are electric by 2035. – Appliances are replaced at end of life such that by 2030 there are 3 million all-electric and electric-ready homes – and by 2035, 7 million homes – as well as contributing to 6 million heat pumps installed statewide by 2030.	Not Applicable. This is a measure for the state to modify its requirements for appliance sales to affect energy efficiency of existing residential buildings. The Project would not include appliance manufacturing or sales, or continued use of existing residential buildings.
Existing Commercial Buildings – 80% of appliance sales are electric by 2030, and 100% of appliance sales are electric by 2045. – Appliances are replaced at end of life, contributing to 6 million heat pumps installed statewide by 2030.	Not Applicable. The Project would not include continued use or existing commercial buildings.
Food Products – 7.5% of energy demand electrified directly and/or indirectly by 2030; 75% by 2045.	Not Applicable. The Project does not include agricultural or mass food production.
Construction Equipment – 25% of energy demand electrified by 2030 and 75% electrified by 2045.	Not Applicable. Although the Project would involve the use of construction equipment, construction would occur in 2024, prior to the electrification goal. Additionally, the Project would not own the construction fleet used.
Chemicals and Allied Products; Pulp and Paper – Electrify 0% of boilers by 2030 and 100% of boilers by 2045. – Hydrogen for 25% of process heat by 2035 and 100% by 2045. – Electrify 100% of other energy demand by 2045.	Not Applicable. This measure would apply to the energy sources for pulp and paper manufacturers. The Project does not involve pulp or paper manufacturing.
Stone, Clay, Glass, and Cement – CCS on 40% of operations by 2035 and on all facilities by 2045. – Process emissions reduced through alternative materials and CCS.	Not Applicable. This measure would apply to the direct GHG emissions from CCS industries. The Project is not a CCS industry.
Other Industrial Manufacturing – 0% energy demand electrified by 2030 and 50% by 2045.	Not Applicable. This measure would apply to the energy sources for industrial manufacturers. The Project is not an industrial manufacturer.
Combined Heat and Power – Facilities retire by 2040.	Not Applicable. This measure would apply to the existing combined heat and power energy facilities. The Project is not a combined heat and power facility.
Agriculture Energy Use – 25% energy demand electrified by 2030 and 75% by 2045.	Not Applicable. The Project does not include agricultural production.
Low Carbon Fuels for Transportation – Biomass supply is used to produce conventional and advanced biofuels, as well as hydrogen.	Not Applicable. This measure would apply to bulk fuel providers. The Project is not a fuel provider.

Scoping Plan Sector and Action	Consistency/Applicability Determination
Low Carbon Fuels for Buildings and Industry – In 2030s blended in pipeline. – Renewable hydrogen blended in fossil gas pipeline at 7% energy (~20% by volume), ramping up between 2030 and 2040. – In 2030s, dedicated hydrogen pipelines constructed to serve certain industrial clusters.	Not Applicable. This measure would apply to natural gas utilities and energy providers. The Project is not an energy provider.
Non-combustion Methane Emissions – Increase landfill and dairy digester methane capture. – Some alternative manure management deployed for smaller dairies. – Moderate adoption of enteric strategies by 2030. – Divert 75% of organic waste from landfills by 2025. – Oil and gas fugitive methane emissions reduced 50% by 2030 and further reductions as infrastructure components retire in line with reduced fossil gas demand.	Consistent. The Project does not include a landfill or dairy. The Project would reduce construction waste with implementation of state mandated recycling and reuse mandates.
High GWP Potential Emissions – Low GWP refrigerants introduced as building electrification increases, mitigating HFC emissions.	Not Applicable. The Project does not include appliances that would use refrigerants.

Source of Scoping Plan Reduction Measures: CARB 2022

3.9 Hazards and Hazardous Materials

	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?			X	
b) 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?		X		
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				X
d) 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?				X
e) 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?			X	
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?			X	
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?			X	

This section evaluates the potential for the Project to create hazards to the public or the environment through the use, storage, transport, or disposal of hazardous materials. It also considers the presence of existing contamination, proximity to hazardous materials sites, and potential impacts related to emergency response, accidental releases, and wildfire risk.

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials? (Less Than Significant)

Construction of the Project would include the transport and use of common hazardous materials inherent to the construction process, including petroleum products such as fuel and lubricants for construction equipment and vehicles, concrete curing compounds, and solvents for construction of Project improvements. These materials are commonly used during construction, are not acutely hazardous, and would be used in relatively small quantities.

Hazardous materials storage, handling, and transportation must comply with local, state, and federal laws. Hazardous materials used during construction of the Project would be subject to applicable regulations, including California Health and Safety Code Section 25531, Division 20, Chapter 6.5, and other standards enforced by the various departments and boards under the California Environmental Protection Agency (Cal/EPA). The Project would be subject to Cal/EPA hazardous materials regulations consolidated under the state's Unified Program enforced by the Department of Toxic Substances Control (DTSC), the State Water Resources Control Board (SWRCB), NCRWQCB, NCUAQMD, and the Department of Resources Recycling and Recovery (CalRecycle). The Cal/EPA administers the Unified Program via

local Certified Unified Program Agencies (CUPAs). The CUPA for Humboldt County is the Humboldt County Division of Environmental Health (HCDEH). The HCDEH Hazardous Materials Unit has jurisdiction over the Project Area and is tasked with local CUPA inspections and compliance. Project activities involving the transport, use, storage, and disposal of hazardous materials would be in accordance with established rules and regulations.

Worker exposure to hazardous materials is regulated by California Department of Industrial Relations, Division of Occupational Safety and Health (Cal/OSHA) and requires worker safety protections. Cal/OSHA enforces hazard communication regulations which require worker training and hazard information (signage/postings) compliance. In addition, hazard communication compliance includes procedures for identifying and labeling hazardous substances, communicating information related to hazardous substances storage, handling, and transportation; and preparation of health and safety plans to protect employees.

Project construction specifications would require the management of hazardous materials to comply with applicable laws, rules, and regulations. During Project construction, the contractor would be required to contain hazardous materials and avoid exposure to workers, the public, and the surrounding environment during construction. An appropriate facility would be utilized for legal disposal of any hazardous materials generated.

Project construction would not require implementation of stormwater management requirements during construction. Stormwater management requirements for addressing materials management would be required, including proper material delivery and storage, spill prevention and control, and management of concrete and other wastes, as described in Section 3.10 (Hydrology and Water Quality).

The established regulatory framework, BMPs, and requisite construction protocols provide appropriate risk mitigation and hazard protections; therefore, the Project would not create a significant hazard to the public or environment from hazardous materials. Because the Project and its contractors would be required to comply with existing and future hazardous materials laws and regulations addressing the transport, storage, use, and disposal of hazardous materials, the potential to create a significant hazard to the public or the environment during Project construction would be less than significant.

Following construction, operation of the Project would require intermittent maintenance and repair, which could involve hazardous materials. The operational risk posed by intermittent maintenance and repair of the lift station specific to hazardous materials is low. The potential to create a significant hazard to the public or the environment during Project operation would be less than significant.

b) 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? (Less Than Significant Impact with Mitigation Incorporated)

The Project would utilize heavy machinery to perform some construction-related tasks including grading, excavation, and transportation of materials. There is always the possibility when equipment is operating that an accident could occur, and fuel could be released onto the soil. Equipment on-site during construction would be required to have emergency spill cleanup kits immediately accessible in case of any fuel or oil spills. With implementation of BIO-2, equipment would not be refueled near the Humboldt Bay, Eureka Slough, or any perennial wetland. If equipment must be washed, it would be washed off-site. The potential impact would be less than significant.

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school? (No Impact)

There are no existing or proposed schools located within 0.25-mile of the Project Area. Therefore, no impacts would occur.

- d) 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? (No Impact)**

Based on information contained in the SWRCB Geotracker website (SWRCB 2026) and DTSC EnviroStor website (DTSC 2026), there are no active sites within 1 mile of the Project Area. Based upon this information, it is unlikely that contamination present from adjacent or nearby sites would migrate into the Project Area. No impact would occur.

- e) 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? (Less Than Significant)**

The Project is located within two miles of a public airport; however, it would not introduce new sensitive receptors or otherwise result in safety hazards or exposure to excessive noise for people residing or working in the Project Area. The Project involves minor modifications to existing infrastructure at an unmanned lift station that is only periodically accessed for operation and maintenance activities. The Project would not introduce permanent on-site employees, regular occupancy, or new land uses that would increase exposure to airport-related safety hazards or excessive noise, and it would not interfere with airport operations or applicable airport land use plans. Therefore, impacts related to airport safety and noise would be less than significant.

- f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan? (Less Than Significant Impact)**

The Project Area is covered under the Humboldt County Emergency Operations Plan (EOP). The Humboldt County EOP identifies the emergency response and evacuation policies and procedures for hazards related to earthquake, tsunami, extreme weather, flooding/flash flooding, landslides, transportation accidents, hazardous materials, interface wildlife fire, energy shortage, offshore toxic spill, civic disturbance, terrorist activities, and national security (Humboldt County 2015).

The Humboldt County EOP establishes a structure for Humboldt County Operation Area agencies to respond to large-scale emergencies requiring multiagency participation or activation of the Humboldt County Emergency Operations Center (Humboldt County 2015). Hazard mitigation and risk assessment strategies for Humboldt County Operation Area are formalized in the Humboldt County Operational Area Hazard Mitigation Plan (HMP).

No temporary lane closures would be required. If temporary lane closures would be required, it would follow Humboldt County requirements, including Humboldt County encroachment permit conditions, for temporary roadway closures, including signage and public noticing requirements.

The Project would not impair implementation or physically interfere with the established Humboldt County EOP, or Humboldt County HMP. As the Project would not impair implementation of an emergency response plan or evacuation plan, the potential impact related to the temporary road closures during construction would be less than significant.

- g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires? (Less Than Significant Impact)**

As discussed in Section 3.20, Wildfire, the Project would not substantially increase wildfire risk or expose people or structures to a significant risk of loss, injury, or death from wildland fire. The Project involves improvements to an existing developed wastewater lift station that is unmanned and only periodically accessed for operation and maintenance activities. The Project would not introduce new residential uses, increase population or employment, create new ignition sources beyond temporary construction activities, or impair emergency access or evacuation. Thus, a less than significant impact would occur.

3.10 Hydrology and Water Quality

	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?		X		
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?			X	
c) 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:			X	
i. Result in substantial erosion or siltation on- or off-site?			X	
ii. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?			X	
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?			X	
iv. Impede or redirect flood flows?			X	
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?			X	
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?				X

a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality? (Less Than Significant with Mitigation Incorporated)

Construction activities such as site clearing, grading, excavation, and material stockpiling, placement of aggregate base, and related construction activities could leave soils exposed to rain or surface water runoff that may carry soil contaminants (e.g., nutrients or other pollutants) into waterways adjacent to the site, degrade water quality, and potentially violate water quality standards for specific chemicals, dissolved oxygen, suspended sediment, or nutrients. The greatest potential Project impacts to water quality would result from sediment mobilization during construction. If not properly managed, construction activities could result in erosion, as well as the discharge of chemicals and materials to adjacent waterways. In such an instance, applicable water quality standards and waste discharge requirements could be violated, and polluted runoff could substantially degrade water quality in the local storm drain system. This impact is would be potentially significant.

Compliance with State Water Board Order No. 2022-0057 would be required which will regulate stormwater runoff from Project construction activities. Prior to ground disturbance, HCSD would obtain coverage under SWRCB Order No. 2022-0057, General Permit For Stormwater Discharges Associated With Construction And Land Disturbance Activities. In compliance with the National Pollutant Discharge Elimination System requirements, a Notice of Intent would be prepared and submitted to the NCRWQCB prior to undertaking construction, providing notification and intent to comply with the State of California Construction General Permit. Additionally, implementation of Mitigation Measures BIO-1, BIO-2, and BIO-3 would reduce construction-related water quality impacts by minimizing erosion,

sediment transport, and pollutants entering nearby surface waters. Thus, impacts related to construction would be reduced to a less than significant impact.

Following construction, operation and maintenance of the Project would not increase drainage or infiltration to Eureka Slough. Instead, site precipitation captured within the Project Area would be routed to the sanitary sewer system rather than discharged to Eureka Slough, thereby reducing direct runoff from the site to the slough. Therefore, operational impacts to hydrology and water quality would be less than significant.

b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin? (Less Than Significant Impact)

The Project is in the Eureka Plain Groundwater Basin 1-099 (DWR 2004), which is not listed as a basin in Critical Conditions of Overdraft (DWR 2026). Contractor-supplied water would be used during construction for dust suppression on local roadways and work areas. Use of groundwater is not anticipated for construction of the Project, although some limited dewatering of excavations may be necessary. Similarly, the Project would not decrease groundwater supplies or interfere with groundwater management. During construction, isolated and short duration groundwater dewatering may occur as needed. Dewatering would be small in scale and limited to shallow groundwater only. No impact would result during construction.

Following construction, the Project would not require groundwater use and would not increase population or employment that could indirectly raise groundwater demand. Accordingly, the Project would not reduce aquifer storage capacity or lower groundwater levels. In addition, the proposed flood protection structure would create a hydrologically isolated condition within the site. However, this isolation would not adversely affect regional groundwater recharge because precipitation falling within the area would be captured and conveyed to the sanitary sewer system rather than discharged to surrounding waters or allowed to infiltrate. As a result, the Project would not measurably alter groundwater recharge patterns or usage, and a less than significant impact to groundwater would occur.

c.i) 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 result in substantial erosion or siltation on- or off-site? (Less Than Significant Impact)

Implementation of the Project would result in minor alterations to existing drainage patterns within the footprint of the flood protection structure of the lift station. However, these changes would not substantially impede the movement of surface water because flows would continue to be conveyed around the Project Area. Limited on-site precipitation will be routed to the sanitary sewer. Therefore, impacts would be less than significant.

Erosion protection measures would be implemented during construction to avoid impacts to water quality, including those related to siltation (see Hydrology and Water Quality Section (a), above). CWA Section 401, and CWA Section 404 permits would also be implemented, including measures to prevent erosion-related impacts during construction. Substantial on- or off-site erosion and siltation would not result; therefore, potential construction-related erosion and siltation impacts would be less than significant.

c.ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site? (Less Than Significant Impact)

The Project would not substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site. The Project is designed to protect the lift station from flooding associated with high tide events, storm surges, and future sea level rise conditions.. Surface water within the Project Area would be routed to sewer systems without creating new flooding conditions. Therefore, impacts would be less than significant.

c.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? (Less Than Significant Impact)

Grading would occur during summer and fall months when conditions are driest, to minimize the risk of rainfall during the construction period and stormwater runoff when graded soils are exposed. As discussed above in Hydrology and Water Quality Section (a), requirements of CWA Section 401, and CWA Section 404 permits would also be implemented, including measures to prevent polluted stormwater runoff during construction. A less than significant impact would occur.

Operationally, the Project does not include elements that would significantly alter topography and rates of stormwater runoff. A less than significant impact would occur.

c.iv) Impede or redirect flood flows? (Less Than Significant Impact)

The Project would not impede or substantially redirect flood flows. While minor modifications to site drainage would occur, general flow paths would be maintained, and water would continue to move around the Project Area without large obstructions. Therefore, impacts would be less than significant.

d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation? (Less Than Significant Impact)

The Project Area includes areas located in the FEMA 100-year flood zone (**Figure 6 of Appendix C**). Because portions of the Project Area overlap the FEMA 100-year flood zone, construction would not occur during flood conditions (see Section 1.6 – Construction Schedule). This would minimize the potential for a flood-related release of pollutants during construction. The Project does not include unsecured elements that could be mobilized during a flood event; therefore, construction-related impacts would be less than significant. Additionally, the Project is intended to protect the facility from floodwaters and reduce the potential for wastewater releases to the Eureka Slough.

The Project Area is not located near a larger isolated body of water that may be affected by a seiche. No impact from a seiche would result.

The Project Area is located within a mapped tsunami hazard zone (CGS 2026). However, the Project would not involve the routine use or long-term storage of substantial quantities of hazardous materials that could be released during a tsunami event. Construction-related materials would be limited in quantity, temporary in nature, and managed in accordance with applicable regulatory requirements. In addition, the Project does not introduce new sources of hazardous pollutants that would be subject to release during inundation. Therefore, the potential for a tsunami event to result in a release of pollutants would be minimal, and impacts would be less than significant.

e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan? (No Impact)

The relevant water quality control plan is the NCRWQCB's Basin Plan, which establishes thresholds for key water resource protection objectives for both surface waters and groundwater (NCRWQCB 2025). HCSD would obtain coverage under SWRCB Order No. 2022-0057, General Permit For Stormwater Discharges Associated With Construction And Land Disturbance Activities, in addition to CWA Section 401 and CWA Section 404 permits. These regulatory and associated monitoring requirements would ensure a conflict with the Basin Plan does not occur. No impact would result.

3.11 Land Use and Planning

	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a) Physically divide an established community?				X
b) 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?				X

This section evaluates the potential impacts related to land use, as it applies to construction and operation of the Project. Land use within the Project Area consists of Residential Low Density (RL) and Natural Resources (NR) (Humboldt County 2026d). Zoning within the Project Area consists of Residential Single Family / Coastal Wetland and Archaeological Resource Area (RS-5-W/A) (Humboldt County 2026e).

a) Physically divide an established community? (No Impact)

The Project involves improvements to an existing utility facility and would not divide an established community. No impact would result.

b) 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? (No Impact)

According to Humboldt County's Web GIS, the entirety of the Project is within the Coastal Zone and is designated as being within the primary permit jurisdiction of the Humboldt County LCP (Humboldt County 2026f). The Humboldt Bay Area Plan (2022) is the land use plan for this area, and the Humboldt County Coastal Zoning Code is the Implementation Plan, with the Humboldt County General Plan being advisory (Humboldt County 2017). The Project Area is within the State Jurisdiction of the Coastal Zone. A coastal development permit would be required from the CCC. The Project would be required to adhere to all requirements of the Permit.

Applicable policies adopted for the purpose of avoiding or mitigating environmental effects can be found throughout the Humboldt Bay Area Plan and Humboldt County General Plan. A review of the Humboldt Bay Area Plan and Humboldt County General Plan elements, and the policies and standards within, did not identify any inconsistencies with the proposed Project. Specifically, the Project is consistent with the following goal included in the Humboldt Bay Area Plan:

3.30 NATURAL RESOURCES PROTECTION POLICIES AND STANDARDS

**** 30240. (Part) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade such areas and shall be compatible with the continuance of such habitat areas.*

Agencies that regulate the filling of wetlands include the USACE and the NCRWQCB. Because the proposed Project would affect USACE and NCRWQCB jurisdictional wetlands, the HCSD would obtain the necessary permit(s) to comply with respective regulations including a CWA Section 404, and Section 401 Water Quality Certification. By implementing permit requirements and mitigation measures identified in the Section 3.4 – Biological Resources above, the Project would not conflict with any applicable federal and state wetland regulations. Additionally, the proposed Project would not permanently alter the existing land uses, their designations, or their zoning, and would not introduce new land uses or land use designations or zoning; therefore, no conflict with applicable land use plans, policies, or regulation(s) would occur. No impact would result.

3.12 Mineral Resources

	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?			X	
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?			X	

a, b) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state, or a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan? (Less Than Significant Impact)

The Project would require minor use of rock, gravel, sand, and other similar materials, but is not expected to have any significant impact on locally available minerals or mineral resources valuable to the region or the state. Additionally, the Project Area is also not designated by the Humboldt County General Plan or other local land use plans as having locally-important mineral resources within the Project Area (Humboldt County 2017). The impact would be less than significant.

3.13 Noise

	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a) Result in generation of 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?			X	
b) Result in generation of excessive groundborne vibration or noise levels?			X	
c) 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?				X

Current noise conditions on and near the Project Area consists of the adjacent local roadways along the proposed alignment. Sensitive receptors are located within 30 feet of the Project Area, including the Eureka Pentecostal Church. Residential neighborhoods along Hoover Street are also located adjacent to the Project Area and could be affected by construction-related noise.

a) Result in generation of 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? (Less Than Significant Impact)

The proposed Project is located within the jurisdiction of the Humboldt Bay Area Plan. However, the Humboldt Bay Area Plan does not provide noise thresholds. Therefore, the Humboldt County General Plan noise policies are applied to noise-related impact analysis.

Construction

Construction of the Project would result in a temporary noise increase associated with the use of construction equipment during a single construction season, commencing in May and concluding by approximately October. Construction noise, including the loudest activity associated with pile driving, would occur near the terminus of Hoover Street. The Project site is also located at a lower elevation than nearby sensitive receptors, which would reduce the potential for a direct noise path to adjacent residences and the Eureka Pentecostal Church. Construction activities associated with the Project would occur over a single construction season and would be temporary in nature, with relatively low equipment intensity and limited duration at any one location. Activities would occur across the Project Area and along portions of Hoover Street associated with utility realignment, which would limit the duration of noise generation at any individual receptor.

Construction activities would be limited to daytime work hours between 7:00 a.m. to 7:00 p.m., Monday through Friday with occasional work on Saturdays. Furthermore, Humboldt County has not established construction-related noise standards. Because the construction phase would be temporary and construction activities would be intermittent and limited to between 7:00 a.m. and 7:00 p.m., potential noise impacts generated during the construction phase would be less than significant.

Operation

The Humboldt County General Plan includes Standard N-S1, which indicates that the Land Use/Noise Compatibility Standards (**Table 3.13-1** below) must be used as a guide to ensure compatibility of land uses. Development may occur in areas identified as “normally unacceptable” if mitigation measures can reduce indoor noise levels to “Maximum Interior Noise Levels” and outdoor noise levels to the maximum “Normally Acceptable” value for the given land use category.

For measuring noise levels and setting noise standards, the County uses Table 13-C (**Table 3.13-1** below) of the Humboldt County General Plan, which stipulates that 60 Community Noise Equivalent Level (CNEL) is the upper acceptable limit for residential units (outside measurement), and 85 CNEL is the upper acceptable limit for “public ROW” land uses. CNEL is a measure that describes the average noise exposure over a period of time.

Table 3.13-1 Humboldt County Land Use Noise Compatibility Standards

Land Use Category	Maximum Interior Noise Level	Clearly Acceptable Noise Standard (CNEL)	Normally Acceptable Noise Level (CNEL)	Normally Unacceptable Noise Level (CNEL)	Clearly Unacceptable Noise Level (CNEL)
Residential Single Family, Duplex, Mobile Homes	45	50-55	56-60	61-75	76+
Residential Multiple Family, Dormitories, Etc.	45	50-55	56-60	61-75	76+
Transient Lodging	45	50-65	66-70	71-80	81+
School Classrooms, Libraries, Churches	45	50-60	61-65	66-75	76+
Hospitals, Nursing Homes	45	50-60	61-65	66-75	76+
Auditoriums, Concert Halls, Music Shells	35	-	50-60	61-70	71+
Sports Arenas, Outdoor Spectator Sports	-	50-60	61-65	66-75	76+
Playgrounds, Neighborhood Parks	-	50-55	56-65	66-75	76+
Golf Courses, Riding Stables, Water Rec., Cemeteries	-	50-60	61-70	71-80	80+
Office Buildings, Personal Business & Professional	50	50-65	66-75	76-80	81+
Commercial: Retail, Movie Theaters, Restaurants	50	50-65	66-75	76-80	81+
Commercial: Wholesale, Some Retail, Ind, Mfg., Util.	-	50-70	71-80	81-85	86+
Manufacturing, Communications (Noise Sensitive)	-	50-55	56-70	71-80	81+
Livestock Farming, Animal Breeding	-	50-60	61-75	76-80	81+
Agriculture (except livestock), Mining, Fishing	-	50-75	76+	-	-
Public Right of Way	-	50-75	76-85	86+	-
Extensive Natural Recreation Areas	-	50-60	61-75	76-85	86+

Once constructed, the Project would not generate substantial operational noise, as all new components are static in nature and do not involve moving parts or equipment that would produce ongoing sound.. Therefore, operation would not result in noise levels exceeding the County's noise standards for residential units or public ROW land uses. No impact would result.

b) Result in generation of excessive groundborne vibration or noise levels? (Less Than Significant Impact)

Humboldt County does not establish vibration limits; however, Caltrans recommends a vibration limit of 0.5 inches/second peak particle velocity (PPV) for buildings structurally sound and designed to modern engineering standards, 0.3 inches/second PPV for buildings that are found to be structurally sound but where structural damage is a major concern, and a conservative limit of 0.08 inches/second PPV for historic buildings or buildings that are documented to be structurally weakened. No known buildings that are documented to be structurally weakened or ancient adjoin the Project Area. Therefore, the 0.5 inches/second PPV limit would apply when considering the potential for groundborne vibration levels to result in a significant vibration impact.

The noise and vibration the typical vibration levels that could be expected from construction equipment at a distance of 25 feet. Construction activities would involve the use of tracked excavators, backhoes, dump trucks, skid steers, concrete trucks, pickup trucks, and other conventional construction equipment. Pavement removal activities may require the temporary use of jackhammers, saws, grinders, or similar equipment capable of generating localized vibration. In addition, installation of the floodwall system at the lift station would require pile driving, which is the most intensive vibration-generating activity associated with the Project. As shown in **Table 3.13-2**, pile driving can generate vibration levels of approximately 0.644 inches per second PPV at 25 feet.

Table 3.13-2 Typical Vibration Levels for Construction Equipment Used During Project Construction (Caltrans 2020)

Equipment	PPV at 25 ft. (in/sec)	Approximate Lv at 25 ft. (VdB)
Vibratory Roller	0.210	94
Large Bulldozer	0.089	87
Pile Driver	0.644	94
Loaded trucks	0.076	86
Jackhammer	0.035	79
Small bulldozer	0.003	58

Vibration levels attenuate rapidly with increasing distance from the source due to geometric spreading and soil damping, resulting in substantially lower vibration levels at nearby receptors. Actual vibration levels would vary depending on site-specific factors such as soil characteristics, construction methods, equipment type, and activity duration. Construction of the Project would not involve blasting, explosives, or other extreme vibration-generating techniques. Although pile driving, vibratory compaction, and operation of heavy equipment would occur during construction, these activities would be temporary and intermittent.

The closest residence is located approximately 30 feet from anticipated construction activities. At that distance, vibration generated by a vibratory roller would remain below the 0.5 inches per second PPV threshold applicable to modern structures. The Eureka Pentecostal Church, another nearby sensitive receptor, is located approximately 110 feet from the lift station where pile driving activities would occur. Because groundborne vibration decreases substantially with distance, vibration levels at the church would be considerably lower than the 0.644 inches per second PPV estimated at 25 feet from a pile driver and would not be expected to result in structural damage. Given the temporary nature of construction activities, the setback distances between vibration-producing equipment and nearby receptors, and the rapid attenuation of groundborne vibration, Project construction would not expose nearby

structures or sensitive receptors to excessive vibration levels. Therefore, construction-related groundborne vibration impacts would be less than significant.

Following construction, operation of the Project would not introduce substantial sources of groundborne vibration or groundborne noise. The Project consists of passive flood protection improvements intended to protect the lift station from flooding associated with high tides, storm surges, and sea level rise. The completed improvements would not generate groundborne vibration during normal operations. Although periodic maintenance or repair activities may occasionally require the temporary use of construction equipment, such activities would be infrequent, short-term, and limited in duration. Therefore, no operational impact would result.

c) 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? (No Impact)

The Project Area is located approximately 1.0 mile southwest of Murray Field Airport and approximately 4 miles northeast of the Samoa Field Airport. The Project is not located within an airport land use plan. Therefore, the Project would not expose people residing or working in the Project Area to excessive noise levels. No impact would result.

3.14 Population and Housing

	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?				X
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?				X

a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)? (No Impact)

The Project would not be growth-inducing and would not result in the creation of new homes or businesses, either directly or indirectly. While existing utilities would be modified as part of Project implementation, these modifications would not expand system capacity. Additionally, no new roads, utility extensions, or other infrastructure improvements would be constructed that could facilitate future residential or commercial development. The Project does not include any residential units that would directly induce population growth. Maintenance of Project elements is anticipated to be performed by local HCSD staff. No new employment opportunities would be directly or indirectly induced by implementation of the Project. Therefore, the Project would not induce substantial population growth and no impact would occur.

b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere? (No Impact)

The Project Area is already developed and is not used for residential purposes; therefore, no people or housing units would be displaced, and no replacement housing would be required.. No impact would result.

3.15 Public Services

	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a) Would the project 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?				X
Police protection?				X
Schools?				X
Parks?				X
Other public facilities?				X

- a) **Would the project 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 public services? (No Impact)**

As discussed in Section 3.14, implementation of the Project would not induce population growth. The Project involves improvements to an existing facility, including the construction of a flood protection structure, relocation of a manhole, and realignment of the gravity main and water service. These improvements would not increase staffing needs, introduce new hazards, or modify the road system in a manner that would restrict emergency access. In addition, the Project would not introduce new or expanded land uses within the Project Area that would require increased demand for public services. Accordingly, the Project would not necessitate expanded fire or police protection, nor would it require new or altered public service facilities to maintain acceptable service ratios or response times. Therefore, no impact would occur.

3.16 Recreation

	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a) 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?				X
b) Include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?				X

a) 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? (No Impact)

The Project would not increase use of the Eureka Slough, or other recreational facilities or parks, as it involves improvements to an existing facility, would not increase population, and would not be staffed except for periodic operation and maintenance activities. Therefore, no impact would result.

b) Include or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment? (No Impact)

The Project does not include or require the construction or expansion of recreational facilities; therefore no impact would occur.

3.17 Transportation

	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a) Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?			X	
b) Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?				X
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?				X
d) Result in inadequate emergency access?			X	

a) Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities? (Less Than Significant Impact)

Construction would result in vehicle trips by construction workers and haul-truck trips for material off-haul and deliveries via U.S. 101 from the south to the Project Area at the end of Hoover Street. Construction-related traffic would be temporary, would vary on a daily basis, and would be distributed over the course of a workday and work week. An encroachment permit for temporary lane closures on Hoover Street may be required. Temporary lane closures would follow County requirements, including signage and public noticing requirements.

The Project would not modify existing transit, bicycle, or pedestrian facilities and would not conflict with applicable circulation plans, ordinances, or policies. Following construction, no increase in operational traffic would occur because the Project involves improvements to an existing facility. Therefore, a less than significant impact would result.

b) Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)? (No Impact)

Pursuant to SB 743 and the current CEQA Guidelines, evaluation of a project's potential transportation impact requires consideration of VMT, which refers to the amount and distance of automobile travel attributable to a project. Projects that reduce or have no impact on VMT are presumed to cause a less than significant transportation impact (OPR 2018). The Project would protect the sewer lift station from flooding associated with high tides, storm surges, and sea level rise, and would not result in an increase in vehicle trips following construction. There would be no impact.

c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)? (No Impact)

The Project would not change the geometry of the street or roadway network. Therefore, no potentially hazardous roadway design features would be introduced by the Project and no impact would occur.

d) Result in inadequate emergency access? (Less Than Significant Impact)

Emergency access to the Project Area would be maintained during construction through traffic control measures, including controlled one-lane traffic, and would remain available throughout construction activities. Temporary lane closures on Hoover Street may be required. Temporary lane closures would follow County requirements for temporary roadway closures, including signage and public noticing requirements, and ingress and regress would be provided for emergency access. This would result in less than significant emergency access impacts. Existing provisions for emergency access would continue during operation of the Project. Therefore, no operational emergency access impacts would occur.

3.18 Tribal Cultural Resources

	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a) Cause a substantial adverse change in the significance of a tribal cultural resource listed or eligible for listing in the California Register of Historic Resources, or in a local register of historic resources as defined in PRC section 5020.1(k)?		X		
b) Cause a substantial adverse change in the significance of a tribal cultural resource that is a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to the criteria set forth in subdivision (c) of the PRC section 5024.1? In applying the criteria set forth in subdivision (c) of the PRC section 5024.1, the lead agency shall consider the significance of the resource to a California Native American Tribe.		X		

a,b) Cause a substantial adverse change in the significance of a tribal cultural resource? (Less Than Significant Impact with Mitigation Incorporated)

CEQA requires lead agencies to determine if a proposed Project would have a significant effect on tribal cultural resources. The CEQA Guidelines define tribal cultural resources as: (1) a site, feature, place, cultural landscape, sacred place, or object with cultural value to a California Native American Tribe that is listed or eligible for listing on the California Register of Historical Resources, or on a local register of historical resources as defined in PRC Section 5020.1(k); or (2) a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant according to the historical register criteria in PRC Section 5024.1(c), and considering the significance of the resource to a California Native American Tribe.

Under Assembly Bill (AB) 52, notification letters were sent to the Wiyot Tribe, Blue Lake Rancheria, and the Bear River Band of the Rohnerville Rancheria on May 29, 2026 (see Section 1.11, Tribal Consultation). Additional outreach efforts are documented in the ASR, as discussed in Section 3.5 (Cultural Resources). The Wiyot Tribe requested that a cultural resource monitor be present during ground-disturbing activities associated with the Project. In response, Mitigation Measure CR-1 would be implemented, requiring retention of a qualified cultural resource monitor approved by the Wiyot Tribe during ground disturbance in culturally sensitive areas. The measure also establishes procedures for coordination with the THPO, requires work stoppage and notification in the event of inadvertent discoveries, and provides for evaluation and treatment of any identified resources to ensure they are handled in accordance with applicable laws and tribal recommendations. Therefore, potential impacts to tribal cultural resources would be less than significant with mitigation incorporated.

3.19 Utilities and Service Systems

	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electrical power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?			X	
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?				X
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?			X	
d) 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?			X	
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?			X	

a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electrical power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects? (Less Than Significant Impact)

The proposed Project would include limited modifications to existing utility infrastructure, including the relocation of a manhole and the Hoover Street Gravity Main, a water service realignment, and installation of two new force main fittings to support temporary bypass pumping during construction. These improvements would not result in the expansion of utility capacity or the construction of new utility infrastructure. Existing water lines in proximity to the work area would be identified and protected during construction. A perimeter valley gutter, drop inlets, and related grading improvements within the site would collect stormwater runoff and convey it to the sanitary sewer system. The Project does not involve expanded wastewater or stormwater infrastructure. Therefore, impacts would be less than significant.

b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years? (No Impact)

The Project would not create an increased demand for domestic water service. The Project would require relatively small quantities of water during the construction phase (e.g., for dust control and concrete/asphalt applications). The Project's water demands would not be substantial and can be met by existing entitlements and resources. The Project would not result in the need for the construction of new water facilities, or the expansion of existing facilities. Therefore, no water supply impact would occur.

c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments? (Less Than Significant)

The Project would not significantly increase wastewater because it is limited to improvements to an existing wastewater lift station. Stormwater within the Project Area would be routed to the sewer system which would marginally increase flows. A large 3-inch storm event over the isolated 0.1 acre would generate approximately 8,100 gallons of runoff. A 12-inch diameter sewer pipe has an internal storage capacity of approximately seven gallons per linear foot and conveys flow based on slope and hydraulic conditions. At typical design slopes, such pipes can transport several hundred to several thousand gallons per minute, indicating that relatively small stormwater volumes on the order of several thousand gallons would be conveyed rapidly and would not represent a substantial hydraulic load on the system. No expansion of wastewater treatment would be needed. Therefore, impacts would be less than significant.

d, e) 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? Comply with federal, state, and local management and reduction statutes and regulations related to solid waste? (Less Than Significant Impact)

The solid waste provider in the area is the Humboldt Waste Management Authority (HWMA). The Project is not expected to generate a significant increase in solid waste. The proposed Project would generate limited solid waste during construction and occasionally minimal waste during operation and maintenance. Construction solid waste would include the one-time temporary generation of construction waste associated with the proposed Project. Applicable recyclable construction materials (e.g., scrap metal, wood, concrete, glass) could be shipped to local businesses for reuse, with non-recyclable materials sent to the HWMA transfer station in Eureka or Samoa, California.

Solid waste collected as a part of the Project would be disposed of by the HWMA. HWMA trucks solid waste produced in the County to state licensed landfills located in Anderson, California and Medford, Oregon in compliance with local, state, and federal regulations pertaining to solid waste disposal. These facilities have sufficient capacity to serve the Project's solid waste disposal needs; therefore, a less than significant impact would occur.

3.20 Wildfire

	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?			X	
b) 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?			X	
c) 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 ongoing impacts to the environment?				X
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides as a result of runoff, post-fire slope instability, or drainage changes?				X

a) Substantially impair an adopted emergency response plan or emergency evacuation plan (Less Than Significant Impact)

A review of the Humboldt County EOP (Humboldt County 2015) and the Tsunami Inundation Map for Emergency Planning – County of Humboldt (CGS 2021) indicates that the proposed Project would not impair emergency response activities nor established evacuation routes. The Project would not block or alter any roads or pedestrian pathways within the Project Area. However, temporary traffic changes may occur during construction, such as short-term lane closures or access restrictions as described in Section 3.17. A less than significant impact would result.

b) 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? (Less Than Significant Impact)

The Project Area is not located in or near a State Responsibility Area (SRA) or on lands classified as very high fire severity zones (Humboldt County 2026g 2026h). The Project Area is in a developed urban location and is in a relatively flat slough floodplain. Some grassland and other vegetation are present in the Project Area. The vegetated portions could be susceptible to wildfire during Project construction or operation due to accidental ignition, however, the slough vegetation would limit the potential for ignition due to its inherent wetland features. During construction, all hazardous materials and construction equipment would be appropriately used and stored pursuant to all required state and local regulations. The Project would not involve the use or storage of significant quantities of hazardous materials during operation that may be released if a wildfire occurred. Furthermore, the Project does not include any structures built for human occupancy. Due to the temporary nature of construction, the minimal amount of hazardous materials anticipated to be stored during the construction phase, the fact that the Project is located within an area of “moderate” fire risk, and that the Project does not provide any structures to be used for human occupancy, it is not anticipated to exacerbate wildfire risks and thereby expose users to pollutants. Therefore, potential impacts would be less than significant.

- c) **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 ongoing impacts to the environment? (No Impact)**

The Project does not involve the construction or maintenance of infrastructure that would exacerbate fire risk or result in impacts to the environment. New roads for fire defense, expanded water sources, new power lines, or the construction of other utilities would not be required. Therefore, no impact would result.

- d) **Expose people or structures to significant risks, including downslope or downstream flooding or landslides as a result of runoff, post-fire slope instability, or drainage changes? (No Impact)**

The Project Area is not within a low slope area of topography. If a wildfire were to occur, post-fire slope instability would be unlikely. The Project is not expected to result in significant drainage changes. Therefore, no impact would result.

3.21 Mandatory Findings of Significance

	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Does the project:				
a) Have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?			X	
b) Have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?			X	
c) Have environmental effects which would cause substantial adverse effects on human beings, either directly or indirectly?			X	

- a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory? (Less Than Significant Impact)**

As evaluated in this Initial Study, the Project would not substantially degrade the quality of the environment; substantially reduce the habitat of a fish or wildlife species; cause a fish or wildlife population to drop below self-sustaining levels; threaten to eliminate a plant or animal community; reduce the number or restrict the range of an endangered, rare, or threatened species; or eliminate important examples of the major periods of California history or prehistory.

Mitigation measures are not required to reduce impacts related to air quality, biological resources, cultural resources, geology and soils, hazards and hazardous materials, hydrology and water quality, and tribal cultural resources. The impacts associated with the proposed Project analyzed in this Initial Study would not add appreciably to any existing or foreseeable future significant impact.

- b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)? (Less Than Significant Impact)**

Cumulative impacts are defined as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts" (CEQA Guidelines Section 15355). Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time, and may arise from the combination of past, present, and reasonably foreseeable future projects within a geographic area. CEQA requires that a Project's incremental contribution to these combined conditions be evaluated to determine whether the contribution is cumulatively considerable.

The geographic scope for cumulative analysis includes the surrounding vicinity where related development activities could contribute to shared environmental conditions such as traffic, air quality, noise, biological resources, and utilities demand. Review of available information, including coordination with the Humboldt County Planning Department and Humboldt County Department of Public Works, did not identify any past, current, or reasonably foreseeable projects within or near the Project Area that would result in overlapping environmental effects of a magnitude that would combine with the Project to create a cumulatively considerable condition. Smaller-scale residential infill and minor development activities were not included in the cumulative scenario because such projects typically result in negligible contributions to regional environmental conditions and are addressed through existing regulatory compliance requirements.

Operational impacts associated with the Project would be minimal and would not substantially increase demand on public services, infrastructure, or natural resources beyond existing capacity or adopted planning thresholds. Furthermore, adherence to applicable federal, State, and local regulations, as well as incorporation of mitigation measures identified in this Initial Study, would ensure that any Project-level impacts are reduced to a less than significant level prior to their contribution to cumulative conditions.

Based on the absence of nearby cumulative projects with substantial overlapping impacts, the limited scale and scope of the Project, and the implementation of regulatory requirements and mitigation measures, the Project's incremental contribution to cumulative environmental conditions would not be cumulatively considerable. Incremental impacts, if any, would be negligible, diffuse, and not measurable within the broader environmental setting. Therefore, cumulative impacts would be less than significant.

c) Does the project have environmental effects which would cause substantial adverse effects on human beings, either directly or indirectly? (Less Than Significant Impact)

The Project has been planned and designed to avoid significant environmental impacts. As discussed in the analysis throughout Section 3 of this Initial Study, the Project would not have environmental effects that would cause substantial adverse direct or indirect effects on human beings. The impact would be less than significant.

4. Report Preparers

4.1 Lead Agency

Terrence Williams, General Manager, Humboldt Community Services District

4.2 GHD

Madalyn Pierson, Environmental Scientist

Christian Hernandez, Environmental Scientist (Reviewer)

Nick Black, Project Engineer (Reviewer)

Christopher Wolf, Business Group Leader – Natural Resources & Impact Assessment (Reviewer)

5. References

- California Air Resources Board (CARB). 2022. 2022 Scoping Plan for Achieving Carbon Neutrality
- California Department of Toxic Substances Control (DTSC). 2020b. EnviroStor Hazardous Waste and Substances Site List (Cortese). Accessed: May 2026. <https://www.envirostor.dtsc.ca.gov>
- California Department of Transportation (Caltrans). 2023. Highway Design Manual (HDM). Available online: <https://dot.ca.gov/programs/design/manual-highway-design-manual-hdm>
- California Department of Transportation (Caltrans). 2026. State Scenic Highway Map. Available online: <https://dot.ca.gov/programs/design/lap-landscape-architecture-and-community-livability/lap-liv-i-scenic-highways>.
- California Department of Water Resources (DWR). 2004. Department of Water Resources Bulletin 118 Alluvial Groundwater Basins/Subbasins Humboldt County, California. Eureka Plain Groundwater Basin.
- California Department of Water Resources (DWR). 2026. Groundwater Basin Prioritization. Available online: <https://gis.water.ca.gov/app/bp-dashboard/final/>
- California Geological Survey (CGS). 2026. Earthquake Zones of Required Investigation. Accessed: May 2026. <https://maps.conservation.ca.gov/cgs/EQZApp/app/>
- California Department of Fish and Wildlife (CDFW). 2026a. Essential Connectivity Area-California Essential Habitat Connectivity. Accessed: May 2026. <https://data-cdfw.opendata.arcgis.com/maps/CDFW::essential-connectivity-areas-california-essential-habitat-connectivity-cehc-ds620/explore?location=40.711361%2C-123.585823%2C9>
- California Department of Fish and Wildlife (CDFW). 2026b. Natural Community Conservation Planning (NCCP). Accessed: May 2026. <https://wildlife.ca.gov/Conservation/Planning/NCCP>
- Crawford and Associates, Inc. 2026. Geotechnical Report – Hoover Street Lift Station Flood Protection Project
- Department of Toxic Substance Control. 2026. EnviroStor Map (EnviroStor). Accessed: May 2026. <https://www.envirostor.dtsc.ca.gov/public/map/?myaddress=1060+Hoover+St%2C+Eureka%2C+CA+95501>
- Environmental Science Associates (ESA), GHD, Northern Hydrology & Engineering, Philip King and Kristina Kunkel, Redwood Community Action Agency. 2021. Sea Level Rise Adaptation Plan for Transportation Infrastructure and Other Critical Resources in the Eureka Slough Hydrographic Area, Humboldt Bay Trinity Associates
- Humboldt County. 2015. Emergency Operations Plan. March. Available online at: <https://humboldt.gov/DocumentCenter/View/51861/Humboldt-County-Emergency-Operations-Plan-2015>
- Humboldt County. 2017. Humboldt County General Plan. October. Available online: <https://humboldt.gov/DocumentCenter/View/61984/Humboldt-County-General-Plan-complete-document-PDF>
- Humboldt County. 2022. Humboldt Bay Area Plan of the Humboldt County Local Coastal Program. March. Available online at: <https://humboldt.gov/DocumentCenter/View/50844/Humboldt-Bay-Area-Local-Coastal-Plan>
- Humboldt County. 2025. Humboldt Regional Climate Action Plan. May. Available online at: <https://humboldt.gov/2464/Humboldt-Regional-Climate-Action-Plan>

Humboldt County. 2026a. Humboldt County WebGIS. Layers Accessed: Prime Agricultural Soils. Accessed: May 2026. <https://webgis.co.humboldt.ca.us/HCEGIS2.0/>

Humboldt County. 2026b. Humboldt County WebGIS. Layers Accessed: Williamson Act. Accessed: May 2026. <https://webgis.co.humboldt.ca.us/HCEGIS2.0/>

Humboldt County. 2026c. Humboldt County WebGIS. Layers Accessed: Area of Potential Liquefaction. Accessed: May 2026. <https://webgis.co.humboldt.ca.us/HCEGIS2.0/>

Humboldt County. 2026d. Humboldt County WebGIS. Layers Accessed: Land Use. Accessed: May 2026. <https://webgis.co.humboldt.ca.us/HCEGIS2.0/>

Humboldt County. 2026e. Humboldt County WebGIS. Layers Accessed: Zoning. Accessed: May 2026. <https://webgis.co.humboldt.ca.us/HCEGIS2.0/>

Humboldt County. 2026f. Humboldt County WebGIS. Layers Accessed: Coastal Zone. Accessed: May 2026. <https://webgis.co.humboldt.ca.us/HCEGIS2.0/>

Humboldt County. 2026g. Humboldt County WebGIS. Layers Accessed: Cal Fire SRA. Accessed: May 2026. <https://webgis.co.humboldt.ca.us/HCEGIS2.0/>

Humboldt County. 2026h. Humboldt County WebGIS. Layers Accessed: Fire Hazard Severity. Accessed: May 2026. <https://webgis.co.humboldt.ca.us/HCEGIS2.0/>

North Coast Regional Water Quality Control Board (NCRWQCB). 2025. Water Quality Control Plan for the North Coast Region 2025 Basin Plan Amendment.

North Coast Unified Air Quality Management District (NCUAQMD). 2019. Personal Communication with J. Davis.

North Coast Unified Air Quality Management District (NCUAQMD). 2021. Air Quality Planning & CEQA. Available at: <http://www.ncuaqmd.org/index.php?page=aqplanning.ceqa>

Office of Planning and Research. 2018. Technical Advisory on Evaluating Transportation Impacts in CEQA. December. Available online at: https://opr.ca.gov/docs/20190122-743_Technical_Advisory.pdf

Roscoe and Associates. 2025. An Archaeological Survey Report for the Humboldt Community Services District Hoover Street Lift Station Flood Protection Project Eureka, Humboldt County, California. January. CLASSIFIED

Sacramento Metropolitan Air Quality Management District. (SMAQMD) 2021. SMAQMD Thresholds of Significance Table. Accessed May 2026. Available at <https://www.airquality.org/residents/ceqa-land-use-planning/ceqa-guidance-tools>

Sawyer, J.O., T. Keeler-Wolf, and J.M. Evans. 2009. A Manual of California Vegetation, Second Edition. California Native Plant Society. Sacramento, California, USA.

State Water Resource Control Board. 2026. GeoTracker. Accessed May 2026: <https://geotracker.waterboards.ca.gov/map/?CMD=runreport&myaddress=1060+Hoover+St%2C+Eureka%2C+CA+95501>

United States Army Corps of Engineers (USACE). 2010. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region Version 2.0.

United States Census Bureau (US Census). 2020. Eureka City, California. Retrieved from:
<https://data.census.gov/all?q=eureka>

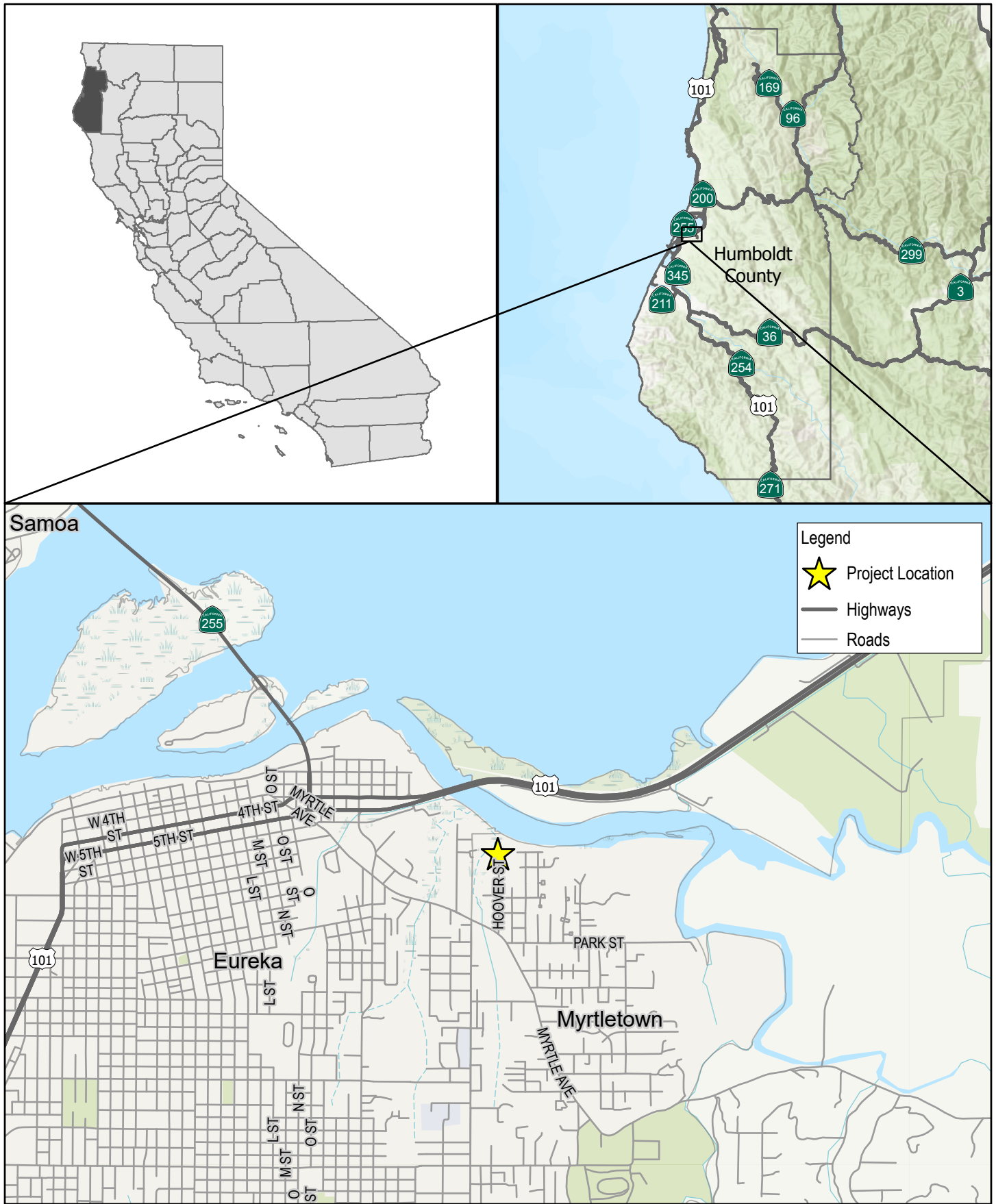
Appendix A

Figures

Figure 1: Vicinity Map

Figure 2: Project Study Boundary

Figure 3: Project Overview



Paper Size ANSI A
 0 1,000 2,000 3,000 4,000
 Feet
 Map Projection: Mercator Auxiliary Sphere
 Horizontal Datum: WGS 1984
 Grid: WGS 1984 Web Mercator Auxiliary Sphere



Humboldt Community Service District
 Hoover Street Lift Station

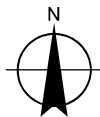
Project No. 12644761
 Revision No. -
 Date Oct 2024

Vicinity Map

FIGURE 1



Paper Size ANSI A
0 50 100 150 200
Feet



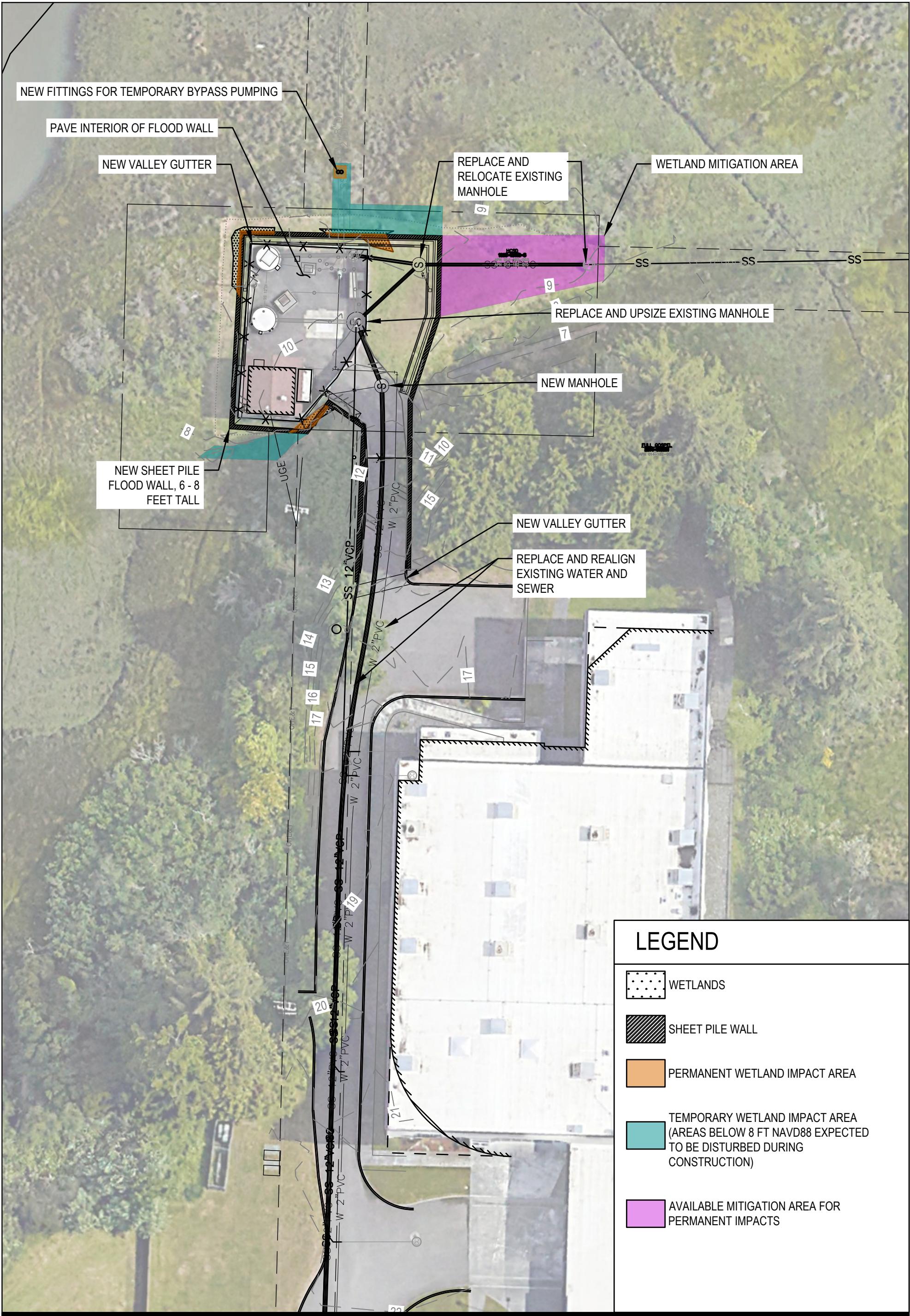
Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California 1 FIPS 0401 Feet

Humboldt Community Service District
Hoover Street Lift Station

Project No. 12644761
Revision No. -
Date Jul 2026

Hoover Street Lift Station

FIGURE 2



HCSD
HOOVER ST FLOOD PROTECTION
PROJECT OVERVIEW

Project No. 12644761
Date 7/6/2026

Appendix B

CalEEMod Modeling Information and Results

Hoover St Lift Station Detailed Report

Table of Contents

- 1. Basic Project Information
 - 1.1. Basic Project Information
 - 1.2. Land Use Types
 - 1.3. User-Selected Emission Reduction Measures by Emissions Sector
- 2. Emissions Summary
 - 2.1. Construction Emissions Compared Against Thresholds
 - 2.2. Construction Emissions by Year
 - 2.2.1. Total Construction Emissions by Year, Unmitigated
 - 2.2.2. Onsite Construction Emissions by Year, Unmitigated
 - 2.2.3. Offsite Construction Emissions by Year, Unmitigated
 - 2.2.4. Total Construction Emissions by Year, Mitigated
 - 2.2.5. Onsite Construction Emissions by Year, Mitigated
 - 2.2.6. Offsite Construction Emissions by Year, Mitigated
 - 2.3. Operations Emissions Compared Against Thresholds
 - 2.4. Operations Emissions by Sector, Unmitigated

2.5. Operations Emissions by Sector, Mitigated

3. Construction Emissions Details

3.1. Flood Protection Sheet Pile Wall (2027)

3.1.1. Onsite - Unmitigated

3.1.2. Offsite - Unmitigated

3.1.3. Onsite - Mitigated

3.1.4. Offsite - Mitigated

3.2. Utility Modifications (2027)

3.2.1. Onsite - Unmitigated

3.2.2. Offsite - Unmitigated

3.2.3. Onsite - Mitigated

3.2.4. Offsite - Mitigated

3.3. Wetland Restoration (2027)

3.3.1. Onsite - Unmitigated

3.3.2. Offsite - Unmitigated

3.3.3. Onsite - Mitigated

3.3.4. Offsite - Mitigated

3.4. Site Drainage (2027)

3.4.1. Onsite - Unmitigated

3.4.2. Offsite - Unmitigated

3.4.3. Onsite - Mitigated

3.4.4. Offsite - Mitigated

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

4.1.2. Mitigated

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

4.2.2. Electricity Emissions By Land Use - Mitigated

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

4.2.4. Natural Gas Emissions By Land Use - Mitigated

4.3. Area Emissions by Source

4.3.1. Unmitigated

4.3.2. Mitigated

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

4.4.2. Mitigated

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

4.5.2. Mitigated

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

4.6.2. Mitigated

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

4.7.2. Mitigated

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

4.8.2. Mitigated

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

4.9.2. Mitigated

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

5. Activity Data

5.1. Construction Schedule

5.2. Off-Road Equipment

5.2.1. Unmitigated

5.2.2. Mitigated

5.3. Construction Vehicles

5.3.1. Unmitigated

5.3.2. Mitigated

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

5.5. Architectural Coatings

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

5.6.2. Construction Earthmoving Control Strategies

5.7. Construction Paving

5.8. Construction Electricity Consumption and Emissions Factors

5.9. Operational Mobile Sources

5.9.1. Unmitigated

5.9.2. Mitigated

5.10. Operational Area Sources

5.10.1. Hearths

5.10.2. Architectural Coatings

5.10.3. Landscape Equipment

5.10.4. Landscape Equipment - Mitigated

5.11. Operational Energy Consumption

5.11.1. Unmitigated

5.11.2. Mitigated

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

5.12.2. Mitigated

5.13. Operational Waste Generation

5.13.1. Unmitigated

5.13.2. Mitigated

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

5.14.2. Mitigated

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

5.15.2. Mitigated

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

5.16.2. Process Boilers

5.17. User Defined

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

5.18.1.2. Mitigated

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

5.18.1.2. Mitigated

5.18.2. Sequestration

5.18.2.1. Unmitigated

5.18.2.2. Mitigated

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

6.2. Initial Climate Risk Scores

6.3. Adjusted Climate Risk Scores

6.4. Climate Risk Reduction Measures

6.4.1. Wildfire

6.4.2. Flooding

6.4.3. Extreme Precipitation

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

7.2. Healthy Places Index Scores

7.3. Overall Health & Equity Scores

7.4. Health & Equity Measures

7.5. Evaluation Scorecard

7.6. Health & Equity Custom Measures

8. User Changes to Default Data

8.1. Justifications

8.3. Land Use

8.4. Construction

8.4.2. Off-Road Equipment

8.4.4. Dust from Material Movement

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Hoover St Lift Station
Construction Start Date	5/1/2027
Operational Year	2028
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.90000
Precipitation (days)	75.0000
Location	1060 Hoover St, Eureka, CA 95501, USA
County	Humboldt
City	Unincorporated
Air District	North Coast Unified APCD
Air Basin	North Coast
TAZ	121
EDFZ	2
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.44

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Single Family Housing	0.00000	Dwelling Unit	0.17000	0.00000	7,405.20	—	0.00000	lift station sewer improvements

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Construction	C-9	Use Dust Suppressants
Construction	C-10-A	Water Exposed Surfaces

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	10.6374	8.88669	71.2817	43.2167	0.08875	3.82991	0.25371	3.83112	3.52352	0.05952	3.52386	—	9,663.30	9,663.30	0.39631	0.08482	1.08195	9,699.21
Mit.	10.6374	8.88669	71.2817	43.2167	0.08875	3.82991	0.25371	3.83112	3.52352	0.05952	3.52386	—	9,663.30	9,663.30	0.39631	0.08482	1.08195	9,699.21
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.87666	1.57302	11.0891	11.3900	0.02048	0.38395	0.25311	0.63705	0.35323	0.05936	0.41259	—	1,850.61	1,850.61	0.08409	0.02447	0.02794	1,860.03
Mit.	1.87666	1.57302	11.0891	11.3900	0.02048	0.38395	0.25310	0.63705	0.35323	0.05935	0.41259	—	1,850.61	1,850.61	0.08409	0.02447	0.02794	1,860.03
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.33188	1.11534	8.18368	7.14868	0.01619	0.40133	0.03312	0.43444	0.36922	0.00775	0.37697	—	1,641.94	1,641.94	0.06759	0.01468	0.06402	1,648.07
Mit.	1.33188	1.11534	8.18368	7.14868	0.01619	0.40133	0.03311	0.43444	0.36922	0.00774	0.37697	—	1,641.94	1,641.94	0.06759	0.01468	0.06402	1,648.07
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.24307	0.20355	1.49352	1.30463	0.00295	0.07324	0.00604	0.07929	0.06738	0.00141	0.06880	—	271.842	271.842	0.01119	0.00243	0.01060	272.856
Mit.	0.24307	0.20355	1.49352	1.30463	0.00295	0.07324	0.00604	0.07929	0.06738	0.00141	0.06880	—	271.842	271.842	0.01119	0.00243	0.01060	272.856
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Exceeds (Daily Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	—	54.0000	54.0000	0.00000	—	82.0000	—	—	54.0000	—	—	—	—	—	—	—	—	—
Unmit.	—	No	Yes	Yes	—	No	—	—	No	—	—	—	—	—	—	—	—	—
Mit.	—	No	Yes	Yes	—	No	—	—	No	—	—	—	—	—	—	—	—	—
Exceeds (Average Daily)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	—	54.0000	54.0000	0.00000	—	82.0000	—	—	54.0000	—	—	—	—	—	—	—	—	—
Unmit.	—	No	No	Yes	—	No	—	—	No	—	—	—	—	—	—	—	—	—
Mit.	—	No	No	Yes	—	No	—	—	No	—	—	—	—	—	—	—	—	—
Exceeds (Annual)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	—	0.00000	0.00000	0.00000	—	0.00000	—	—	0.00000	—	—	—	—	—	—	—	—	—
Unmit.	—	Yes	Yes	Yes	—	Yes	—	—	Yes	—	—	—	—	—	—	—	—	—
Mit.	—	Yes	Yes	Yes	—	Yes	—	—	Yes	—	—	—	—	—	—	—	—	—

2.2. Construction Emissions by Year

2.2.1. Total Construction Emissions by Year, Unmitigated

Includes both onsite and offsite emissions.
Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	10.6374	8.88669	71.2817	43.2167	0.08875	3.82991	0.25371	3.83112	3.52352	0.05952	3.52386	—	9,663.30	9,663.30	0.39631	0.08482	1.08195	9,699.21
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	1.87666	1.57302	11.0891	11.3900	0.02048	0.38395	0.25311	0.63705	0.35323	0.05936	0.41259	—	1,850.61	1,850.61	0.08409	0.02447	0.02794	1,860.03
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	1.33188	1.11534	8.18368	7.14868	0.01619	0.40133	0.03312	0.43444	0.36922	0.00775	0.37697	—	1,641.94	1,641.94	0.06759	0.01468	0.06402	1,648.07
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.24307	0.20355	1.49352	1.30463	0.00295	0.07324	0.00604	0.07929	0.06738	0.00141	0.06880	—	271.842	271.842	0.01119	0.00243	0.01060	272.856

2.2.2. Onsite Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	10.6373	8.88659	71.2755	43.2157	0.08871	3.82982	0.00001	3.82983	3.52343	< 0.000005	3.52344	—	9,490.82	9,490.82	0.38499	0.07700	0.00000	9,523.39
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	1.65781	1.37572	10.9036	9.63322	0.02047	0.38390	< 0.000005	0.38391	0.35319	< 0.000005	0.35319	—	1,593.49	1,593.49	0.06464	0.01293	0.00000	1,598.95
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	1.30246	1.08875	8.16017	6.91796	0.01618	0.40131	< 0.000005	0.40131	0.36921	< 0.000005	0.36921	—	1,606.18	1,606.18	0.06515	0.01303	0.00000	1,611.69
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

2027	0.23770	0.19870	1.48923	1.26253	0.00295	0.07324	< 0.000005	0.07324	0.06738	< 0.000005	0.06738	—	265.921	265.921	0.01079	0.00216	0.00000	266.833
------	---------	---------	---------	---------	---------	---------	------------	---------	---------	------------	---------	---	---------	---------	---------	---------	---------	---------

2.2.3. Offsite Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.21230	0.19240	0.15992	1.60469	0.00003	0.00009	0.25371	0.25379	0.00009	0.05952	0.05961	—	259.876	259.876	0.01698	0.01191	1.08195	264.931
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.21885	0.19730	0.18555	1.75678	0.00002	0.00004	0.25310	0.25315	0.00004	0.05935	0.05940	—	257.121	257.121	0.01946	0.01155	0.02794	261.076
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.02942	0.02658	0.02351	0.23073	0.00001	0.00001	0.03311	0.03313	0.00001	0.00774	0.00776	—	35.7616	35.7616	0.00244	0.00165	0.06402	36.3786
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.00537	0.00485	0.00429	0.04211	< 0.000005	< 0.000005	0.00604	0.00605	< 0.000005	0.00141	0.00142	—	5.92074	5.92074	0.00040	0.00027	0.01060	6.02289

2.2.4. Total Construction Emissions by Year, Mitigated

Includes both onsite and offsite emissions.

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	10.6374	8.88669	71.2817	43.2167	0.08875	3.82991	0.25371	3.83112	3.52352	0.05952	3.52386	—	9,663.30	9,663.30	0.39631	0.08482	1.08195	9,699.21
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

2027	1.87666	1.57302	11.0891	11.3900	0.02048	0.38395	0.25310	0.63705	0.35323	0.05935	0.41259	—	1,850.61	1,850.61	0.08409	0.02447	0.02794	1,860.03
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	1.33188	1.11534	8.18368	7.14868	0.01619	0.40133	0.03311	0.43444	0.36922	0.00774	0.37697	—	1,641.94	1,641.94	0.06759	0.01468	0.06402	1,648.07
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.24307	0.20355	1.49352	1.30463	0.00295	0.07324	0.00604	0.07929	0.06738	0.00141	0.06880	—	271.842	271.842	0.01119	0.00243	0.01060	272.856

2.2.5. Onsite Construction Emissions by Year, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	10.6373	8.88659	71.2755	43.2157	0.08871	3.82982	< 0.000005	3.82982	3.52343	< 0.000005	3.52343	—	9,490.82	9,490.82	0.38499	0.07700	0.00000	9,523.39
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	1.65781	1.37572	10.9036	9.63322	0.02047	0.38390	< 0.000005	0.38390	0.35319	< 0.000005	0.35319	—	1,593.49	1,593.49	0.06464	0.01293	0.00000	1,598.95
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	1.30246	1.08875	8.16017	6.91796	0.01618	0.40131	< 0.000005	0.40131	0.36921	< 0.000005	0.36921	—	1,606.18	1,606.18	0.06515	0.01303	0.00000	1,611.69
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.23770	0.19870	1.48923	1.26253	0.00295	0.07324	< 0.000005	0.07324	0.06738	< 0.000005	0.06738	—	265.921	265.921	0.01079	0.00216	0.00000	266.833

2.2.6. Offsite Construction Emissions by Year, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
------	-----	-----	-----	----	-----	-------	-------	-------	--------	--------	--------	------	-------	------	-----	-----	---	------

Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.21230	0.19240	0.15992	1.60469	0.00003	0.00009	0.25371	0.25379	0.00009	0.05952	0.05961	—	259.876	259.876	0.01698	0.01191	1.08195	264.931
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.21885	0.19730	0.18555	1.75678	0.00002	0.00004	0.25310	0.25315	0.00004	0.05935	0.05940	—	257.121	257.121	0.01946	0.01155	0.02794	261.076
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.02942	0.02658	0.02351	0.23073	0.00001	0.00001	0.03311	0.03313	0.00001	0.00774	0.00776	—	35.7616	35.7616	0.00244	0.00165	0.06402	36.3786
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.00537	0.00485	0.00429	0.04211	< 0.000005	< 0.000005	0.00604	0.00605	< 0.000005	0.00141	0.00142	—	5.92074	5.92074	0.00040	0.00027	0.01060	6.02289

2.3. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.12489	0.12489	0.00002	< 0.000005	0.00000	0.12612
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.12489	0.12489	0.00002	< 0.000005	0.00000	0.12612
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.12489	0.12489	0.00002	< 0.000005	0.00000	0.12612

Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Unmit.	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.02068	0.02068	< 0.000005	< 0.000005	0.00000	0.02088
Exceeds (Daily Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	—	54.0000	54.0000	9.00000	—	82.0000	—	—	54.0000	—	—	—	—	—	—	—	—	—	—
Unmit.	—	No	No	No	—	No	—	—	No	—	—	—	—	—	—	—	—	—	—
Exceeds (Average Daily)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	—	54.0000	54.0000	9.00000	—	82.0000	—	—	54.0000	—	—	—	—	—	—	—	—	—	—
Unmit.	—	No	No	No	—	No	—	—	No	—	—	—	—	—	—	—	—	—	—
Exceeds (Annual)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	—	10.00000	10.00000	0.00000	—	15.0000	—	—	10.00000	—	—	—	—	—	—	—	—	—	—
Unmit.	—	No	No	No	—	No	—	—	No	—	—	—	—	—	—	—	—	—	—

2.4. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Area	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Energy	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Water	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.12489	0.12489	0.00002	< 0.000005	—	0.12612

Waste	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000
Total	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.12489	0.12489	0.00002	< 0.000005	0.00000	0.12612
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Area	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Water	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.12489	0.12489	0.00002	< 0.000005	—	0.12612
Waste	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000
Total	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.12489	0.12489	0.00002	< 0.000005	0.00000	0.12612
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Area	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Energy	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Water	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.12489	0.12489	0.00002	< 0.000005	—	0.12612
Waste	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000
Total	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.12489	0.12489	0.00002	< 0.000005	0.00000	0.12612
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Area	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Energy	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	—	0.00000	0.00000	0.00000	0.00000	—	0.00000

Water	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.02068	0.02068	< 0.000005	< 0.000005	—	0.02088
Waste	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000
Total	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.02068	0.02068	< 0.000005	< 0.000005	0.00000	0.02088

2.5. Operations Emissions by Sector, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Area	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Energy	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Water	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.12489	0.12489	0.00002	< 0.000005	—	0.12612
Waste	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000
Total	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.12489	0.12489	0.00002	< 0.000005	0.00000	0.12612
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Area	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Water	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.12489	0.12489	0.00002	< 0.000005	—	0.12612
Waste	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000

Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000
Total	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.12489	0.12489	0.00002	< 0.000005	0.00000	0.12612
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Area	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Energy	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Water	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.12489	0.12489	0.00002	< 0.000005	—	0.12612
Waste	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000
Total	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.12489	0.12489	0.00002	< 0.000005	0.00000	0.12612
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Area	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Energy	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Water	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.02068	0.02068	< 0.000005	< 0.000005	—	0.02088
Waste	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000
Total	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.02068	0.02068	< 0.000005	< 0.000005	0.00000	0.02088

3. Construction Emissions Details

3.1. Flood Protection Sheet Pile Wall (2027)

3.1.1. Onsite - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.55144	2.98420	17.1029	31.3195	0.08767	0.66890	—	0.66890	0.61539	—	0.61539	—	9,490.82	9,490.82	0.38499	0.07700	—	9,523.39
Dust From Material Movement	—	—	—	—	—	—	< 0.000005	< 0.000005	—	< 0.000005	< 0.000005	—	—	—	—	—	—	—
Architectural Coatings	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.29190	0.24528	1.40572	2.57421	0.00721	0.05498	—	0.05498	0.05058	—	0.05058	—	780.068	780.068	0.03164	0.00633	—	782.745
Dust From Material Movement	—	—	—	—	—	—	< 0.000005	< 0.000005	—	< 0.000005	< 0.000005	—	—	—	—	—	—	—
Architectural Coatings	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.05327	0.04476	0.25654	0.46979	0.00132	0.01003	—	0.01003	0.00923	—	0.00923	—	129.149	129.149	0.00524	0.00105	—	129.592
Dust From Material Movement	—	—	—	—	—	—	< 0.000005	< 0.000005	—	< 0.000005	< 0.000005	—	—	—	—	—	—	—
Architectural Coatings	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.1.2. Offsite - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.14145	0.12819	0.10249	1.06916	0.00000	0.00000	0.16833	0.16833	0.00000	0.03946	0.03946	—	170.174	170.174	0.01132	0.00746	0.71581	173.395
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00006	0.00005	0.00310	0.00047	0.00002	0.00004	0.00060	0.00065	0.00004	0.00017	0.00021	—	2.30718	2.30718	< 0.000005	0.00036	0.00412	2.41890
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01176	0.01063	0.00899	0.09223	0.00000	0.00000	0.01317	0.01317	0.00000	0.00308	0.00308	—	14.0012	14.0012	0.00098	0.00061	0.02537	14.2336
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	< 0.000005	< 0.000005	0.00026	0.00004	< 0.000005	< 0.000005	0.00005	0.00005	< 0.000005	0.00001	0.00002	—	0.18966	0.18966	< 0.000005	0.00003	0.00015	0.19865
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00215	0.00194	0.00164	0.01683	0.00000	0.00000	0.00240	0.00240	0.00000	0.00056	0.00056	—	2.31806	2.31806	0.00016	0.00010	0.00420	2.35653

Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	< 0.000005	< 0.000005	0.00005	0.00001	< 0.000005	< 0.000005	0.00001	0.00001	< 0.000005	< 0.000005	< 0.000005	—	0.03140	0.03140	< 0.000005	< 0.000005	0.00002	0.03289

3.1.3. Onsite - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.55144	2.98420	17.1029	31.3195	0.08767	0.66890	—	0.66890	0.61539	—	0.61539	—	9,490.82	9,490.82	0.38499	0.07700	—	9,523.39
Dust From Material Movement	—	—	—	—	—	—	< 0.000005	< 0.000005	—	< 0.000005	< 0.000005	—	—	—	—	—	—	—
Architectural Coatings	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.29190	0.24528	1.40572	2.57421	0.00721	0.05498	—	0.05498	0.05058	—	0.05058	—	780.068	780.068	0.03164	0.00633	—	782.745

Dust From Material Movement	—	—	—	—	—	—	< 0.000005	< 0.000005	—	< 0.000005	< 0.000005	—	—	—	—	—	—	—
Architectural Coatings	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05327	0.04476	0.25654	0.46979	0.00132	0.01003	—	0.01003	0.00923	—	0.00923	—	129.149	129.149	0.00524	0.00105	—	129.592
Dust From Material Movement	—	—	—	—	—	—	< 0.000005	< 0.000005	—	< 0.000005	< 0.000005	—	—	—	—	—	—	—
Architectural Coatings	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.1.4. Offsite - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.14145	0.12819	0.10249	1.06916	0.00000	0.00000	0.16833	0.16833	0.00000	0.03946	0.03946	—	170.174	170.174	0.01132	0.00746	0.71581	173.395
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00006	0.00005	0.00310	0.00047	0.00002	0.00004	0.00060	0.00065	0.00004	0.00017	0.00021	—	2.30718	2.30718	< 0.000005	0.00036	0.00412	2.41890

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01176	0.01063	0.00899	0.09223	0.00000	0.00000	0.01317	0.01317	0.00000	0.00308	0.00308	—	14.0012	14.0012	0.00098	0.00061	0.02537	14.2336
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	< 0.000005	< 0.000005	0.00026	0.00004	< 0.000005	< 0.000005	0.00005	0.00005	< 0.000005	0.00001	0.00002	—	0.18966	0.18966	< 0.000005	0.00003	0.00015	0.19865
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00215	0.00194	0.00164	0.01683	0.00000	0.00000	0.00240	0.00240	0.00000	0.00056	0.00056	—	2.31806	2.31806	0.00016	0.00010	0.00420	2.35653
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	< 0.000005	< 0.000005	0.00005	0.00001	< 0.000005	< 0.000005	0.00001	0.00001	< 0.000005	< 0.000005	< 0.000005	—	0.03140	0.03140	< 0.000005	< 0.000005	0.00002	0.03289

3.2. Utility Modifications (2027)

3.2.1. Onsite - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.80346	3.15118	25.5163	20.4936	0.04735	0.91968	—	0.91968	0.84610	—	0.84610	—	4,123.54	4,123.54	0.16727	0.03345	—	4,137.69
Dust From Material Movement	—	—	—	—	—	—	< 0.000005	< 0.000005	—	< 0.000005	< 0.000005	—	—	—	—	—	—	—

Architectural Coatings	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.31261	0.25900	2.09723	1.68440	0.00389	0.07559	—	0.07559	0.06954	—	0.06954	—	338.921	338.921	0.01375	0.00275	—	340.084
Dust From Material Movement	—	—	—	—	—	—	< 0.000005	< 0.000005	—	< 0.000005	< 0.000005	—	—	—	—	—	—	—
Architectural Coatings	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05705	0.04727	0.38275	0.30740	0.00071	0.01380	—	0.01380	0.01269	—	0.01269	—	56.1122	56.1122	0.00228	0.00046	—	56.3048
Dust From Material Movement	—	—	—	—	—	—	< 0.000005	< 0.000005	—	< 0.000005	< 0.000005	—	—	—	—	—	—	—
Architectural Coatings	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
--------------	---------	---------	---------	---------	---------	---------	---------	---------	---------	---------	---------	---	---------	---------	---------	---------	---------	---------

3.2.2. Offsite - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00006	0.00005	0.00310	0.00047	0.00002	0.00004	0.00060	0.00065	0.00004	0.00017	0.00021	—	2.30718	2.30718	< 0.000005	0.00036	0.00412	2.41890
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	< 0.000005	< 0.000005	0.00026	0.00004	< 0.000005	< 0.000005	0.00005	0.00005	< 0.000005	0.00001	0.00002	—	0.18966	0.18966	< 0.000005	0.00003	0.00015	0.19865
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	< 0.000005	< 0.000005	0.00005	0.00001	< 0.000005	< 0.000005	0.00001	0.00001	< 0.000005	< 0.000005	< 0.000005	—	0.03140	0.03140	< 0.000005	< 0.000005	0.00002	0.03289

3.2.3. Onsite - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
----------	-----	-----	-----	----	-----	-------	-------	-------	--------	--------	--------	------	-------	------	-----	-----	---	------

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.80346	3.15118	25.5163	20.4936	0.04735	0.91968	—	0.91968	0.84610	—	0.84610	—	4,123.54	4,123.54	0.16727	0.03345	—	4,137.69
Dust From Material Movement	—	—	—	—	—	—	< 0.000005	< 0.000005	—	< 0.000005	< 0.000005	—	—	—	—	—	—	—
Architectural Coatings	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.31261	0.25900	2.09723	1.68440	0.00389	0.07559	—	0.07559	0.06954	—	0.06954	—	338.921	338.921	0.01375	0.00275	—	340.084
Dust From Material Movement	—	—	—	—	—	—	< 0.000005	< 0.000005	—	< 0.000005	< 0.000005	—	—	—	—	—	—	—
Architectural Coatings	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road	0.05705	0.04727	0.38275	0.30740	0.00071	0.01380	—	0.01380	0.01269	—	0.01269	—	56.1122	56.1122	0.00228	0.00046	—	56.3048
Dust From Material Movement	—	—	—	—	—	—	< 0.000005	< 0.000005	—	< 0.000005	< 0.000005	—	—	—	—	—	—	—
Architectural Coatings	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.2.4. Offsite - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00006	0.00005	0.00310	0.00047	0.00002	0.00004	0.00060	0.00065	0.00004	0.00017	0.00021	—	2.30718	2.30718	< 0.000005	0.00036	0.00412	2.41890
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	< 0.000005	< 0.000005	0.00026	0.00004	< 0.000005	< 0.000005	0.00005	0.00005	< 0.000005	0.00001	0.00002	—	0.18966	0.18966	< 0.000005	0.00003	0.00015	0.19865
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	< 0.000005	< 0.000005	0.00005	0.00001	< 0.000005	< 0.000005	0.00001	0.00001	< 0.000005	< 0.000005	< 0.000005	—	0.03140	0.03140	< 0.000005	< 0.000005	0.00002	0.03289

3.3. Wetland Restoration (2027)

3.3.1. Onsite - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	6.83383	5.73541	45.7592	22.7221	0.04136	2.91014	—	2.91014	2.67733	—	2.67733	—	4,333.97	4,333.97	0.17580	0.03516	—	4,348.84
Dust From Material Movement	—	—	—	—	—	—	< 0.000005	< 0.000005	—	< 0.000005	< 0.000005	—	—	—	—	—	—	—
Architectural Coatings	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.56168	0.47140	3.76103	1.86757	0.00340	0.23919	—	0.23919	0.22005	—	0.22005	—	356.216	356.216	0.01445	0.00289	—	357.439

Dust From Material Movement	—	—	—	—	—	—	< 0.000005	< 0.000005	—	< 0.000005	< 0.000005	—	—	—	—	—	—	—
Architectural Coatings	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10251	0.08603	0.68639	0.34083	0.00062	0.04365	—	0.04365	0.04016	—	0.04016	—	58.9757	58.9757	0.00239	0.00048	—	59.1781
Dust From Material Movement	—	—	—	—	—	—	< 0.000005	< 0.000005	—	< 0.000005	< 0.000005	—	—	—	—	—	—	—
Architectural Coatings	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.3.2. Offsite - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00006	0.00005	0.00310	0.00047	0.00002	0.00004	0.00060	0.00065	0.00004	0.00017	0.00021	—	2.30718	2.30718	< 0.000005	0.00036	0.00412	2.41890

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	< 0.000005	< 0.000005	0.00026	0.00004	< 0.000005	< 0.000005	0.00005	0.00005	< 0.000005	0.00001	0.00002	—	0.18966	0.18966	< 0.000005	0.00003	0.00015	0.19865
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	< 0.000005	< 0.000005	0.00005	0.00001	< 0.000005	< 0.000005	0.00001	0.00001	< 0.000005	< 0.000005	< 0.000005	—	0.03140	0.03140	< 0.000005	< 0.000005	0.00002	0.03289

3.3.3. Onsite - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	6.83383	5.73541	45.7592	22.7221	0.04136	2.91014	—	2.91014	2.67733	—	2.67733	—	4,333.97	4,333.97	0.17580	0.03516	—	4,348.84
Dust From Material Movement	—	—	—	—	—	—	< 0.000005	< 0.000005	—	< 0.000005	< 0.000005	—	—	—	—	—	—	—
Architectural Coatings	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.56168	0.47140	3.76103	1.86757	0.00340	0.23919	—	0.23919	0.22005	—	0.22005	—	—	356.216	356.216	0.01445	0.00289	—	357.439
Dust From Material Movement	—	—	—	—	—	—	< 0.000005	< 0.000005	—	< 0.000005	< 0.000005	—	—	—	—	—	—	—	—
Architectural Coatings	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10251	0.08603	0.68639	0.34083	0.00062	0.04365	—	0.04365	0.04016	—	0.04016	—	—	58.9757	58.9757	0.00239	0.00048	—	59.1781
Dust From Material Movement	—	—	—	—	—	—	< 0.000005	< 0.000005	—	< 0.000005	< 0.000005	—	—	—	—	—	—	—	—
Architectural Coatings	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.3.4. Offsite - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00006	0.00005	0.00310	0.00047	0.00002	0.00004	0.00060	0.00065	0.00004	0.00017	0.00021	—	2.30718	2.30718	< 0.000005	0.00036	0.00412	2.41890
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	< 0.000005	< 0.000005	0.00026	0.00004	< 0.000005	< 0.000005	0.00005	0.00005	< 0.000005	0.00001	0.00002	—	0.18966	0.18966	< 0.000005	0.00003	0.00015	0.19865
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	< 0.000005	< 0.000005	0.00005	0.00001	< 0.000005	< 0.000005	0.00001	0.00001	< 0.000005	< 0.000005	< 0.000005	—	0.03140	0.03140	< 0.000005	< 0.000005	0.00002	0.03289

3.4. Site Drainage (2027)

3.4.1. Onsite - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
----------	-----	-----	-----	----	-----	-------	-------	-------	--------	--------	--------	------	-------	------	-----	-----	---	------

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.65781	1.37572	10.9036	9.63322	0.02047	0.38390	—	0.38390	0.35319	—	0.35319	—	1,593.49	1,593.49	0.06464	0.01293	—	1,598.95
Dust From Material Movement	—	—	—	—	—	—	< 0.000005	< 0.000005	—	< 0.000005	< 0.000005	—	—	—	—	—	—	—
Architectural Coatings	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.65781	1.37572	10.9036	9.63322	0.02047	0.38390	—	0.38390	0.35319	—	0.35319	—	1,593.49	1,593.49	0.06464	0.01293	—	1,598.95
Dust From Material Movement	—	—	—	—	—	—	< 0.000005	< 0.000005	—	< 0.000005	< 0.000005	—	—	—	—	—	—	—
Architectural Coatings	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipm	0.13626	0.11307	0.89618	0.79177	0.00168	0.03155	—	0.03155	0.02903	—	0.02903	—	130.971	130.971	0.00531	0.00106	—	131.421
Dust From Material Movement	—	—	—	—	—	—	< 0.000005	< 0.000005	—	< 0.000005	< 0.000005	—	—	—	—	—	—	—
Architectural Coatings	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02487	0.02064	0.16355	0.14450	0.00031	0.00576	—	0.00576	0.00530	—	0.00530	—	21.6838	21.6838	0.00088	0.00018	—	21.7582
Dust From Material Movement	—	—	—	—	—	—	< 0.000005	< 0.000005	—	< 0.000005	< 0.000005	—	—	—	—	—	—	—
Architectural Coatings	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.4.2. Offsite - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.21218	0.19229	0.15373	1.60374	0.00000	0.00000	0.25250	0.25250	0.00000	0.05919	0.05919	—	255.262	255.262	0.01697	0.01119	1.07371	260.093

Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00006	0.00005	0.00310	0.00047	0.00002	0.00004	0.00060	0.00065	0.00004	0.00017	0.00021	—	2.30718	2.30718	< 0.000005	0.00036	0.00412	2.41890
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.21880	0.19725	0.18233	1.75630	0.00000	0.00000	0.25250	0.25250	0.00000	0.05919	0.05919	—	254.812	254.812	0.01945	0.01119	0.02783	258.660
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00006	0.00005	0.00322	0.00049	0.00002	0.00004	0.00060	0.00065	0.00004	0.00017	0.00021	—	2.30808	2.30808	< 0.000005	0.00036	0.00011	2.41579
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01764	0.01594	0.01349	0.13834	0.00000	0.00000	0.01975	0.01975	0.00000	0.00461	0.00461	—	21.0018	21.0018	0.00146	0.00092	0.03806	21.3504
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	< 0.000005	< 0.000005	0.00026	0.00004	< 0.000005	< 0.000005	0.00005	0.00005	< 0.000005	0.00001	0.00002	—	0.18966	0.18966	< 0.000005	0.00003	0.00015	0.19865
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00322	0.00291	0.00246	0.02525	0.00000	0.00000	0.00361	0.00361	0.00000	0.00084	0.00084	—	3.47708	3.47708	0.00024	0.00015	0.00630	3.53480
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	< 0.000005	< 0.000005	0.00005	0.00001	< 0.000005	< 0.000005	0.00001	0.00001	< 0.000005	< 0.000005	< 0.000005	—	0.03140	0.03140	< 0.000005	< 0.000005	0.00002	0.03289

3.4.3. Onsite - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.65781	1.37572	10.9036	9.63322	0.02047	0.38390	—	0.38390	0.35319	—	0.35319	—	1,593.49	1,593.49	0.06464	0.01293	—	1,598.95

Dust From Material Movement	—	—	—	—	—	—	< 0.000005	< 0.000005	—	< 0.000005	< 0.000005	—	—	—	—	—	—	—
Architectural Coatings	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.65781	1.37572	10.9036	9.63322	0.02047	0.38390	—	0.38390	0.35319	—	0.35319	—	1,593.49	1,593.49	0.06464	0.01293	—	1,598.95
Dust From Material Movement	—	—	—	—	—	—	< 0.000005	< 0.000005	—	< 0.000005	< 0.000005	—	—	—	—	—	—	—
Architectural Coatings	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.13626	0.11307	0.89618	0.79177	0.00168	0.03155	—	0.03155	0.02903	—	0.02903	—	130.971	130.971	0.00531	0.00106	—	131.421
Dust From Material Movement	—	—	—	—	—	—	< 0.000005	< 0.000005	—	< 0.000005	< 0.000005	—	—	—	—	—	—	—

Architectural	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02487	0.02064	0.16355	0.14450	0.00031	0.00576	—	0.00576	0.00530	—	0.00530	—	21.6838	21.6838	0.00088	0.00018	—	21.7582
Dust From Material Movement	—	—	—	—	—	—	< 0.000005	< 0.000005	—	< 0.000005	< 0.000005	—	—	—	—	—	—	—
Architectural Coatings	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.4.4. Offsite - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.21218	0.19229	0.15373	1.60374	0.00000	0.00000	0.25250	0.25250	0.00000	0.05919	0.05919	—	255.262	255.262	0.01697	0.01119	1.07371	260.093
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00006	0.00005	0.00310	0.00047	0.00002	0.00004	0.00060	0.00065	0.00004	0.00017	0.00021	—	2.30718	2.30718	< 0.000005	0.00036	0.00412	2.41890
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.21880	0.19725	0.18233	1.75630	0.00000	0.00000	0.25250	0.25250	0.00000	0.05919	0.05919	—	254.812	254.812	0.01945	0.01119	0.02783	258.660

Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00006	0.00005	0.00322	0.00049	0.00002	0.00004	0.00060	0.00065	0.00004	0.00017	0.00021	—	2.30808	2.30808	< 0.000005	0.00036	0.00011	2.41579
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01764	0.01594	0.01349	0.13834	0.00000	0.00000	0.01975	0.01975	0.00000	0.00461	0.00461	—	21.0018	21.0018	0.00146	0.00092	0.03806	21.3504
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	< 0.000005	< 0.000005	0.00026	0.00004	< 0.000005	< 0.000005	0.00005	0.00005	< 0.000005	0.00001	0.00002	—	0.18966	0.18966	< 0.000005	0.00003	0.00015	0.19865
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00322	0.00291	0.00246	0.02525	0.00000	0.00000	0.00361	0.00361	0.00000	0.00084	0.00084	—	3.47708	3.47708	0.00024	0.00015	0.00630	3.53480
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	< 0.000005	< 0.000005	0.00005	0.00001	< 0.000005	< 0.000005	0.00001	0.00001	< 0.000005	< 0.000005	< 0.000005	—	0.03140	0.03140	< 0.000005	< 0.000005	0.00002	0.03289

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Total	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Total	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Total	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

4.1.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Total	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Total	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Single Family Housing	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000
Total	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Total	—	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Total	—	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Total	—	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000	0.00000	0.00000	—	0.00000

4.2.2. Electricity Emissions By Land Use - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Total	—	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Total	—	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Total	—	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000	0.00000	0.00000	—	0.00000

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Total	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	—	0.00000	0.00000	0.00000	0.00000	—	0.00000

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Total	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Total	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	—	0.00000	0.00000	0.00000	0.00000	—	0.00000

4.2.4. Natural Gas Emissions By Land Use - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Total	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Total	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Single Family Housing	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Total	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	—	0.00000	0.00000	0.00000	0.00000	—	0.00000

4.3. Area Emissions by Source

4.3.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Total	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Architectural Coatings	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Total	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	—	0.00000	0.00000	0.00000	0.00000	—	0.00000

4.3.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Landscape Equipm	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Total	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Total	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	—	0.00000	0.00000	0.00000	0.00000	—	0.00000

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.12489	0.12489	0.00002	< 0.000005	—	0.12612
Total	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.12489	0.12489	0.00002	< 0.000005	—	0.12612
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.12489	0.12489	0.00002	< 0.000005	—	0.12612
Total	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.12489	0.12489	0.00002	< 0.000005	—	0.12612
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.02068	0.02068	< 0.000005	< 0.000005	—	0.02088
Total	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.02068	0.02068	< 0.000005	< 0.000005	—	0.02088

4.4.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.12489	0.12489	0.00002	< 0.000005	—	0.12612

Total	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.12489	0.12489	0.00002	< 0.000005	—	0.12612
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.12489	0.12489	0.00002	< 0.000005	—	0.12612
Total	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.12489	0.12489	0.00002	< 0.000005	—	0.12612
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.02068	0.02068	< 0.000005	< 0.000005	—	0.02088
Total	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.02068	0.02068	< 0.000005	< 0.000005	—	0.02088

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000
Total	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000
Total	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000
Total	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000

4.5.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000
Total	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000
Total	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000
Total	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000

4.6.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipm ent Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.7.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
-------	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

4.8.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipm ent Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipm ent Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipm ent Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetati on	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Remove d	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequest ered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Remove d	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequest ered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Remove d	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetati on	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
-------------	-----	-----	-----	----	-----	-------	-------	-------	--------	--------	--------	------	-------	------	-----	-----	---	------

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Flood Protection Sheet Pile Wall	Site Preparation	5/4/2027	6/14/2027	5.00000	30.0000	—
Utility Modifications	Building Construction	6/16/2027	7/27/2027	5.00000	30.0000	—
Wetland Restoration	Building Construction	7/27/2027	9/6/2027	5.00000	30.0000	—
Site Drainage	Trenching	9/6/2027	10/16/2027	5.00000	30.0000	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Flood Protection Sheet Pile Wall	Excavators	Diesel	Average	5.00000	8.00000	148.000	0.41000
Flood Protection Sheet Pile Wall	Off-Highway Trucks	Diesel	Average	5.00000	8.00000	376.000	0.38000
Utility Modifications	Excavators	Diesel	Average	5.00000	8.00000	84.0000	0.37000
Utility Modifications	Dumpers/Tenders	Diesel	Average	5.00000	4.00000	367.000	0.29000
Wetland Restoration	Excavators	Diesel	Average	5.00000	4.00000	367.000	0.29000
Wetland Restoration	Dumpers/Tenders	Diesel	Average	5.00000	4.00000	82.0000	0.20000
Wetland Restoration	Skid Steer Loaders	Diesel	Average	5.00000	8.00000	84.0000	0.37000
Site Drainage	Excavators	Diesel	Average	5.00000	6.00000	36.0000	0.38000
Site Drainage	Cement and Mortar Mixers	Diesel	Average	5.00000	6.00000	33.0000	0.73000
Site Drainage	Dumpers/Tenders	Diesel	Average	5.00000	4.00000	16.0000	0.38000

5.2.2. Mitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Flood Protection Sheet Pile Wall	Excavators	Diesel	Average	5.00000	8.00000	148.000	0.41000
Flood Protection Sheet Pile Wall	Off-Highway Trucks	Diesel	Average	5.00000	8.00000	376.000	0.38000
Utility Modifications	Excavators	Diesel	Average	5.00000	8.00000	84.0000	0.37000
Utility Modifications	Dumpers/Tenders	Diesel	Average	5.00000	4.00000	367.000	0.29000
Wetland Restoration	Excavators	Diesel	Average	5.00000	4.00000	367.000	0.29000
Wetland Restoration	Dumpers/Tenders	Diesel	Average	5.00000	4.00000	82.0000	0.20000
Wetland Restoration	Skid Steer Loaders	Diesel	Average	5.00000	8.00000	84.0000	0.37000
Site Drainage	Excavators	Diesel	Average	5.00000	6.00000	36.0000	0.38000
Site Drainage	Cement and Mortar Mixers	Diesel	Average	5.00000	6.00000	33.0000	0.73000
Site Drainage	Dumpers/Tenders	Diesel	Average	5.00000	4.00000	16.0000	0.38000

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Flood Protection Sheet Pile Wall	Worker	25.0000	9.53000	LDA,LDT1,LDT2
Flood Protection Sheet Pile Wall	Vendor	—	7.16000	HHDT,MHDT
Flood Protection Sheet Pile Wall	Hauling	0.03333	20.0000	HHDT
Flood Protection Sheet Pile Wall	Onsite truck	—	—	HHDT
Utility Modifications	Worker	0.00000	9.53000	LDA,LDT1,LDT2
Utility Modifications	Vendor	0.00000	7.16000	HHDT,MHDT
Utility Modifications	Hauling	0.03333	20.0000	HHDT
Utility Modifications	Onsite truck	—	—	HHDT
Wetland Restoration	Worker	0.00000	9.53000	LDA,LDT1,LDT2
Wetland Restoration	Vendor	0.00000	7.16000	HHDT,MHDT

Wetland Restoration	Hauling	0.03333	20.0000	HHDT
Wetland Restoration	Onsite truck	—	—	HHDT
Site Drainage	Worker	37.5000	9.53000	LDA,LDT1,LDT2
Site Drainage	Vendor	—	7.16000	HHDT,MHDT
Site Drainage	Hauling	0.03333	20.0000	HHDT
Site Drainage	Onsite truck	—	—	HHDT

5.3.2. Mitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Flood Protection Sheet Pile Wall	Worker	25.0000	9.53000	LDA,LDT1,LDT2
Flood Protection Sheet Pile Wall	Vendor	—	7.16000	HHDT,MHDT
Flood Protection Sheet Pile Wall	Hauling	0.03333	20.0000	HHDT
Flood Protection Sheet Pile Wall	Onsite truck	—	—	HHDT
Utility Modifications	Worker	0.00000	9.53000	LDA,LDT1,LDT2
Utility Modifications	Vendor	0.00000	7.16000	HHDT,MHDT
Utility Modifications	Hauling	0.03333	20.0000	HHDT
Utility Modifications	Onsite truck	—	—	HHDT
Wetland Restoration	Worker	0.00000	9.53000	LDA,LDT1,LDT2
Wetland Restoration	Vendor	0.00000	7.16000	HHDT,MHDT
Wetland Restoration	Hauling	0.03333	20.0000	HHDT
Wetland Restoration	Onsite truck	—	—	HHDT
Site Drainage	Worker	37.5000	9.53000	LDA,LDT1,LDT2
Site Drainage	Vendor	—	7.16000	HHDT,MHDT
Site Drainage	Hauling	0.03333	20.0000	HHDT
Site Drainage	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Flood Protection Sheet Pile Wall	0.00000	0.00000	0.00000	0.00000	—
Utility Modifications	0.00000	0.00000	0.00000	0.00000	—
Wetland Restoration	0.00000	0.00000	0.00000	0.00000	—
Site Drainage	0.00000	0.00000	0.00000	0.00000	—

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Cubic Yards)	Material Exported (Cubic Yards)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Flood Protection Sheet Pile Wall	1.000000	1.000000	0.27000	0.00000	0.00000
Utility Modifications	1.000000	1.000000	0.27000	0.00000	0.00000
Wetland Restoration	1.000000	1.000000	0.27000	0.00000	0.00000
Site Drainage	1.000000	1.000000	0.27000	0.00000	0.00000

5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

5.7. Construction Paving

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2027	0.00000	203.983	0.03300	0.00400

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Single Family Housing	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

5.9.2. Mitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Single Family Housing	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

5.10. Operational Area Sources

5.10.1. Hearths

Land Use	Hearth Type	Unmitigated (number)	Mitigated (number)
Single Family Housing	Wood Fireplaces	0	0
Single Family Housing	Gas Fireplaces	0	0
Single Family Housing	Propane Fireplaces	0	0
Single Family Housing	Electric Fireplaces	0	0
Single Family Housing	No Fireplaces	0	0
Single Family Housing	Conventional Wood Stoves	0	0
Single Family Housing	Catalytic Wood Stoves	0	0
Single Family Housing	Non-Catalytic Wood Stoves	0	0
Single Family Housing	Pellet Wood Stoves	0	0

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
0.00000	0.00000	0.00000	0.00000	—

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00000
Summer Days	day/yr	180.000

5.10.4. Landscape Equipment - Mitigated

Season	Unit	Value
Snow Days	day/yr	0.00000
Summer Days	day/yr	180.000

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Single Family Housing	0.00000	203.983	0.0330	0.0040	0.00000

5.11.2. Mitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Single Family Housing	0.00000	203.983	0.0330	0.0040	0.00000

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Single Family Housing	0.00000	76,755.6

5.12.2. Mitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Single Family Housing	0.00000	76,755.6

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Single Family Housing	0.00000	0.00000

5.13.2. Mitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Single Family Housing	0.00000	0.00000

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Single Family Housing	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088.00	0.00225	2.50000	2.50000	10.00000

Single Family Housing	Household refrigerators and/or freezers	R-134a	1,430.00	0.11538	0.60000	0.00000	1.000000
-----------------------	---	--------	----------	---------	---------	---------	----------

5.14.2. Mitigated

Land Use	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Single Family Housing	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088.00	0.00225	2.50000	2.50000	10.00000
Single Family Housing	Household refrigerators and/or freezers	R-134a	1,430.00	0.11538	0.60000	0.00000	1.000000

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

5.15.2. Mitigated

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

5.16.2. Process Boilers

5.17. User Defined

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres
--------------------------	----------------------	---------------	-------------

5.18.1.2. Mitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres
--------------------------	----------------------	---------------	-------------

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres
--------------------	---------------	-------------

5.18.1.2. Mitigated

Biomass Cover Type	Initial Acres	Final Acres
--------------------	---------------	-------------

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)
-----------	--------	------------------------------	------------------------------

5.18.2.2. Mitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)
-----------	--------	------------------------------	------------------------------

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	5.52000	annual days of extreme heat
Extreme Precipitation	16.6000	annual days with precipitation above 20 mm

Sea Level Rise	—	meters of inundation depth
Wildfire	18.2500	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters

Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	N/A	N/A	N/A	N/A
Extreme Precipitation	3	2	0	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	1	1	0	N/A
Flooding	5	5	3	4
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	N/A	N/A	N/A	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.

The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.

The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	N/A	N/A	N/A	N/A

Extreme Precipitation	3	2	2	3
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	1	1	1	2
Flooding	5	4	5	2
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	N/A	N/A	N/A	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.

The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.

The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

6.4.1. Wildfire

User Selected Measures	Co-Benefits Achieved	Exposure Reduction	Sensitivity Reduction	Adaptive Capacity Increase
MH-13: Support Local Food Systems	Enhanced Food Security, Improved Public Health, Social Equity	—	—	1.000000

6.4.2. Flooding

User Selected Measures	Co-Benefits Achieved	Exposure Reduction	Sensitivity Reduction	Adaptive Capacity Increase
MH-13: Support Local Food Systems	Enhanced Food Security, Improved Public Health, Social Equity	—	—	1.000000
MH-22: Improve Poor Drainage	Improved Public Health	—	1.000000	—
MH-6: Upgrade Water Systems	Improved Ecosystem Health, Water Conservation	—	—	2.000000
EP-5: Upgrade Wastewater Systems	Improved Ecosystem Health, Water Conservation	—	—	2.000000

6.4.3. Extreme Precipitation

User Selected Measures	Co-Benefits Achieved	Exposure Reduction	Sensitivity Reduction	Adaptive Capacity Increase
MH-13: Support Local Food Systems	Enhanced Food Security, Improved Public Health, Social Equity	—	—	1.000000
EP-5: Upgrade Wastewater Systems	Improved Ecosystem Health, Water Conservation	—	—	2.000000

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	0.18668
AQ-PM	4.99067
AQ-DPM	12.3584
Drinking Water	18.4838
Lead Risk Housing	32.6024
Pesticides	0.00000
Toxic Releases	11.2778
Traffic	39.9875
Effect Indicators	—
CleanUp Sites	0.00000
Groundwater	65.6650
Haz Waste Facilities/Generators	56.3997
Impaired Water Bodies	51.2180
Solid Waste	0.00000
Sensitive Population	—

Asthma	77.3928
Cardio-vascular	69.1052
Low Birth Weights	5.68386
Socioeconomic Factor Indicators	—
Education	44.6469
Housing	17.9341
Linguistic	0.00000
Poverty	63.6432
Unemployment	74.7397

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	61.76055434
Employed	76.27357885
Median HI	52.31618119
Education	—
Bachelor's or higher	53.83036058
High school enrollment	100
Preschool enrollment	61.70922623
Transportation	—
Auto Access	59.70742974
Active commuting	23.21314
Social	—
2-parent households	4.645194405
Voting	62.8127807
Neighborhood	—

Alcohol availability	65.9822918
Park access	7.057615809
Retail density	19.0170666
Supermarket access	53.83036058
Tree canopy	95.4446298
Housing	—
Homeownership	50.58385731
Housing habitability	78.23687925
Low-inc homeowner severe housing cost burden	68.76684204
Low-inc renter severe housing cost burden	76.06826639
Uncrowded housing	96.93314513
Health Outcomes	—
Insured adults	59.36096497
Arthritis	0.0
Asthma ER Admissions	17.2
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	16.2
Cognitively Disabled	4.0
Physically Disabled	21.7
Heart Attack ER Admissions	54.0
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0

Pedestrian Injuries	89.7
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	37.6
Children	86.0
Elderly	23.5
English Speaking	87.2
Foreign-born	4.4
Outdoor Workers	34.0
Climate Change Adaptive Capacity	—
Impervious Surface Cover	80.5
Traffic Density	55.7
Traffic Access	0.0
Other Indices	—
Hardship	32.0
Other Decision Support	—
2016 Voting	55.0

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	19.0000
Healthy Places Index Score for Project Location (b)	61.0000

Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
Project Located in a Low-Income Community (Assembly Bill 1550)	No
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

8.1. Justifications

Screen	Justification
Characteristics: Project Details	—
Land Use	—
Construction: Construction Phases	—
Construction: Off-Road Equipment	—
Construction: Dust From Material Movement	—
Construction: Architectural Coatings	—
Operations: Hearths	—

8.3. Land Use

Model Parameter	Units	Default Value	New Value
Lot Area	acre	0.00000	0.17000

Landscape Area	sq. ft	0.00000	7,405.20
----------------	--------	---------	----------

8.4. Construction

8.4.2. Off-Road Equipment

Phase Name	Equipment Type	Model Parameter	Default Value	New Value
Flood Protection Sheet Pile Wall	Excavators	Number per Day	1.000000	5.00000
Utility Modifications	Excavators	Number per Day	2.00000	5.00000
Utility Modifications	Dumpers/Tenders	Number per Day	1.000000	5.00000
Wetland Restoration	Excavators	Number per Day	1.000000	5.00000
Wetland Restoration	Dumpers/Tenders	Number per Day	2.00000	5.00000
Wetland Restoration	Dumpers/Tenders	Hours Per Day	6.00000	4.00000
Wetland Restoration	Skid Steer Loaders	Number per Day	2.00000	5.00000

8.4.4. Dust from Material Movement

Phase Name	Model Parameter	Units	Default Value	New Value
Flood Protection Sheet Pile Wall	Material Imported	Cubic Yards	—	1.000000
Flood Protection Sheet Pile Wall	Material Exported	Cubic Yards	—	1.000000
Flood Protection Sheet Pile Wall	Total Acres Graded	acres	0.00000	0.27000

Appendix C

Biological Resources Technical Memorandum

Technical Memorandum

December 05, 2024

To	Terrance Williams, General Manager Humboldt Community Services District	Contact No.	707-267-2208
Copy to	Rebecca Crow, Project Manager, GHD	Email	Christian.Hernandez@ghd.com
From	Christian Hernandez, Environmental Scientist, GHD	Project No.	12644761
Project Name	Hoover Street Lift Station Flood Protection Project		
Subject	Biological Resources Technical Memorandum		

1. Introduction

This Biological Resources Technical Memorandum (Tech Memo) was prepared for the Humboldt Community Services District (HCSD) to support the Hoover Street Lift Station Flood Protection Project (Project), located in the U.S. Census-designated Myrtle town, an outlying community of Eureka, California (**Appendix A, Figures 1 and 2**). The Project is located in within the state's jurisdiction of the coastal zone.

This Tech Memo was drafted in support of the Project and evaluates sensitive biological resources that may be impacted by the proposed Project. Resources evaluated in this review include aquatic resources, Sensitive Natural Communities, and special status plant and wildlife species including but not limited to those listed under federal and state endangered species acts. Three three-parameter wetlands were identified within the Project Study Boundary.

1.1 Definition of the Project Study Boundary and Biological Study Area

The Project study area consists of one location. The Project Study Boundary (PSB) is considered the area of ground disturbance necessary to implement the Project (**Appendix A, Figure 2**). State and federal special status plant species and sensitive vegetation communities were evaluated at the level of the PSB. Aquatic resources were also evaluated at the level of the PSB and discussed below.

For the purposes of this Tech Memo, the Biological Study Area (BSA) includes the PSB and a buffer of 500 feet (**Appendix A, Figure 2**). State and federal special status wildlife species were evaluated at the level of the BSA. This BSA buffer around the PSB is designed to account for any temporary indirect impacts to wildlife or other resources from proposed construction activities.

1.2 Project Description

The proposed PSB includes approximately 0.17 acre (**Appendix A, Figure 2**). The Project includes modifications to the facility to minimize future flooding impacts caused by tidal surges, exacerbated by climate impacts from sea level rise, in the form of a sheet pile/concrete wall, berm, hybrid, or similar design approach.

2. Methods

2.1 Database Scoping

A database search of the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC), National Marine Fisheries Service (NMFS) California West Coast Region Species List Tool, California Natural Diversity Database (CNDDDB), and California Native Plant Society Inventory for Rare and Endangered Plants was conducted by GHD on September 9, 2024 (USFWS 2024, NMFS 2022, CNDDDB 2024, CNPS 2024). In addition, citizen science databases such as eBird, and iNaturalist were reviewed for additional local wildlife information (eBird 2024, iNaturalist 2024). The USFWS and NMFS databases were searched at the Project level, and all other database searches encompassed seven United States Geological Society 7.5 Minute Quadrangles (hereafter quads) including the Eureka quad and the surrounding Tyee City, Arata North, Arcata South, Cannibal Island, Fields Landing, and McWhinney Creek quads. **Appendix B** contains Database Search Results.

2.2 Sensitive Natural Communities

Sensitive Natural Communities (SNCs) include those identified on the California Sensitive Natural Communities List as well as those tracked by the CNDDDB (CDFW 2024a, CNDDDB 2024). SNCs identified on the California Sensitive Natural Communities List coincide with alliances described in *A Manual of California Vegetation, Second Edition* (Sawyer et al. 2009).

2.3 Special Status Plant Species

Special status plant species include plant species and subspecies tracked by the CNDDDB and California Native Plant Society (CNPS) that meet at least one of the following criteria (CNDDDB 2024):

- Officially listed by California or the Federal Government as Endangered, Threatened, or Rare;
- A candidate for state or federal listing as Endangered, Threatened, or Rare;
- Taxa listed in the CNPS's *Inventory of Rare and Endangered Plants of California*;
- Taxa which meet the criteria for listing, even if not currently included on any list, as described in Section 15380 of the California Environmental Quality Act (CEQA) Guidelines; these taxa may indicate "None" under listing status, but note that all California Rare Plant Rank 1 and 2 and some Rank 3 and 4 plants may fall under Section 15380 of CEQA;
- Taxa that are biologically rare, very restricted in distribution, or declining throughout their range but not currently threatened with extirpation;
- A Bureau of Land Management (BLM), USFWS, or U.S. Forest Service (USFS) Sensitive Species/Species of Conservation Concern;
- Population(s) in California that may be peripheral to the major portion of a taxon's range but are threatened with extirpation in California; and
- Taxa closely associated with a habitat that is declining in California at a significant rate (e.g. wetlands, riparian, vernal pools, old growth forests, desert aquatic systems, native grasslands, valley shrubland habitats, etc.).

2.4 Special Status Wildlife Species

Special status wildlife species include all wildlife species tracked by the CNDDDB and include all species, subspecies, Distinct Population Segments (DPS), or Evolutionarily Significant Units (ESU) that meet at least one of the following criteria (CDFW 2024a):

- Officially listed or proposed for listing under the California endangered species act (CESA) and/or the federal endangered species act (ESA).
- Taxa considered by the California Department of Fish and Wildlife (CDFW) to be a Species of Special Concern (SSC) or Fully Protected (FC).
- Taxa which meet the criteria for listing, even if not currently included on any list, as described in Section 15380 of the CEQA Guidelines.
- Taxa that are biologically rare, very restricted in distribution, or declining throughout their range, but not currently threatened with extirpation.
- Population(s) in California that may be peripheral to the major portion of a taxon's range but are threatened with extirpation in California.
- Taxa closely associated with a habitat that is declining in California at a significant rate (e.g., wetlands, riparian, vernal pools, old growth forests, desert aquatic systems, native grasslands, valley shrubland habitats, etc.).
- Taxa designated as a special status, sensitive, or declining species by other state or federal agencies, or a non-governmental organization (NGO), and determined by the CNDDDB to be rare, restricted, declining, or threatened across their range in California.

2.5 Aquatic Resources

To define a wetland, the United States Army Corps of Engineers (USACE) requires that vegetation, soil, and hydrology (three-parameters) all show wetland attributes (USACE 1987; USACE 2010). The California Coastal Commission (CCC) requires only one-parameter of the three (hydric soils, wetlands vegetation or wetlands hydrology) to be present in order to define the site as a wetland (14 CCR 13577; CCC 2011). The wetland delineation used USACE criteria from the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys and Coast Region (USACE 2010). The current standard field forms provided by the USACE (2010) were used to collect vegetation, soils, and hydrology data (**Appendix C**).

In potential three-parameter wetland areas, vegetation, soil, and hydrology data were generally collected in a transect across the upland/wetland boundary with two plots (upland/wetland) per transect. The naming convention used on datasheets to designate upland or wetland plots associated with a transect is -U or -W, respectively.

Wetland/upland boundaries and plots were mapped in the field with an Eos Arrow 100 Submeter Global Positioning System (GPS) Receiver with Global Navigation Satellite System (GNSS) and an iPad running ArcGIS Collector software. The wetland/upland boundary was recorded with the GPS unit as needed to map the wetland's spatial extent. The points were then connected in the office using ArcMap software for figure creation and the boundaries were clipped to the extent of the Project Area.

3. Results

The habitat conditions within the PSB are that of an actively maintained and regularly mowed facility, generally composing of ruderal species with patches of native coastal salt grass (Picture 1 – 3). The immediate surrounding area includes visible wetlands (Picture 4).



Picture 1 **Managed PSB.**



Picture 2 **Managed PSB.**



Picture 3 **Managed PSB.**



Picture 4 **Adjacent Wetlands.**

3.1 Sensitive Natural Communities

A database query of CNDDDB returned three terrestrial communities in the eight USGS quads surrounding the Project location: Northern Coastal Salt Marsh, Northern Foredune Grassland, and Sitka Spruce Forest. GHD conducted a site visit on October 18, 2024, to assess habitat communities. None of these communities are present in the PSB.

3.2 Special Status Plant Species

Table 1 summarizes the potential for special status plants documented in the 7-quad area to occur within the PSB. A reconnaissance survey was conducted on October 18, 2024. No rare plants were observed in the site visits, and no suitable habitat was observed. Vegetation within the PSB is actively maintained and mowed regularly, severely limiting habitat suitability for species status plant species.

Table 1 Potential for Special Status Plants to Occur in the PSB

Scientific Name	Common Name	ESA	CESA	CRPR ²	Habitat Requirements ¹	Potential to Occur in the PSB
<i>Abronia umbellata</i> var. <i>breviflora</i>	pink sand-verbena	None	None	1B.1	Coastal dunes and coastal strand. Foredunes and interdunes with sparse cover. <i>A. umbellata</i> var. <i>breviflora</i> is usually the plant closest to the ocean.	No potential. No suitable habitat is present within PSB.
<i>Angelica lucida</i>	sea-watch	None	None	4.2	Coastal bluff scrub, Coastal dunes, Coastal scrub, Marshes and swamps (coastal salt).	Low potential. Species observed within 0.6 mile north in 2014 (CNDDDB 2024). Marginally suitable coastal scrub and coastal salt marsh habitat is present within PSB.
<i>Astragalus pycnostachyus</i> var. <i>pycnostachyus</i>	coastal marsh milk-vetch	None	None	1B.2	Coastal dunes, marshes and swamps, coastal scrub. Mesic sites in dunes or along streams or coastal salt marshes.	Low potential. Moderately suitable coastal scrub and coastal salt marsh habitat is present within PSB. However, the species has not been observed in the Humboldt Bay since 1925 (CNDDDB 2024).
<i>Cardamine angulata</i>	seaside bittercress	None	None	2B.1	North coast coniferous forest, lower montane coniferous forest. Wet areas, streambanks.	No potential. No suitable habitat is present within PSB.
<i>Carex lyngbyei</i>	Lyngbye's sedge	None	None	2B.2	Marshes and swamps (brackish or freshwater).	Low potential. Species observed within 0.3 mile west in 1987 (CNDDDB 2024). Marginally suitable brackish marsh habitat is adjacent to the PSB.
<i>Carex praticola</i>	northern meadow sedge	None	None	2B.2	Meadows and seeps. Moist to wet meadows.	No potential. No suitable habitat is present within PSB.

Scientific Name	Common Name	ESA	CESA	CRPR ²	Habitat Requirements ¹	Potential to Occur in the PSB
<i>Castilleja ambigua</i> var. <i>humboldtiensis</i>	Humboldt Bay owl's-clover	None	None	1B.2	Marshes and swamps. In coastal saltmarsh with <i>Spartina</i> , <i>Distichlis</i> , <i>Salicornia</i> , <i>Jaumea</i> .	High potential. Species observed directly adjacent to the PSB in 2003 (CNDDDB 2024).
<i>Chloropyron maritimum</i> ssp. <i>palustre</i>	Point Reyes salty bird's-beak	None	None	1B.2	Coastal salt marsh. Usually in coastal salt marsh with <i>Salicornia</i> , <i>Distichlis</i> , <i>Jaumea</i> , <i>Spartina</i> , etc.	Low potential. Species observed within 0.4 mile north in 2014 (CNDDDB 2024). Marginally suitable coastal marsh habitat is adjacent to the PSB.
<i>Collinsia corymbosa</i>	round-headed collinsia	None	None	1B.2	Coastal dunes.	No potential. No suitable habitat is present within PSB.
<i>Eleocharis parvula</i>	small spikerush	None	None	4.3	Marshes and swamps.	Low potential. Marginal marsh habitat is adjacent to the PSB.
<i>Erythronium revolutum</i>	coast fawn lily	None	None	2B.2	Bogs and fens, broadleafed upland forest, north coast coniferous forest. Mesic sites; streambanks.	No potential. No suitable habitat is present within PSB.
<i>Fissidens pauperculus</i>	minute pocket moss	None	None	1B.2	North coast coniferous forest. Moss growing on damp soil along the coast. In dry streambeds and on stream banks.	No potential. No suitable habitat is present within PSB.
<i>Glehnia littoralis</i> ssp. <i>leiocarpa</i>	American glehnia	None	None	4.2	Coastal dunes.	No potential. No suitable habitat is present within PSB.
<i>Hesperervax sparsiflora</i> var. <i>brevifolia</i>	short-leaved evax	None	None	1B.2	Coastal bluff scrub, coastal dunes, coastal prairie. Sandy bluffs and flats.	No potential. No suitable habitat is present within PSB.
<i>Hosackia gracilis</i>	harlequin lotus	None	None	4.2	Broadleafed upland forest, Cismontane woodland, Closed-cone coniferous forest, Coastal bluff scrub, Coastal prairie, Coastal scrub, Marshes and swamps, Meadows and seeps, North Coast coniferous forest, Valley and foothill grassland wetlands. Roadsides.	Low potential. Marginal suitable habitat is present within PSB.
<i>Lathyrus palustris</i>	marsh pea	None	None	2B.2	Bogs and fens, lower montane coniferous forest, marshes and swamps, north coast coniferous forest, coastal prairie, coastal scrub. Moist coastal areas.	Low potential. Marginal coastal scrub habitat is present within PSB.
<i>Layia carnosa</i>	beach layia	FT	SE	1B.1	Coastal dunes, coastal scrub. On sparsely vegetated, semi-stabilized	Low potential. Marginal coastal scrub habitat is within the PSB.

Scientific Name	Common Name	ESA	CESA	CRPR ²	Habitat Requirements ¹	Potential to Occur in the PSB
					dunes, usually behind foredunes.	
<i>Lilium kelloggii</i>	Kellogg's lily	None	None	4.3	Lower montane coniferous forest, North Coast coniferous forest Openings, Roadsides.	No potential. No suitable habitat is present within PSB.
<i>Lilium occidentale</i>	western lily	FE	SE	1B.1	Coastal scrub, freshwater marsh, bogs and fens, coastal bluff scrub, coastal prairie, north coast coniferous forest, marshes and swamps. Well-drained, old beach washes overlain with wind-blown alluvium and organic topsoil; usually near margins of Sitka spruce.	Low potential. Marginal coastal scrub and marsh habitat is adjacent to the PSB.
<i>Montia howellii</i>	Howell's montia	None	None	2B.2	Meadows and seeps, north coast coniferous forest, vernal pools. Vernal wet sites; often on compacted soil.	No potential. No suitable habitat is present within PSB.
<i>Oenothera wolffii</i>	Wolf's evening-primrose	None	None	1B.1	Coastal bluff scrub, coastal dunes, coastal prairie, lower montane coniferous forest. Sandy substrates; usually mesic sites.	No potential. No suitable habitat is present within PSB.
<i>Pleuropogon refractus</i>	nodding semaphore grass	None	None	4.2	Lower montane coniferous forest, Meadows and seeps, North Coast coniferous forest, Riparian forest. Mesic.	No potential. No suitable habitat is present within PSB.
<i>Puccinellia pumila</i>	dwarf alkali grass	None	None	2B.2	Marshes and swamps. Mineral spring meadows and coastal salt marshes.	Low potential. Marginal marsh habitat is adjacent to the PSB.
<i>Sidalcea malachroides</i>	maple-leaved checkerbloom	None	None	4.2	Broadleaved upland forest, coastal prairie, coastal scrub, north coast coniferous forest, riparian forest. Woodlands and clearings near coast; often in disturbed areas.	Low potential. Marginal coastal scrub habitat is present within PSB.
<i>Silene scouleri</i> ssp. <i>scouleri</i>	Scouler's catchfly	None	None	2B.2	Coastal bluff scrub, coastal prairie, valley and foothill grassland.	No potential. No suitable habitat is present within PSB.
<i>Spergularia canadensis</i> var. <i>occidentalis</i>	western sand-spurrey	None	None	2B.1	Marshes and swamps (coastal salt marshes).	Low potential. Marginal coastal salt marsh habitat is present adjacent to the PSB.
<i>Sulcaria spiralifera</i>	twisted horsehair lichen	None	None	1B.2	North Coast coniferous forest (immediate coast), coastal dunes. Usually on conifers.	No potential. No suitable habitat is present within PSB.
<i>Viola palustris</i>	alpine marsh violet	None	None	2B.2	Coastal scrub, bogs and fens. Swampy, shrubby	Low potential. Marginal coastal salt

Scientific Name	Common Name	ESA	CESA	CRPR ²	Habitat Requirements ¹	Potential to Occur in the PSB
					places in coastal scrub or coastal bogs.	scrub habitat is present within PSB.

Footnotes:

1 General habitat, and microhabitat column information, reprinted from CNDDB (April 2024).

2 Rankings from CNDDB (April 2024).

Column Header Categories and Abbreviations:

ESA Listing status under the federal Endangered Species Act (ESA)

FE Federal Endangered; FT = Federal Threatened; FC = Federal Candidate; FD = Federally Delisted

CESA Listing status under the California state Endangered Species Act (CESA)

SE State Endangered; SD = State Delisted; ST = State Threatened.

CRPR: CNPS rankings for rare plants (CNPS 2024) - 1A = Plants presumed extinct in California; 1B = Plants rare, threatened or endangered in California and elsewhere; 2 = Plants rare, threatened, or endangered in California, but more common elsewhere; 3 = Plants about which more information is needed (a review list); 4 = Plants of limited distribution (a watch list); n/a = not applicable; Threat Code extensions and their meanings: ".1 - Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat);.2 – Moderately threatened in California (20-80% of occurrences threatened / moderate degree and immediacy of threat);.3 – Not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known)" (CDFW 2024b).

No potential: Habitat in and adjacent to the PSB is clearly unsuitable for the species requirements (cover, substrate, elevation, hydrology, plant community, site history, disturbance regime).

Low potential: Few of the habitat components meeting the species requirements are present, and/or the majority of habitat on and adjacent to the site is unsuitable or of very poor quality. The species is not likely to be found in the PSB.

Moderate potential: Some of the habitat components meeting the species requirements are present, and/or only some of the habitat on or adjacent to the site is unsuitable. The species has a moderate probability of being found in the PSB.

High potential: All of the habitat components meeting the species requirements are present and/or most of the habitat on or adjacent to the site is highly suitable. The species has a high probability of being found in the PSB.

Present: Detected or documented on-site.

3.3 Special Status Wildlife Species

Habitat availability and suitability was determined for each species reported by the databases mentioned above (**Appendix B**). Nomenclature for special status animals conforms to CDFW guidelines (CDFW 2024a). The potential for each species to occur in the PSB was determined based on habitat evaluations during the site visits and available data (see **Table 2**). Habitat within the PSB was generally poor for wildlife species as it is actively maintained and mowed regularly. No trees exist within the PSB, and an aggregate ground layer limits any ground nesting.

Table 2 Potential for Special Status Wildlife to Occur in the PSB

Scientific Name	Common Name	ESA	CESA	Other Status	Habitat Requirements ¹	Potential to Occur in the PSB
Amphibians						
<i>Ascaphus truei</i>	Pacific tailed frog	None	None	CDFW:SSC, IUCN:LC	Aquatic, Klamath/North coast flowing waters, Lower montane coniferous forest, North coast coniferous forest, Redwood, Riparian forest.	No potential. No suitable aquatic or riparian habitat is present within or adjacent to the PSB.

Scientific Name	Common Name	ESA	CESA	Other Status	Habitat Requirements ¹	Potential to Occur in the PSB
<i>Rana aurora</i>	northern red-legged frog	None	None	CDFW:SSC, IUCN:LC, USFS:S	Klamath/North coast flowing waters, Riparian forest, Riparian woodland.	Low potential. Limited suitable aquatic or riparian habitat is present within or adjacent to the PSB.
<i>Rana boylei</i> pop. 1	foothill yellow-legged frog - north coast DPS	None	None	BLM:S, CDFW:SSC, USFS:S	Aquatic, Klamath/North coast flowing waters, Riparian forest, Riparian scrub, Riparian woodland.	No potential. No suitable aquatic or riparian habitat is present within or adjacent to the PSB.
<i>Rhyacotriton variegatus</i>	southern torrent salamander	None	None	CDFW:SSC, IUCN:LC, USFS:S	Lower montane coniferous forest, Oldgrowth, Redwood, Riparian forest.	Low potential. Limited suitable aquatic or riparian habitat is present within or adjacent to the PSB.
Birds						
<i>Accipiter striatus</i>	sharp-shinned hawk	None	None	CDFW:WL, IUCN:LC	Cismontane woodland, Lower montane coniferous forest, Riparian forest, Riparian woodland.	No potential. No suitable riparian habitat is present within the PSB, but riparian forest is adjacent to the PSB therefore flyover potential exists.
<i>Ardea alba</i>	great egret	None	None	CDF:S, IUCN:LC	Brackish marsh, Estuary, Freshwater marsh, Marsh & swamp, Riparian forest, Wetland.	No potential. Marginally suitable foraging marsh habitat is present adjacent to the PSB. No suitable nesting habitat is present.
<i>Ardea herodias</i>	great blue heron	None	None	CDF:S, IUCN:LC	Brackish marsh, Estuary, Freshwater marsh, Marsh & swamp, Riparian forest, Wetland.	No potential. Marginally suitable foraging marsh habitat is present adjacent to the

Scientific Name	Common Name	ESA	CESA	Other Status	Habitat Requirements ¹	Potential to Occur in the PSB
						PSB. No suitable nesting habitat is present.
<i>Brachyramphus marmoratus</i>	marbled murrelet	Threatened	Endangered	CDF:S, IUCN:EN	Lower montane coniferous forest, Oldgrowth, Redwood.	No potential. No suitable habitat is present within the PSB.
<i>Charadrius montanus</i>	mountain plover	None	None	BLM:S, CDFW:SSC, IUCN:NT, USFWS:BCC	Chenopod scrub, Valley & foothill grassland.	No potential. No suitable habitat is present within the PSB.
<i>Charadrius nivosus nivosus</i>	western snowy plover	Threatened	None	CDFW:SSC	Great Basin standing waters, Sand shore, Wetland.	No potential. No suitable sandy habitat is present within or adjacent to the PSB.
<i>Circus hudsonius</i>	northern harrier	None	None	CDFW:SSC, IUCN:LC, USFWS:BCC	Coastal scrub, Great Basin grassland, Marsh & swamp, Riparian scrub, Valley & foothill grassland, Wetland.	Low potential. Marginally suitable coastal scrub nesting habitat is present adjacent to the PSB.
<i>Coccyzus americanus</i>	Yellow-billed Cuckoo	Threatened	Endangered	BLM:S, USFS:S	Riparian forest.	No potential. No suitable riparian forest is present within the PSB, but is adjacent to the PSB therefore flyover potential exists.
<i>Coturnicops noveboracensis</i>	yellow rail	None	None	CDFW:SSC, IUCN:LC, USFS:S, USFWS:BCC	Freshwater marsh, Meadow & seep.	Low potential. Marginally suitable habitat is present within the PSB. Species observed approximately 0.5 mile northwest in 2013 (CNDDB 2024).
<i>Egretta thula</i>	snowy egret	None	None	IUCN:LC	Marsh & swamp, Meadow & seep, Riparian forest, Riparian	No potential. Marginally suitable foraging marsh

Scientific Name	Common Name	ESA	CESA	Other Status	Habitat Requirements ¹	Potential to Occur in the PSB
					woodland, Wetland.	habitat is present adjacent to the PSB. No suitable nesting habitat is present.
<i>Elanus leucurus</i>	white-tailed kite	None	None	BLM:S, CDFW:FP, IUCN:LC	Cismontane woodland, Marsh & swamp, Riparian woodland, Valley & foothill grassland, Wetland.	Low potential. Marginally suitable riparian tree nesting habitat is present adjacent to the PSB.
<i>Falco peregrinus anatum</i>	American peregrine falcon	Delisted	Delisted	CDF:S	Estuary; Great Basin grassland; Valley & foothill grassland.	No potential. Marginally suitable foraging estuary habitat is present adjacent to the PSB, however no nesting habitat is present.
<i>Haliaeetus leucocephalus</i>	bald eagle	Delisted	Endangered	BLM:S, CDF:S, CDFW:FP, IUCN:LC, USFS:S	Lower montane coniferous forest, Oldgrowth.	No potential. Species has been observed approximately 2.5 miles west-northwest in 2022 (CNDDDB 2024). However, no suitable habitat is present within the PSB.
<i>Nannopterum auritum</i>	double-crested cormorant	None	None	CDFW:WL, IUCN:LC	Riparian forest, Riparian scrub, Riparian woodland.	No potential. No suitable riparian habitat is present within the PSB, but riparian forest is adjacent to the PSB therefore flyover potential exists.
<i>Nycticorax nycticorax</i>	black-crowned night heron	None	None	IUCN:LC	Marsh & swamp, Riparian forest, Riparian woodland, Wetland.	Low potential. Marginally suitable marsh nesting habitat is present adjacent to the PSB.

Scientific Name	Common Name	ESA	CESA	Other Status	Habitat Requirements ¹	Potential to Occur in the PSB
<i>Pandion haliaetus</i>	osprey	None	None	CDF:S, CDFW:WL, IUCN:LC	Riparian forest.	Low potential. No suitable platform nesting habitat is present within the PSB, but riparian forest is adjacent to the PSB therefore flyover potential exists.
<i>Rallus obsoletus obsoletus</i>	California Ridgway's rail	Endangered	Endangered	CDFW:FP	Brackish marsh, Marsh & swamp, Salt marsh, Wetland.	No potential. PSB is outside species range.
<i>Riparia riparia</i>	bank swallow	None	Threatened	BLM:S, IUCN:LC	Riparian scrub, Riparian woodland.	No potential. No suitable steep cliff or river embankment habitat is present within the PSB, but riparian woodland is adjacent to the PSB therefore flyover potential exists.
<i>Strix occidentalis caurina</i>	Northern Spotted Owl	Threatened	Threatened	CDF:S	North coast coniferous forest; Oldgrowth; Redwood.	No potential. No suitable habitat is present within the PSB.
Fish						
<i>Acipenser medirostris pop. 1</i>	green sturgeon - southern DPS	Threatened	None	AFS:VU, CDFW:SSC, IUCN:EN	Aquatic, Estuary, Marine bay, Sacramento/San Joaquin flowing waters.	No potential. No aquatic habitat is present within the PSB.
<i>Entosphenus tridentatus</i>	Pacific lamprey	None	None	AFS:VU, BLM:S, CDFW:SSC, IUCN:LC, USFS:S	Aquatic, Klamath/North coast flowing waters, Sacramento/San Joaquin flowing waters, South coast flowing waters.	No potential. No aquatic habitat is present within the PSB.
<i>Eucyclogobius newberryi</i>	tidewater goby	Endangered	None	AFS:EN, CDFW:SSC, IUCN:NT	Aquatic, Klamath/North coast flowing waters,	No potential. No aquatic habitat is

Scientific Name	Common Name	ESA	CESA	Other Status	Habitat Requirements ¹	Potential to Occur in the PSB
					Sacramento/San Joaquin flowing waters, South coast flowing waters.	present within the PSB.
<i>Lampetra richardsoni</i>	western brook lamprey	None	None	CDFW:SSC, IUCN:LC, USFS:S		No potential. No aquatic habitat is present within the PSB.
<i>Oncorhynchus clarkii clarkii</i>	coast cutthroat trout	None	None	AFS:VU, CDFW:SSC, USFS:S	Aquatic, Klamath/North coast flowing waters.	No potential. No aquatic habitat is present within the PSB.
<i>Oncorhynchus kisutch pop. 2</i>	coho salmon - southern Oregon / northern California ESU	Threatened	Threatened	AFS:TH	Aquatic, Klamath/North coast flowing waters, Sacramento/San Joaquin flowing waters.	No potential. No aquatic habitat is present within the PSB.
<i>Oncorhynchus mykiss irideus pop. 48</i>	steelhead - northern California DPS summer-run	Threatened	Endangered	AFS:TH	Aquatic, Estuary, Klamath/North coast flowing waters.	No potential. No aquatic habitat is present within the PSB.
<i>Oncorhynchus mykiss irideus pop. 49</i>	steelhead - northern California DPS winter-run	Threatened	None	AFS:TH, CDFW:SSC	Aquatic, Estuary, Klamath/North coast flowing waters.	No potential. No aquatic habitat is present within the PSB.
<i>Spirinchus thaleichthys</i>	longfin smelt	Proposed Endangered	Threatened	IUCN:LC	Aquatic, Estuary.	No potential. No aquatic habitat is present within the PSB.
<i>Thaleichthys pacificus</i>	eulachon	Threatened	None	CDFW:SSC, IUCN:LC	Aquatic, Klamath/North coast flowing waters.	No potential. No aquatic habitat is present within the PSB.
Insects						
<i>Bombus caliginosus</i>	obscure bumble bee	None	None	IUCN:VU	Coastal areas from Santa Barbara County north to Washington state.	No potential. Species was observed approximately 1.3 miles west in 1962 (CNDDDB 2024). The PSB is mostly composed of non-native grasses and

Scientific Name	Common Name	ESA	CESA	Other Status	Habitat Requirements ¹	Potential to Occur in the PSB
						forbes with low-value that is regularly cut and maintained.
<i>Bombus crotchii</i>	Crotch's bumble bee	None	Candidate Endangered	IUCN:EN	Coastal California east to the Sierra-Cascade crest and south into Mexico.	No potential. PSB includes low-value habitat that is regularly cut. The PSB is mostly composed of non-native grasses and forbes with low-value that is regularly cut and maintained.
<i>Bombus occidentalis</i>	western bumble bee	None	Candidate Endangered	IUCN:VU, USFS:S	Once common and widespread, species has declined precipitously from central CA to southern B.C., perhaps from disease.	No potential. Species was observed approximately 0.8 miles west in 1976 (CNDDDB 2024). The PSB is mostly composed of non-native grasses and forbes with low-value that is regularly cut and maintained.
<i>Danaus plexippus plexippus pop. 1</i>	monarch - California overwintering	Candidate	None	IUCN:EN, USFS:S	Fields, roadside areas, open areas, wet areas or urban gardens. This species only lays eggs on milkweed. Overwintering tree habitat includes eucalyptus, Monterey pine, Monterey cypress, western sycamore, coast redwood, and coast live oak trees.	No potential. No trees or milkweed exist within the PSB. No suitable habitat is present within the PSB.
Mammals						
<i>Arborimus albipes</i>	white-footed vole	None	None	CDFW:SSC, IUCN:LC	North coast coniferous forest, Redwood, Riparian forest.	No potential. No suitable forest habitat is

Scientific Name	Common Name	ESA	CESA	Other Status	Habitat Requirements ¹	Potential to Occur in the PSB
						present within the PSB.
<i>Arborimus pomo</i>	Sonoma tree vole	None	None	CDFW:SSC, IUCN:NT	North coast coniferous forest, Oldgrowth, Redwood.	No potential. No suitable forest habitat is present within the PSB.
<i>Corynorhinus townsendii</i>	Townsend's big-eared bat	None	None	BLM:S, CDFW:SSC, IUCN:LC, USFS:S	Broadleaved upland forest, Chaparral, Chenopod scrub, Great Basin grassland, Great Basin scrub, Joshua tree woodland, Lower montane coniferous forest, Meadow & seep, Mojavean desert scrub, Riparian forest, Riparian woodland, Sonoran desert scrub, Sonoran thorn woodland, Upper montane coniferous forest, Valley & foothill grassland.	No potential. The PSB does not contain caves, mines, or old buildings suitable for roosting.
<i>Martes caurina humboldtensis</i>	Humboldt marten	Threatened	Endangered	CDFW:SSC, USFS:S	North coast coniferous forest, Oldgrowth, Redwood.	No potential. No suitable forest habitat is present within the PSB.
<i>Myotis evotis</i>	long-eared myotis	None	None	BLM:S, IUCN:LC	Found in all brush, woodland and forest habitats from sea level to about 9000 ft. Prefers coniferous woodlands and forests.	No potential. Suitable brush and tree habitat is present adjacent to the PSB, however no suitable habitat is present within the PSB.
<i>Pekania pennanti</i>	Fisher	None	None	BLM:S, CDFW:SSC, IUCN:LC, USFS:S	North coast coniferous forest, Oldgrowth, Riparian forest.	No potential. No suitable forest habitat is present within the PSB.
Mollusks						
<i>Anodonta californiensis</i>	California floater	None	None	USFS:S	Aquatic.	No potential. No aquatic habitat is

Scientific Name	Common Name	ESA	CESA	Other Status	Habitat Requirements ¹	Potential to Occur in the PSB
						present within the PSB.
<i>Margaritifera falcata</i>	western pearlshell	None	None	IUCN:NT	Aquatic.	No potential. No aquatic habitat is present within the PSB.
Reptiles						
<i>Actinemys marmorata</i>	northwestern pond turtle	Proposed Threatened	None	BLM:S, CDFW:SSC, IUCN:VU, USFS:S	Aquatic.	Low potential. Limited suitable habitat is present within the PSB.
<i>Chelonia mydas</i>	Green Sea Turtle	Threatened	None	IUCN:EN	Marine bay.	No potential. No suitable aquatic habitat is present within the PSB.

Footnotes:

1 General habitat, and microhabitat column information, reprinted from CNDDDB (April 2024).

Column Header Categories and Abbreviations:

ESA Listing status under the federal Endangered Species Act (ESA)

FE Federal Endangered; FT = Federal Threatened; FC = Federal Candidate; FD = Federally Delisted

CESA Listing status under the California state Endangered Species Act (CESA)

SE State Endangered; SD = State Delisted; ST = State Threatened.

*1 General habitat, and microhabitat column information, reprinted from CNDDDB (September 2024).

Other Status:

American Fisheries Society (AFS) EN = Endangered, NT = Near Threatened, VU = Vulnerable, LC = Least Concern

Bureau of Land Management (BLM) S = Sensitive

California Department of Forestry and Fire Protection (CDF) S = Sensitive

California Department of Fish and Wildlife (CDFW) FP = Fully Protected, SSC = Species of Special Concern, WL = Watch List

International Union for Conservation of Nature (IUCN) EN = Endangered, VU = Vulnerable, NT = Near Threatened, LC = Least Concern

U.S. Forest Service (USFS) S = Sensitive

U.S. Fish and Wildlife Service (USFWS) BCC = Birds of Conservation Concern

Potential to Occur:

No potential: Habitat in and adjacent to the PSB is clearly unsuitable for the species requirements (cover, substrate, elevation, hydrology, plant community, site history, disturbance regime).

Low potential: Few of the habitat components meeting the species requirements are present, and/or the majority of habitat on and adjacent to the site is unsuitable or of very poor quality. The species is not likely to be found in the PSB.

Moderate potential: Some of the habitat components meeting the species requirements are present, and/or only some of the habitat on or adjacent to the site is unsuitable. The species has a moderate probability of being found in the PSB.

High potential: All of the habitat components meeting the species requirements are present and/or most of the habitat on or adjacent to the site is highly suitable. The species has a high probability of being found in the PSB.

Present: Detected or documented on-site.

3.4 Aquatic Resources

GHD conducted a wetland delineation on October 18, 2024, identifying three three-parameter wetlands. No one-parameter wetlands were identified within the PSB. All three-parameter wetlands meet the definition of Waters of the State and therefore are also under the jurisdiction of the North Coast Regional Water Quality Control Board (NCRWQCB). All wetlands in the PSB are within the coastal zone and within the jurisdiction of the CCC. Wetland data sheets are in **Appendix C**.

3.4.1 Three-parameter Wetlands

Wetland 1

Wetland 1 is 75 square feet located on the northern edge of the PSB located within a visible subsidence from the main Project site, composed largely of *Distichlis spicata* (Coastal Salt Grass), and classified according to the Cowardin system as Estuarine Intertidal Emergent wetlands with persistent vegetation (E2EM1) (FGDC 2013). Vegetation within the entire PSB is maintained, creating a disturbed vegetation environment. The Prevalence Index (PI) for Wetland 1 was 2.28, thus meeting the vegetation indicator. The soils have a matrix color of 2.5YR 3/2, a redox color of 7.5YR 5/8, and met the Sandy Redox (S5) hydric soil indicator. Wetland 1 met two secondary hydrology indicators of Geomorphic Position (D2) and FAC-Neutral Test (D5), thus meeting the hydrology indicator, but does not include a continuous surface connection to other Waters of the United States (WOTUS). Wetland 1 and Wetland 2 shared an upland transect. As there is no continuous surface connection to other WOTUS, this wetland is not jurisdictional to the USACE. However, it is jurisdictional to the NCRWQCB and the CCC.

Wetland 2

Wetland 2 is 80 square feet located on the northern edge of the PSB located within a visible subsidence from the main Project site, composed largely of Coastal Salt Grass, and classified according to the Cowardin system as Estuarine Intertidal Emergent wetlands with persistent vegetation (E2EM1) (FGDC 2013). Vegetation within the entire PSB is maintained, creating a disturbed vegetation environment. The PI for Wetland 2 was 2.08, thus meeting the vegetation indicator. The soils have a matrix color of 2.5YR 3/2 and 2.5YR 4/2, a redox color of 7.5YR 5/8, and met the Sandy Redox (S5) hydric soil indicator. Wetland 2 met two secondary hydrology indicators of Geomorphic Position (D2) and FAC-Neutral Test (D5), thus meeting the hydrology indicator but it does not include a continuous surface connection to other WOTUS. Wetland 1 and Wetland 2 shared an upland transect. As there is no continuous surface connection to other WOTUS, this wetland is not jurisdictional to the USACE. However, it is jurisdictional to the NCRWQCB and the CCC.

Wetland 3

Wetland 3 is 40 square feet tidally influenced drainage ditch located on the southwestern edge of the PSB and can be classified according to the Cowardin system as Estuarine Intertidal Emergent wetlands with persistent vegetation (E2EM1) (FGDC 2013). Wetland 3 is composed largely of Coastal Salt Grass, *Atriplex prostrata* (Hastate Orache) and *Jaumea carnosa* (Marsh Jaumea), and passes the dominance test for vegetation. The soils have a matrix color of 10YR 2/2 from 0-4 inches, 2.5YR 4/1 from 4-10 inches, and 5GY 6/1 from 10-16 inches, and meets both the Depleted Below Dark Surface (A11) and Loamy Gleyed Matrix (F2) hydric soil indicator. Wetland 3 had standing water at the time of the survey, and a water table at 11 inches meeting the hydrology indicator. Additionally, Wetland 3 met the secondary indicators of Drainage Patterns (B10), Geomorphic Position (D2), and FAC-Neutral Test (D5). This wetland has direct connection through an intertidal channel to the Eureka Slough. This wetland is jurisdictional to the NCRWQCB, the CCC, and the USACE.

4. Conclusion

GHD conducted site visits on October 18, 2024, to assess existing habitat and conduct a wetland delineation. As mentioned in Section 3.1, no SNCs occur within the PSB. Based on nearby occurrence records, no special status plants have moderate or high potential to occur within the PSB. Vegetation is maintained, and there no suitable habitat for special status plants. Protocol-level plant survey are not recommended as necessary.

The reconnaissance plant survey did not observe endangered, threatened, candidate, or special status plant species within in the PSB. Additionally, based on surveys, suitable habitat, and nearby occurrence records, no endangered, threatened, candidate, or special status wildlife species have moderate or high potential to occur within the PSB. Three three-parameter wetlands were identified within the PSB, composing of a total of 195 square feet. Wetland 1 and Wetland 2 are located on engineered fill north of the pump station and do not have a direct connection to the Eureka Slough; therefore, Wetland 1 and Wetland 2 are not jurisdictional to USACE. Wetland 3 is a tidally influenced drainage ditch with connection to the Eureka Slough and is jurisdictional to the USACE in addition to the NCRWQCB and CCC. No other one-parameter or three-parameter wetlands were identified within the PSB.

5. References

- California Department of Fish and Wildlife (CDFW). 2024a. Natural Communities. State of California, Natural Resources Agency, Department of Fish and Wildlife, Biogeographic Data Branch, Sacramento, California, USA. <https://wildlife.ca.gov/Data/VegCAMP/Natural-Communities>
- California Department of Fish and Wildlife (CDFW). 2024b. Metadata – Description of CNDDDB fields. State of California, Natural Resources Agency, Department of Fish and Wildlife Biogeographic Data Branch, Sacramento, California, USA. https://map.dfg.ca.gov/bios/docs/CNDDDB_QuickView_FieldDescriptions.htm
- California Native Plant Society (CNPS). 2024. CNPS Inventory of Rare Plants. California Native Plant Society, Sacramento, California, USA. <https://www.cnps.org/rare-plants/cnps-inventory-of-rareplants>
- eBird. 2024. eBird: an online database of bird distribution and abundance. Cornell Lab of Ornithology, Ithaca, New York, USA. <http://www.ebird.org>
- Federal Geographic Data Committee (FGDC). 2013. Classification of Wetlands and Deepwater Habitats of the United States. Second Edition. Wetlands Subcommittee, Federal Geographic Data Committee and U.S. Fish and Wildlife Service, Washington, DC. <http://fws.gov/wetlands/Documents/Wetlands-and-Deepwater-Habitats-Classification-chart.pdf>
- iNaturalist. 2024. Observations. iNaturalist Department, California Academy of Sciences and National Geographic Society, San Francisco, California, USA. <https://www.inaturalist.org>
- National Oceanic and Atmospheric Administration National Marine Fisheries Service (NMFS). 2022. Endangered Species Act Species List.
- NatureServe. 2022. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. <http://explorer.natureserve.org>
- Sawyer, J.O., T. Keeler-Wolf, and J.M. Evans. 2009. A Manual of California Vegetation, Second Edition. California Native Plant Society. Sacramento, California, USA.
- U.S. Army Corps of Engineers (USACE). 1987. Wetlands Delineation Manual, Tech. Rep 4-87-1. Waterways Experiment Station, United States Department of the Army Corps of Engineers (USACE).
- U.S. Army Corps of Engineers (USACE). 2010. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0). U.S. Army Corps of Engineers.

U.S. Fish and Wildlife Service (USFWS). 2024. IPaC - Information for Planning and Consultation. Department of the Interior, U.S. Fish and Wildlife Service. <https://ecos.fws.gov/ipac/>

Appendices

Appendix A

Appendix B

Appendix C

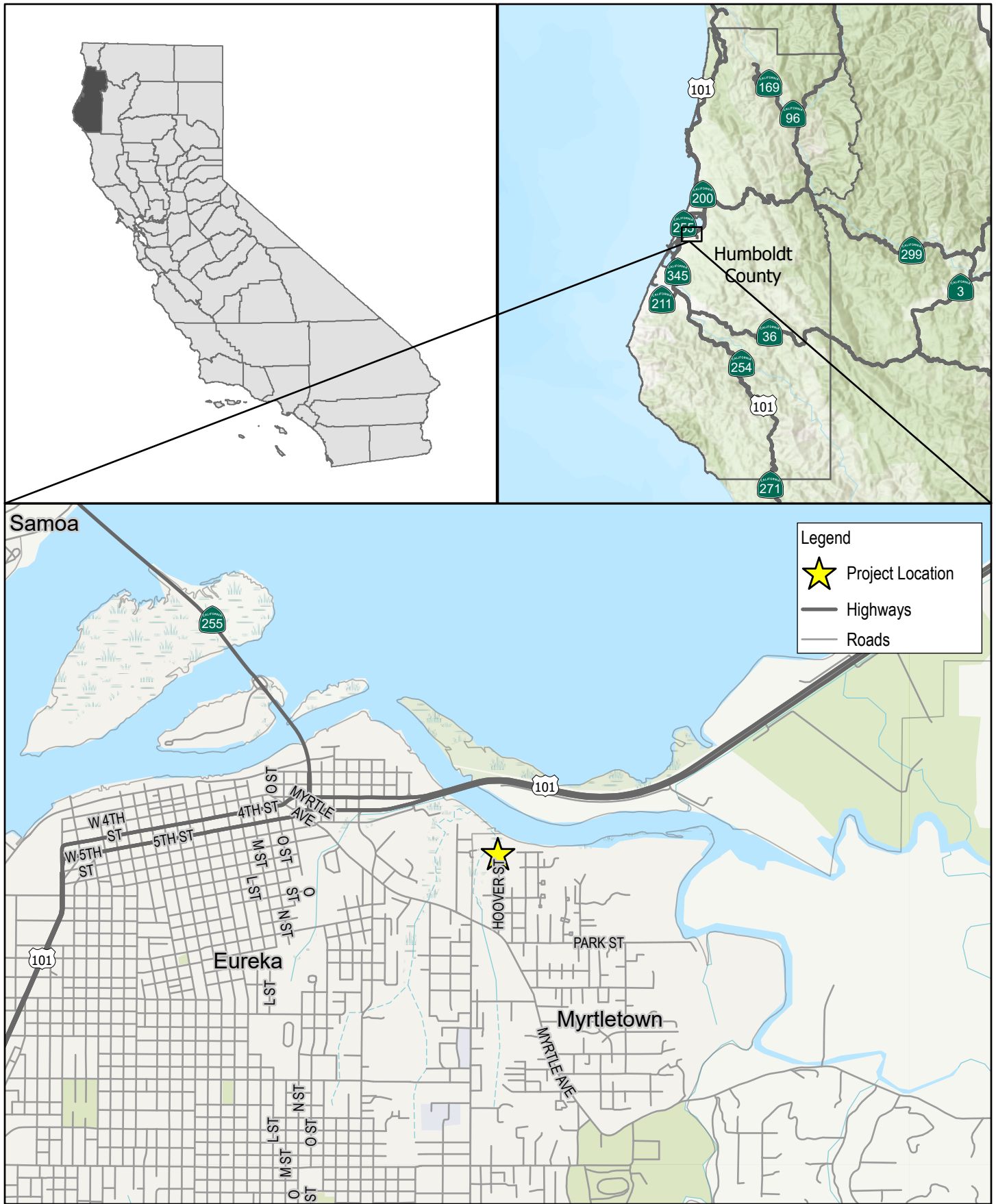
Figures

Database Search (IPaC, NMFS, CNDDB, CNPS)

Wetland Data Sheets

Appendix A

Figures



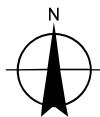
Paper Size ANSI A 0 1,000 2,000 3,000 4,000 Feet Map Projection: Mercator Auxiliary Sphere Horizontal Datum: WGS 1984 Grid: WGS 1984 Web Mercator Auxiliary Sphere		Humboldt Community Service District Hoover Street Lift Station	Project No. 12644761 Revision No. - Date Oct 2024
Vicinity Map			FIGURE 1

N:\US\Azure\EastUS\12644761\GIS\Maps\Deliverables\12644761_WetlandDelineation.aprx - 12644761_001_Fig1_VICINITY Print date: 21 Oct 2024 - 12:33

Data source: World Topographic Map - labelless: California State Parks, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, MET/INASA, USGS, Bureau of Land Management, EPA, NPS, USDA, USFWS; World Topographic Map - labelless: California State Parks, Esri, TomTom, Garmin, FAO, NOAA, USGS, Bureau of Land Management, EPA, NPS, USFWS; World Hillshade: Esri, USGS. Created by: Joepez



Paper Size ANSI A
0 50 100 150 200
Feet



Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California 1 FIPS 0401 Feet

**Humboldt Community Service District
Hoover Street Lift Station**

Project No. 12644761
Revision No. -
Date Oct 2024

Hoover Street Lift Station

FIGURE 2



Legend

Project Area (0.13 acres)

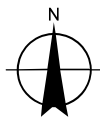
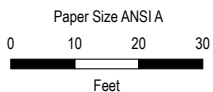
— Contour 1ft (NAVD88)

● Upland Point

Wetlands

3 Parameter Wetland (195 sqft)

● Transect Point



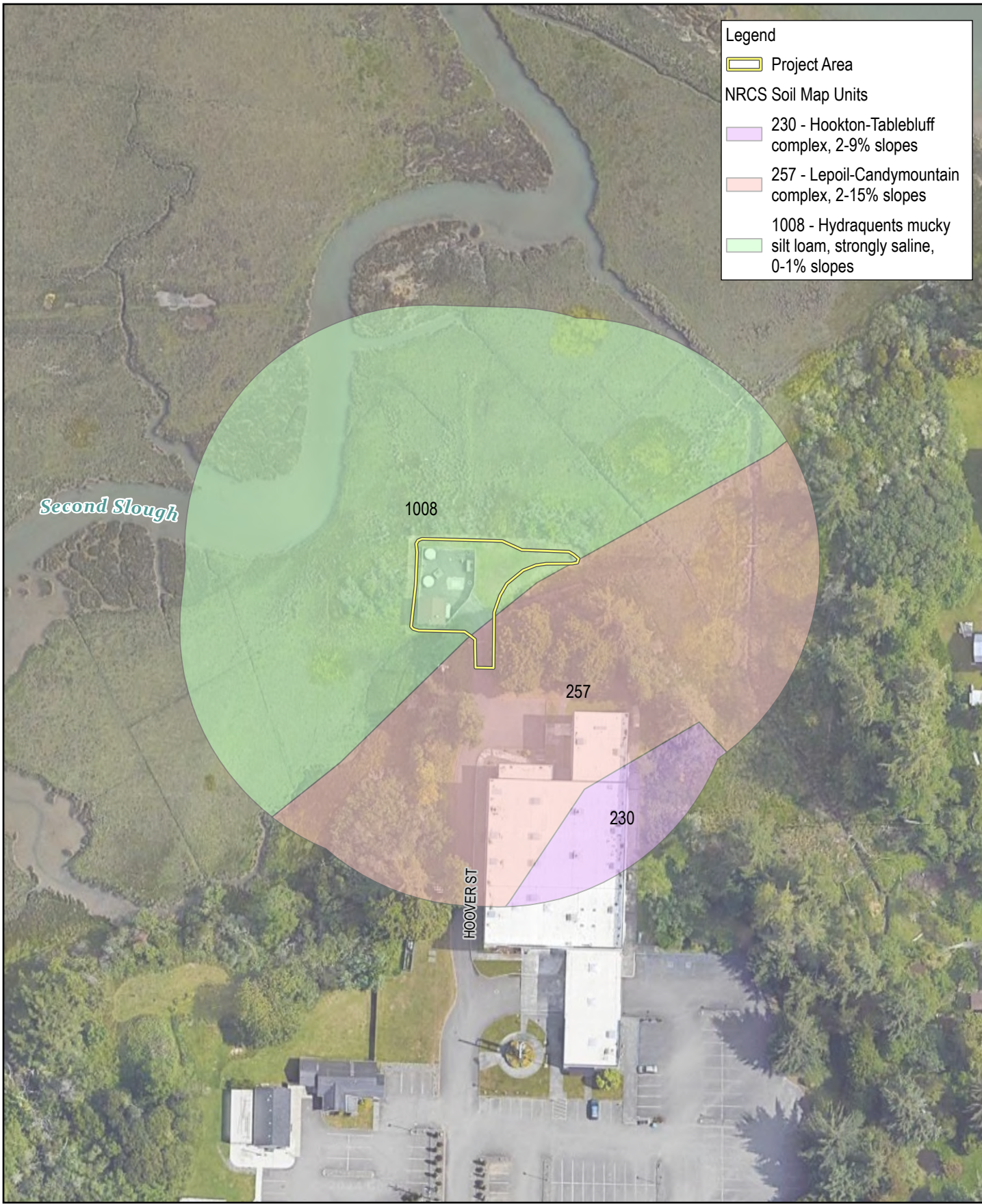
Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

**Humboldt Community Service District
Hoover Street Lift Station**

Project No. **12644761**
Revision No. **-**
Date **Nov 2024**

Wetland Delineation

FIGURE 3



Legend

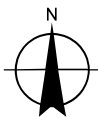
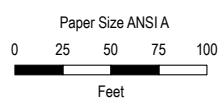
Project Area

NRCS Soil Map Units

230 - Hookton-Tablebluff complex, 2-9% slopes

257 - Lepoil-Candymountain complex, 2-15% slopes

1008 - Hydraquents mucky silt loam, strongly saline, 0-1% slopes



**Humboldt Community Service District
Hoover Street Lift Station**

Project No. **12644761**
Revision No. **-**
Date **Oct 2024**

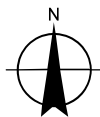
Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

NRCS Soil Map

FIGURE 4



Paper Size ANSI A
 0 25 50 75 100
 Feet



Map Projection: Lambert Conformal Conic
 Horizontal Datum: North American 1983
 Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

Humboldt Community Service District
 Hoover Street Lift Station

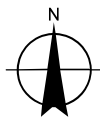
Project No. 12644761
 Revision No. -
 Date Oct 2024

National Wetlands Inventory

FIGURE 5



Paper Size ANSI A
0 25 50 75 100
Feet



Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

Humboldt Community Service District
Hoover Street Lift Station

Project No. 12644761
Revision No. -
Date Oct 2024

**FEMA
Flood Hazard Zones**

FIGURE 6

Appendix B

**Database Search (IPaC, NMFS, CNDDDB,
CNPS)**



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Arcata Fish And Wildlife Office

1655 Heindon Road

Arcata, CA 95521-4573

Phone: (707) 822-7201 Fax: (707) 822-8411



In Reply Refer To:

09/09/2024 16:22:53 UTC

Project Code: 2024-0141315

Project Name: HCSD Hoover St LS Flood Protection Project

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological

evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf>

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see <https://www.fws.gov/program/migratory-bird-permit/what-we-do>.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see <https://www.fws.gov/library/collections/threats-birds>.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit <https://www.fws.gov/partner/council-conservation-migratory-birds>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Bald & Golden Eagles
- Migratory Birds
- Wetlands

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Arcata Fish And Wildlife Office

1655 Heindon Road

Arcata, CA 95521-4573

(707) 822-7201

ENDANGERED SPECIES ACT SPECIES

There is a total of 8 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

-
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Pacific Marten, Coastal Distinct Population Segment <i>Martes caurina</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/9081	Threatened

BIRDS

NAME	STATUS
Marbled Murrelet <i>Brachyramphus marmoratus</i> Population: U.S.A. (CA, OR, WA) There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4467	Threatened
Northern Spotted Owl <i>Strix occidentalis caurina</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1123	Threatened
Western Snowy Plover <i>Charadrius nivosus nivosus</i> Population: Pacific Coast population DPS-U.S.A. (CA, OR, WA), Mexico (within 50 miles of Pacific coast) There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8035	Threatened
Yellow-billed Cuckoo <i>Coccyzus americanus</i> Population: Western U.S. DPS There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

REPTILES

NAME	STATUS
Northwestern Pond Turtle <i>Actinemys marmorata</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1111	Proposed Threatened

FISHES

NAME	STATUS
Tidewater Goby <i>Eucyclogobius newberryi</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/57	Endangered

INSECTS

NAME	STATUS
Monarch Butterfly <i>Danaus plexippus</i> No critical habitat has been designated for this species.	Candidate

NAME

STATUS

Species profile: <https://ecos.fws.gov/ecp/species/9743>

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

BALD & GOLDEN EAGLES

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act¹ and the Migratory Bird Treaty Act².

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats³, should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the ["Supplemental Information on Migratory Birds and Eagles"](#).

-
1. The [Bald and Golden Eagle Protection Act](#) of 1940.
 2. The [Migratory Birds Treaty Act](#) of 1918.
 3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

There are likely bald eagles present in your project area. For additional information on bald eagles, refer to [Bald Eagle Nesting and Sensitivity to Human Activity](#)

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle <i>Haliaeetus leucocephalus</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Mar 1 to Aug 31
Golden Eagle <i>Aquila chrysaetos</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Mar 1 to Aug 31

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "[Supplemental Information on Migratory Birds and Eagles](#)", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

Breeding Season (■)

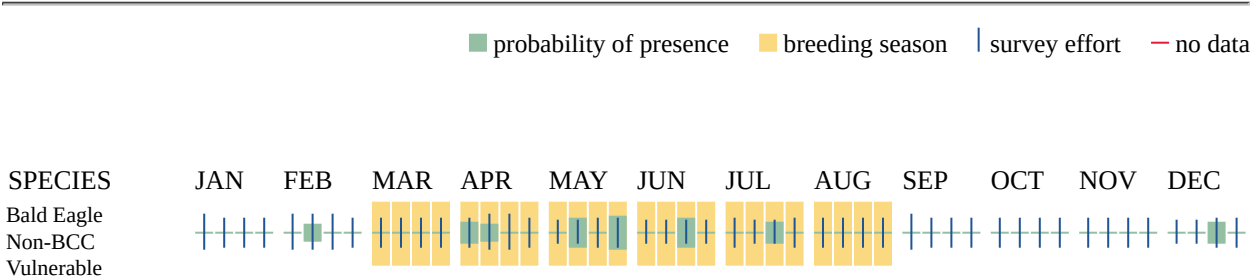
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

Survey Effort (|)

Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data (—)

A week is marked as having no data if there were no survey events for that week.



Golden Eagle
Non-BCC
Vulnerable



Additional information can be found using the following links:

- Eagle Management <https://www.fws.gov/program/eagle-management>
- Measures for avoiding and minimizing impacts to birds <https://www.fws.gov/library/collections/avoiding-and-minimizing-incident-take-migratory-birds>
- Nationwide conservation measures for birds <https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>
- Supplemental Information for Migratory Birds and Eagles in IPaC <https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action>

MIGRATORY BIRDS

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats³ should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "[Supplemental Information on Migratory Birds and Eagles](#)".

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Allen's Hummingbird <i>Selasphorus sasin</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9637	Breeds Feb 1 to Jul 15

NAME	BREEDING SEASON
Bald Eagle <i>Haliaeetus leucocephalus</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Mar 1 to Aug 31
Black Oystercatcher <i>Haematopus bachmani</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9591	Breeds Apr 15 to Oct 31
Black Swift <i>Cypseloides niger</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8878	Breeds Jun 15 to Sep 10
Black Turnstone <i>Arenaria melanocephala</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/10557	Breeds elsewhere
Brandt's Cormorant <i>Urile penicillatus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/11903	Breeds Apr 15 to Sep 15
California Gull <i>Larus californicus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/10955	Breeds Mar 1 to Jul 31
Chestnut-backed Chickadee <i>Poecile rufescens rufescens</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/11913	Breeds Mar 1 to Jul 31
Clark's Grebe <i>Aechmophorus clarkii</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/10575	Breeds Jun 1 to Aug 31
Evening Grosbeak <i>Coccothraustes vespertinus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9465	Breeds May 15 to Aug 10
Golden Eagle <i>Aquila chrysaetos</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Mar 1 to Aug 31

NAME	BREEDING SEASON
Lesser Yellowlegs <i>Tringa flavipes</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Marbled Godwit <i>Limosa fedoa</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9481	Breeds elsewhere
Olive-sided Flycatcher <i>Contopus cooperi</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3914	Breeds May 20 to Aug 31
Red Knot <i>Calidris canutus roselaari</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8880	Breeds elsewhere
Rufous Hummingbird <i>Selasphorus rufus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8002	Breeds Apr 15 to Jul 15
Short-billed Dowitcher <i>Limnodromus griseus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9480	Breeds Jun 1 to Aug 10
Western Grebe <i>aechmophorus occidentalis</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/6743	Breeds Jun 1 to Aug 31
Western Gull <i>Larus occidentalis</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/11969	Breeds Apr 21 to Aug 25
Western Screech-owl <i>Megascops kennicottii cardonensis</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/11923	Breeds Mar 1 to Jun 30
Willet <i>Tringa semipalmata</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/10669	Breeds elsewhere

NAME	BREEDING SEASON
Wrentit <i>Chamaea fasciata</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/10668	Breeds Mar 15 to Aug 10

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read ["Supplemental Information on Migratory Birds and Eagles"](#), specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

Breeding Season (■)

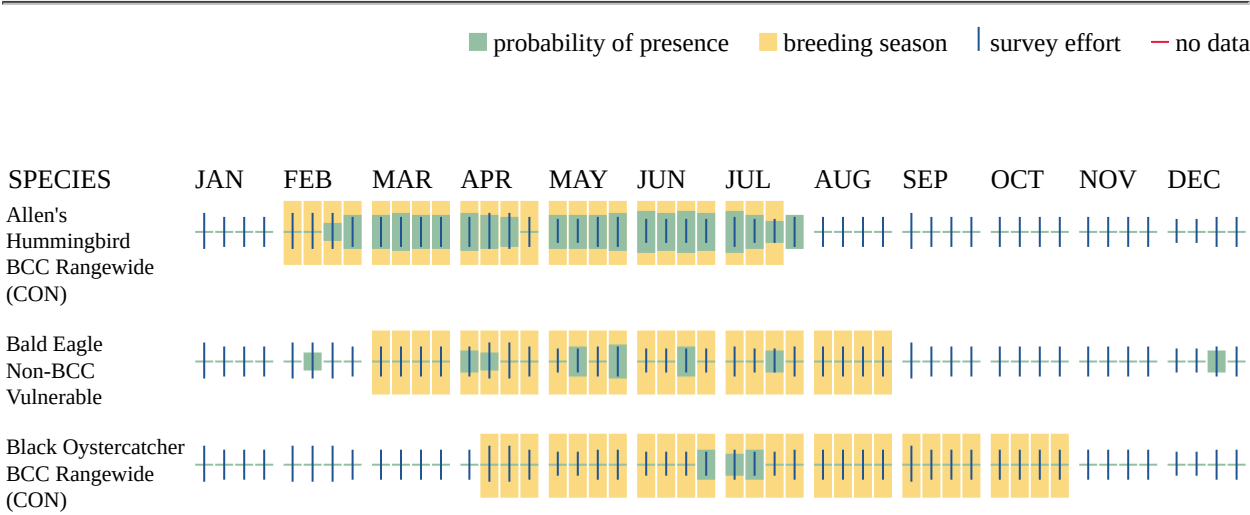
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

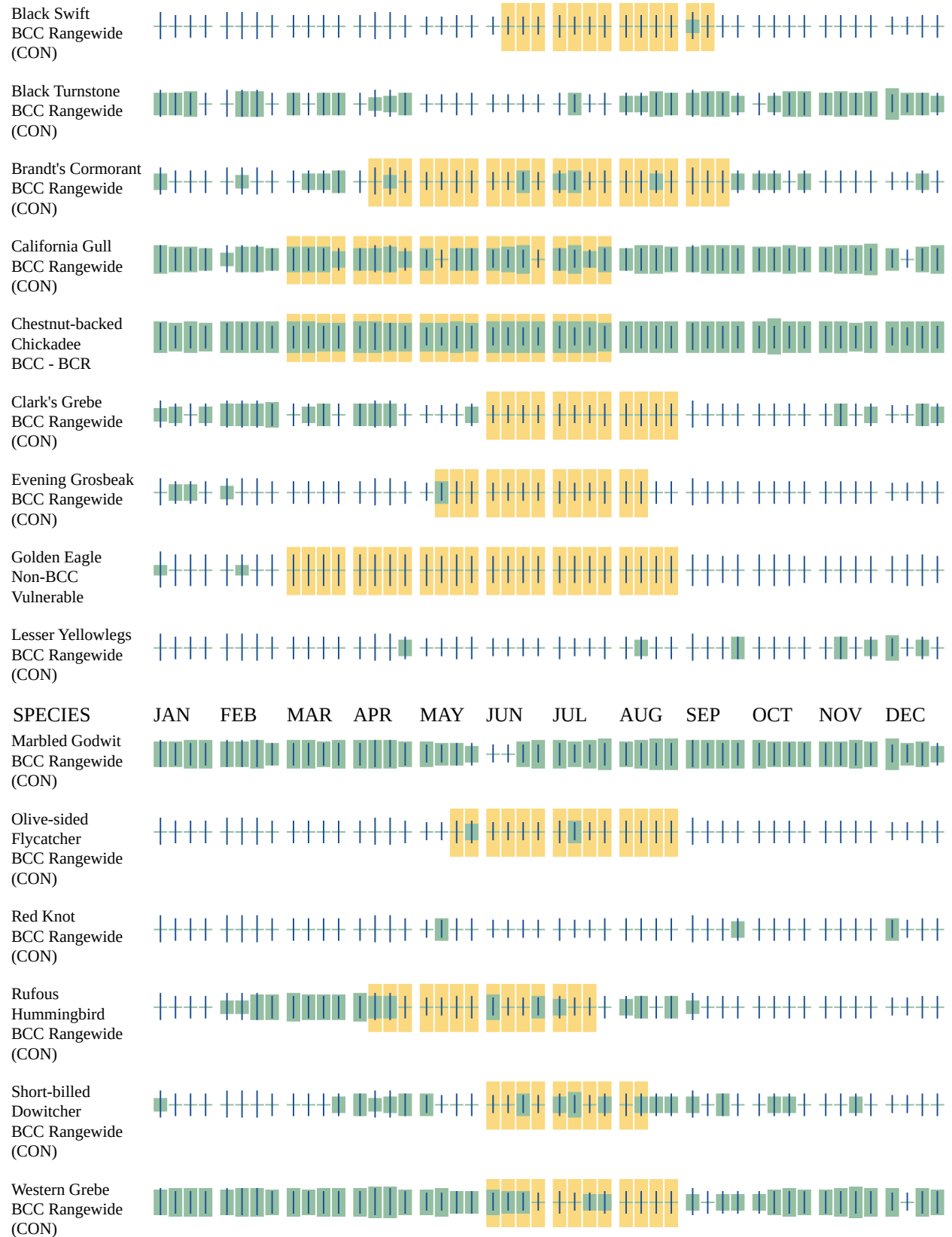
Survey Effort (|)

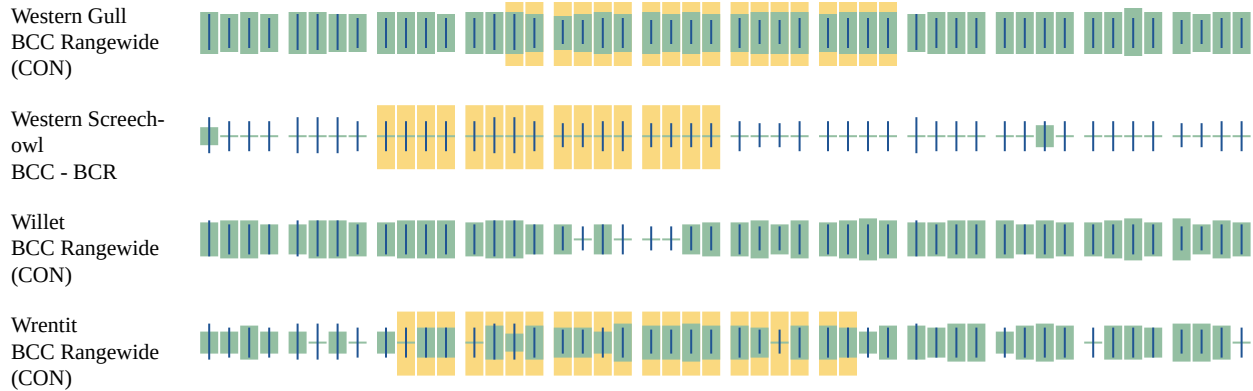
Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data (—)

A week is marked as having no data if there were no survey events for that week.







Additional information can be found using the following links:

- Eagle Management <https://www.fws.gov/program/eagle-management>
- Measures for avoiding and minimizing impacts to birds <https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds>
- Nationwide conservation measures for birds <https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>
- Supplemental Information for Migratory Birds and Eagles in IPaC <https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action>

WETLANDS

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

THERE ARE NO WETLANDS WITHIN YOUR PROJECT AREA.

IPAC USER CONTACT INFORMATION

Agency: Private Entity
Name: Christian Hernande
Address: 718 Third Street
Address Line 2: PO Box 1010
City: Eureka
State: CA
Zip: 95501
Email: christian.hernandez@ghd.com
Phone: 7072672208

From: [Christian Hernandez](#)
To: [NMFS SpeciesList - NOAA Service Account](#)
Subject: Hoover Street Lift Station Flood Protection Project
Date: Friday, September 20, 2024 9:24:00 AM
Attachments: [image001.png](#)
[image002.png](#)
[image003.png](#)
[image004.png](#)
[image005.png](#)

Project Name: Hoover Street Lift Station Flood Protection Project
Project Type: Flooding
Project Description: The Humboldt Community Services District Hoover St Lift Station Flood Protection Project would increase the resilience of the District's Hoover St. LS by mitigating the impacts of flooding caused by tidal surges exacerbated by climate impacts from sea level rise in the form of a sheet pile/concrete wall, berm, hybrid, or similar.

Quad Name **Eureka**

Quad Number **40124-G2**

ESA Anadromous Fish

SONCC Coho ESU (T) - **X**
CCC Coho ESU (E) -
CC Chinook Salmon ESU (T) - **X**
CVSR Chinook Salmon ESU (T) -
SRWR Chinook Salmon ESU (E) -
NC Steelhead DPS (T) - **X**
CCC Steelhead DPS (T) -
SCCC Steelhead DPS (T) -
SC Steelhead DPS (E) -
CCV Steelhead DPS (T) -
Eulachon (T) -
sDPS Green Sturgeon (T) - **X**

ESA Anadromous Fish Critical Habitat

SONCC Coho Critical Habitat - **X**
CCC Coho Critical Habitat -
CC Chinook Salmon Critical Habitat - **X**
CVSR Chinook Salmon Critical Habitat -
SRWR Chinook Salmon Critical Habitat -
NC Steelhead Critical Habitat - **X**
CCC Steelhead Critical Habitat -
SCCC Steelhead Critical Habitat -
SC Steelhead Critical Habitat -
CCV Steelhead Critical Habitat -
Eulachon Critical Habitat -
sDPS Green Sturgeon Critical Habitat - **X**

ESA Marine Invertebrates

Range Black Abalone (E) -
Range White Abalone (E) -

ESA Marine Invertebrates Critical Habitat

Black Abalone Critical Habitat -

ESA Sea Turtles

East Pacific Green Sea Turtle (T) - **X**
Olive Ridley Sea Turtle (T/E) - **X**
Leatherback Sea Turtle (E) - **X**
North Pacific Loggerhead Sea Turtle (E) -

ESA Whales

Blue Whale (E) - **X**
Fin Whale (E) - **X**
Humpback Whale (E) - **X**
Southern Resident Killer Whale (E) - **X**
North Pacific Right Whale (E) - **X**
Sei Whale (E) - **X**
Sperm Whale (E) - **X**

ESA Pinnipeds

Guadalupe Fur Seal (T) -

Essential Fish Habitat

Coho EFH - **X**
Chinook Salmon EFH - **X**
Groundfish EFH - **X**
Coastal Pelagics EFH - **X**
Highly Migratory Species EFH -

MMPA Species (See list at left)

ESA and MMPA Cetaceans/Pinnipeds

See list at left and consult Monica DeAngelis
monica.deangelis@noaa.gov
562-980-3232

MMPA Cetaceans - **X**

MMPA Pinnipeds - **X**

Christian Hernandez

Graduate Environmental Scientist

GHD

Proudly employee-owned | ghd.com

Physical Office Address – 718 3rd Street, Eureka, CA 95501 USA

Office Mailing Address – PO Box 1010, Eureka, CA 95502 USA

D +1 707 267 2208 | E Christian.Hernandez@ghd.com

→ **The Power of Commitment**

Connect



Please consider the environment before printing this email

Element_Type	Scientific_Name	Common_Name	Federal_Status	State_Status	CDFW_Status	CA_Rare_Plant_Rank	Quad_Name	Data_Status
Animals - Amphibians	Ascaphus truei	Pacific tailed frog	None	None	SSC	-	ARCATA NORTH	Mapped and Unprocessed
Animals - Amphibians	Ascaphus truei	Pacific tailed frog	None	None	SSC	-	ARCATA SOUTH	Mapped and Unprocessed
Animals - Amphibians	Ascaphus truei	Pacific tailed frog	None	None	SSC	-	FIELDS LANDING	Mapped
Animals - Amphibians	Ascaphus truei	Pacific tailed frog	None	None	SSC	-	MCWHINNEY CREEK	Mapped
Animals - Amphibians	Rana aurora	northern red-legged frog	None	None	SSC	-	MCWHINNEY CREEK	Mapped
Animals - Amphibians	Rana aurora	northern red-legged frog	None	None	SSC	-	FIELDS LANDING	Mapped and Unprocessed
Animals - Amphibians	Rana aurora	northern red-legged frog	None	None	SSC	-	CANNIBAL ISLAND	Mapped
Animals - Amphibians	Rana aurora	northern red-legged frog	None	None	SSC	-	ARCATA SOUTH	Mapped and Unprocessed
Animals - Amphibians	Rana aurora	northern red-legged frog	None	None	SSC	-	ARCATA NORTH	Mapped and Unprocessed
Animals - Amphibians	Rana aurora	northern red-legged frog	None	None	SSC	-	TYEE CITY	Mapped
Animals - Amphibians	Rana aurora	northern red-legged frog	None	None	SSC	-	EUREKA	Mapped and Unprocessed
Animals - Amphibians	Rana boylei pop. 1	foothill yellow-legged frog - north coast DPS	None	None	SSC	-	ARCATA NORTH	Mapped and Unprocessed
Animals - Amphibians	Rana boylei pop. 1	foothill yellow-legged frog - north coast DPS	None	None	SSC	-	ARCATA SOUTH	Mapped
Animals - Amphibians	Rana boylei pop. 1	foothill yellow-legged frog - north coast DPS	None	None	SSC	-	FIELDS LANDING	Mapped
Animals - Amphibians	Rana boylei pop. 1	foothill yellow-legged frog - north coast DPS	None	None	SSC	-	MCWHINNEY CREEK	Mapped
Animals - Amphibians	Rhyacotriton variegatus	southern torrent salamander	None	None	SSC	-	MCWHINNEY CREEK	Mapped
Animals - Amphibians	Rhyacotriton variegatus	southern torrent salamander	None	None	SSC	-	ARCATA SOUTH	Mapped and Unprocessed
Animals - Amphibians	Rhyacotriton variegatus	southern torrent salamander	None	None	SSC	-	ARCATA NORTH	Mapped and Unprocessed
Animals - Birds	Accipiter cooperii	Coopers hawk	None	None	WL	-	TYEE CITY	Unprocessed
Animals - Birds	Accipiter cooperii	Coopers hawk	None	None	WL	-	EUREKA	Unprocessed
Animals - Birds	Accipiter cooperii	Coopers hawk	None	None	WL	-	ARCATA SOUTH	Unprocessed
Animals - Birds	Accipiter cooperii	Coopers hawk	None	None	WL	-	MCWHINNEY CREEK	Unprocessed
Animals - Birds	Accipiter cooperii	Coopers hawk	None	None	WL	-	FIELDS LANDING	Unprocessed
Animals - Birds	Accipiter striatus	sharp-shinned hawk	None	None	WL	-	FIELDS LANDING	Mapped
Animals - Birds	Accipiter striatus	sharp-shinned hawk	None	None	WL	-	ARCATA NORTH	Unprocessed
Animals - Birds	Circus hudsonius	northern harrier	None	None	SSC	-	ARCATA NORTH	Unprocessed
Animals - Birds	Circus hudsonius	northern harrier	None	None	SSC	-	TYEE CITY	Unprocessed
Animals - Birds	Circus hudsonius	northern harrier	None	None	SSC	-	EUREKA	Mapped and Unprocessed
Animals - Birds	Circus hudsonius	northern harrier	None	None	SSC	-	ARCATA SOUTH	Unprocessed
Animals - Birds	Circus hudsonius	northern harrier	None	None	SSC	-	CANNIBAL ISLAND	Unprocessed
Animals - Birds	Elanus leucurus	white-tailed kite	None	None	FP	-	CANNIBAL ISLAND	Unprocessed
Animals - Birds	Elanus leucurus	white-tailed kite	None	None	FP	-	ARCATA SOUTH	Unprocessed
Animals - Birds	Elanus leucurus	white-tailed kite	None	None	FP	-	EUREKA	Mapped
Animals - Birds	Elanus leucurus	white-tailed kite	None	None	FP	-	ARCATA NORTH	Mapped and Unprocessed
Animals - Birds	Haliaeetus leucocephalus	bald eagle	Delisted	Endangered	FP	-	ARCATA SOUTH	Mapped and Unprocessed
Animals - Birds	Haliaeetus leucocephalus	bald eagle	Delisted	Endangered	FP	-	FIELDS LANDING	Mapped and Unprocessed
Animals - Birds	Brachyramphus marmoratus	marbled murrelet	Threatened	Endangered	-	-	MCWHINNEY CREEK	Mapped and Unprocessed
Animals - Birds	Brachyramphus marmoratus	marbled murrelet	Threatened	Endangered	-	-	EUREKA	Unprocessed
Animals - Birds	Chaetura vauxi	Vauxs swift	None	None	SSC	-	EUREKA	Unprocessed
Animals - Birds	Ardea alba	great egret	None	None	-	-	EUREKA	Mapped and Unprocessed
Animals - Birds	Ardea alba	great egret	None	None	-	-	FIELDS LANDING	Mapped and Unprocessed
Animals - Birds	Ardea herodias	great egret	None	None	-	-	CANNIBAL ISLAND	Mapped and Unprocessed
Animals - Birds	Ardea herodias	great blue heron	None	None	-	-	CANNIBAL ISLAND	Mapped and Unprocessed
Animals - Birds	Ardea herodias	great blue heron	None	None	-	-	ARCATA SOUTH	Mapped
Animals - Birds	Ardea herodias	great blue heron	None	None	-	-	EUREKA	Mapped and Unprocessed
Animals - Birds	Ardea herodias	great blue heron	None	None	-	-	ARCATA NORTH	Mapped and Unprocessed
Animals - Birds	Ardea herodias	great blue heron	None	None	-	-	TYEE CITY	Unprocessed
Animals - Birds	Ardea herodias	great blue heron	None	None	-	-	FIELDS LANDING	Mapped and Unprocessed
Animals - Birds	Botaurus lentiginosus	American bittern	None	None	-	-	ARCATA NORTH	Unprocessed
Animals - Birds	Botaurus lentiginosus	American bittern	None	None	-	-	ARCATA SOUTH	Unprocessed
Animals - Birds	Egretta thula	snowy egret	None	None	-	-	FIELDS LANDING	Mapped and Unprocessed
Animals - Birds	Egretta thula	snowy egret	None	None	-	-	TYEE CITY	Unprocessed
Animals - Birds	Egretta thula	snowy egret	None	None	-	-	EUREKA	Mapped and Unprocessed
Animals - Birds	Nycticorax nycticorax	black-crowned night heron	None	None	-	-	EUREKA	Mapped and Unprocessed
Animals - Birds	Nycticorax nycticorax	black-crowned night heron	None	None	-	-	TYEE CITY	Unprocessed
Animals - Birds	Nycticorax nycticorax	black-crowned night heron	None	None	-	-	FIELDS LANDING	Mapped and Unprocessed
Animals - Birds	Nycticorax nycticorax	black-crowned night heron	None	None	-	-	CANNIBAL ISLAND	Mapped
Animals - Birds	Nycticorax nycticorax	black-crowned night heron	None	None	-	-	ARCATA SOUTH	Mapped
Animals - Birds	Charadrius montanus	mountain plover	None	None	SSC	-	ARCATA SOUTH	Mapped and Unprocessed
Animals - Birds	Charadrius montanus	mountain plover	None	None	SSC	-	CANNIBAL ISLAND	Unprocessed and Unprocessed
Animals - Birds	Charadrius montanus	mountain plover	None	None	SSC	-	TYEE CITY	Unprocessed
Animals - Birds	Charadrius montanus	mountain plover	None	None	SSC	-	ARCATA NORTH	Unprocessed
Animals - Birds	Charadrius montanus	mountain plover	None	None	SSC	-	EUREKA	Mapped and Unprocessed
Animals - Birds	Charadrius montanus	mountain plover	None	None	SSC	-	FIELDS LANDING	Mapped
Animals - Birds	Charadrius nivosus nivosus	western snowy plover	Threatened	None	SSC	-	FIELDS LANDING	Mapped and Unprocessed
Animals - Birds	Charadrius nivosus nivosus	western snowy plover	Threatened	None	SSC	-	EUREKA	Mapped and Unprocessed
Animals - Birds	Charadrius nivosus nivosus	western snowy plover	Threatened	None	SSC	-	ARCATA NORTH	Mapped and Unprocessed
Animals - Birds	Charadrius nivosus nivosus	western snowy plover	Threatened	None	SSC	-	TYEE CITY	Mapped and Unprocessed
Animals - Birds	Charadrius nivosus nivosus	western snowy plover	Threatened	None	SSC	-	CANNIBAL ISLAND	Mapped and Unprocessed
Animals - Birds	Falco columbarius	merlin	None	None	WL	-	EUREKA	Unprocessed
Animals - Birds	Falco peregrinus anatum	American peregrine falcon	Delisted	Delisted	-	-	EUREKA	Mapped and Unprocessed
Animals - Birds	Falco peregrinus anatum	American peregrine falcon	Delisted	Delisted	-	-	ARCATA NORTH	Mapped
Animals - Birds	Falco peregrinus anatum	American peregrine falcon	Delisted	Delisted	-	-	ARCATA SOUTH	Mapped and Unprocessed
Animals - Birds	Falco peregrinus anatum	American peregrine falcon	Delisted	Delisted	-	-	FIELDS LANDING	Mapped and Unprocessed
Animals - Birds	Falco peregrinus anatum	American peregrine falcon	Delisted	Delisted	-	-	MCWHINNEY CREEK	Mapped
Animals - Birds	Riparia riparia	bank swallow	None	Threatened	-	-	ARCATA NORTH	Mapped and Unprocessed
Animals - Birds	Riparia riparia	bank swallow	None	Threatened	-	-	EUREKA	Mapped
Animals - Birds	Pandion haliaetus	osprey	None	None	WL	-	EUREKA	Mapped and Unprocessed
Animals - Birds	Pandion haliaetus	osprey	None	None	WL	-	ARCATA NORTH	Mapped and Unprocessed
Animals - Birds	Pandion haliaetus	osprey	None	None	WL	-	TYEE CITY	Unprocessed
Animals - Birds	Pandion haliaetus	osprey	None	None	WL	-	ARCATA SOUTH	Mapped and Unprocessed
Animals - Birds	Pandion haliaetus	osprey	None	None	WL	-	FIELDS LANDING	Mapped and Unprocessed
Animals - Birds	Pandion haliaetus	osprey	None	None	WL	-	CANNIBAL ISLAND	Unprocessed
Animals - Birds	Pandion haliaetus	osprey	None	None	WL	-	MCWHINNEY CREEK	Mapped and Unprocessed
Animals - Birds	Poecile atricapillus	black-capped chickadee	None	None	WL	-	ARCATA SOUTH	Unprocessed
Animals - Birds	Poecile atricapillus	black-capped chickadee	None	None	WL	-	ARCATA NORTH	Unprocessed
Animals - Birds	Poecile atricapillus	black-capped chickadee	None	None	WL	-	EUREKA	Unprocessed
Animals - Birds	Passerculus sandwichensis alaudinus	Bryants savannah sparrow	None	None	SSC	-	EUREKA	Unprocessed
Animals - Birds	Passerculus sandwichensis alaudinus	Bryants savannah sparrow	None	None	SSC	-	ARCATA NORTH	Unprocessed
Animals - Birds	Passerculus sandwichensis alaudinus	Bryants savannah sparrow	None	None	SSC	-	ARCATA SOUTH	Unprocessed
Animals - Birds	Pelecanus occidentalis californicus	California brown pelican	Delisted	Delisted	-	-	ARCATA SOUTH	Unprocessed
Animals - Birds	Pelecanus occidentalis californicus	California brown pelican	Delisted	Delisted	-	-	CANNIBAL ISLAND	Unprocessed
Animals - Birds	Pelecanus occidentalis californicus	California brown pelican	Delisted	Delisted	-	-	FIELDS LANDING	Unprocessed
Animals - Birds	Pelecanus occidentalis californicus	California brown pelican	Delisted	Delisted	-	-	TYEE CITY	Unprocessed
Animals - Birds	Pelecanus occidentalis californicus	California brown pelican	Delisted	Delisted	-	-	EUREKA	Unprocessed
Animals - Birds	Nannopterum auritum	double-crested cormorant	None	None	WL	-	EUREKA	Unprocessed
Animals - Birds	Nannopterum auritum	double-crested cormorant	None	None	WL	-	FIELDS LANDING	Unprocessed
Animals - Birds	Nannopterum auritum	double-crested cormorant	None	None	WL	-	ARCATA SOUTH	Mapped
Animals - Birds	Coturnicops noveboracensis	yellow rail	None	None	SSC	-	ARCATA SOUTH	Mapped and Unprocessed
Animals - Birds	Coturnicops noveboracensis	yellow rail	None	None	SSC	-	CANNIBAL ISLAND	Mapped and Unprocessed
Animals - Birds	Coturnicops noveboracensis	yellow rail	None	None	SSC	-	EUREKA	Mapped and Unprocessed
Animals - Birds	Rallus obsoletus obsoletus	California Ridgways rail	Endangered	Endangered	FP	-	EUREKA	Mapped and Unprocessed
Animals - Birds	Rallus obsoletus obsoletus	California Ridgways rail	Endangered	Endangered	FP	-	TYEE CITY	Mapped
Animals - Birds	Numenius americanus	long-billed curlew	None	None	WL	-	ARCATA SOUTH	Unprocessed
Animals - Birds	Asio flammeus	short-eared owl	None	None	SSC	-	ARCATA SOUTH	Unprocessed
Animals - Birds	Asio flammeus	short-eared owl	None	None	SSC	-	ARCATA NORTH	Unprocessed
Animals - Birds	Asio flammeus	short-eared owl	None	None	SSC	-	EUREKA	Unprocessed
Animals - Birds	Strix nebulosa	great gray owl	None	Endangered	-	-	ARCATA SOUTH	Unprocessed
Animals - Birds	Strix occidentalis caurina	Northern Spotted Owl	Threatened	Threatened	-	-	MCWHINNEY CREEK	Mapped
Animals - Birds	Strix occidentalis caurina	Northern Spotted Owl	Threatened	Threatened	-	-	FIELDS LANDING	Mapped
Animals - Birds	Strix occidentalis caurina	Northern Spotted Owl	Threatened	Threatened	-	-	ARCATA SOUTH	Mapped
Animals - Birds	Strix occidentalis caurina	Northern Spotted Owl	Threatened	Threatened	-	-	EUREKA	Mapped
Animals - Birds	Strix occidentalis caurina	Northern Spotted Owl	Threatened	Threatened	-	-	ARCATA NORTH	Mapped
Animals - Birds	Contopus cooperi	olive-sided flycatcher	None	None	SSC	-	ARCATA NORTH	Unprocessed
Animals - Birds	Empidonax traillii	willow flycatcher	None	Endangered	-	-	CANNIBAL ISLAND	Unprocessed
Animals - Fish	Acipenser medirostris pop. 1	green sturgeon - southern DPS	Threatened	None	SSC	-	CANNIBAL ISLAND	Mapped
Animals - Fish	Acipenser medirostris pop. 1	green sturgeon - southern DPS	Threatened	None	SSC	-	ARCATA SOUTH	Mapped
Animals - Fish	Acipenser medirostris pop. 1	green sturgeon - southern DPS	Threatened	None	SSC	-	EUREKA	Mapped
Animals - Fish	Acipenser medirostris pop. 1	green sturgeon - southern DPS	Threatened	None	SSC	-	FIELDS LANDING	Mapped
Animals - Fish	Acipenser medirostris pop. 2	green sturgeon - northern DPS	None	None	SSC	-	FIELDS LANDING	Unprocessed

Animals - Reptiles	Actinemys marmorata	northwestern pond turtle	Proposed Threatened	None	SSC	-	FIELDS LANDING	Mapped and Unprocessed
Animals - Reptiles	Actinemys marmorata	northwestern pond turtle	Proposed Threatened	None	SSC	-	EUREKA	Mapped and Unprocessed
Animals - Reptiles	Actinemys marmorata	northwestern pond turtle	Proposed Threatened	None	SSC	-	ARCATA SOUTH	Mapped and Unprocessed
Animals - Reptiles	Actinemys marmorata	northwestern pond turtle	Proposed Threatened	None	SSC	-	CANNIBAL ISLAND	Mapped and Unprocessed
Animals - Reptiles	Actinemys marmorata	northwestern pond turtle	Proposed Threatened	None	SSC	-	ARCATA NORTH	Mapped and Unprocessed
Animals - Reptiles	Actinemys marmorata	northwestern pond turtle	Proposed Threatened	None	SSC	-	TYEE CITY	Unprocessed
Community - Terrestrial	Coastal Terrace Prairie	Coastal Terrace Prairie	None	None	-	-	CANNIBAL ISLAND	Mapped
Community - Terrestrial	Northern Coastal Salt Marsh	Northern Coastal Salt Marsh	None	None	-	-	CANNIBAL ISLAND	Mapped
Community - Terrestrial	Northern Coastal Salt Marsh	Northern Coastal Salt Marsh	None	None	-	-	ARCATA SOUTH	Mapped
Community - Terrestrial	Northern Coastal Salt Marsh	Northern Coastal Salt Marsh	None	None	-	-	EUREKA	Mapped
Community - Terrestrial	Northern Coastal Salt Marsh	Northern Coastal Salt Marsh	None	None	-	-	TYEE CITY	Mapped
Community - Terrestrial	Northern Coastal Salt Marsh	Northern Coastal Salt Marsh	None	None	-	-	FIELDS LANDING	Mapped
Community - Terrestrial	Northern Foredune Grassland	Northern Foredune Grassland	None	None	-	-	TYEE CITY	Mapped
Community - Terrestrial	Sitka Spruce Forest	Sitka Spruce Forest	None	None	-	-	CANNIBAL ISLAND	Mapped
Plants - Bryophytes	Trichodon cylindricus	cylindrical trichodon	None	None	-	2B.2	ARCATA NORTH	Mapped
Plants - Bryophytes	Fissidens pauperculus	minute pocket moss	None	None	-	1B.2	ARCATA NORTH	Mapped
Plants - Bryophytes	Fissidens pauperculus	minute pocket moss	None	None	-	1B.2	ARCATA SOUTH	Mapped
Plants - Lichens	Sulcaria spiriferia	twisted horsehair lichen	None	None	-	1B.2	EUREKA	Mapped
Plants - Lichens	Sulcaria spiriferia	twisted horsehair lichen	None	None	-	1B.2	TYEE CITY	Mapped
Plants - Lichens	Usnea longissima	Methuselahs beard lichen	None	None	-		4.2 ARCATA SOUTH	Mapped
Plants - Lichens	Usnea longissima	Methuselahs beard lichen	None	None	-		4.2 MCWHINNEY CREEK	Mapped and Unprocessed
Plants - Vascular	Angelica lucida	sea-watch	None	None	-		4.2 FIELDS LANDING	Unprocessed
Plants - Vascular	Angelica lucida	sea-watch	None	None	-		4.2 ARCATA SOUTH	Unprocessed
Plants - Vascular	Angelica lucida	sea-watch	None	None	-		4.2 CANNIBAL ISLAND	Unprocessed
Plants - Vascular	Angelica lucida	sea-watch	None	None	-		4.2 EUREKA	Unprocessed
Plants - Vascular	Angelica lucida	sea-watch	None	None	-		4.2 TYEE CITY	Unprocessed
Plants - Vascular	Glehnia littoralis ssp. leiocarpa	American glehnia	None	None	-		4.2 ARCATA NORTH	Unprocessed
Plants - Vascular	Glehnia littoralis ssp. leiocarpa	American glehnia	None	None	-		4.2 TYEE CITY	Unprocessed
Plants - Vascular	Glehnia littoralis ssp. leiocarpa	American glehnia	None	None	-		4.2 EUREKA	Unprocessed
Plants - Vascular	Glehnia littoralis ssp. leiocarpa	American glehnia	None	None	-		4.2 CANNIBAL ISLAND	Unprocessed
Plants - Vascular	Glehnia littoralis ssp. leiocarpa	American glehnia	None	None	-		4.2 FIELDS LANDING	Unprocessed
Plants - Vascular	Hesperexav sparsiflora var. brevifolia	short-leaved evax	None	None	-	1B.2	CANNIBAL ISLAND	Mapped
Plants - Vascular	Hesperexav sparsiflora var. brevifolia	short-leaved evax	None	None	-	1B.2	EUREKA	Mapped and Unprocessed
Plants - Vascular	Lasthenia californica ssp. macrantha	perennial goldfields	None	None	-	1B.2	EUREKA	Mapped
Plants - Vascular	Layia carnosa	beach layia	Threatened	Endangered	-	1B.1	EUREKA	Mapped and Unprocessed
Plants - Vascular	Layia carnosa	beach layia	Threatened	Endangered	-	1B.1	CANNIBAL ISLAND	Mapped and Unprocessed
Plants - Vascular	Layia carnosa	beach layia	Threatened	Endangered	-	1B.1	TYEE CITY	Mapped and Unprocessed
Plants - Vascular	Layia carnosa	beach layia	Threatened	Endangered	-	1B.1	FIELDS LANDING	Mapped
Plants - Vascular	Cardamine angulata	seaside bittercress	None	None	-	2B.1	MCWHINNEY CREEK	Mapped
Plants - Vascular	Cardamine angulata	seaside bittercress	None	None	-	2B.1	ARCATA SOUTH	Mapped
Plants - Vascular	Erysimum menziesii	Menzies wallflower	Endangered	Endangered	-	1B.1	CANNIBAL ISLAND	Mapped
Plants - Vascular	Erysimum menziesii	Menzies wallflower	Endangered	Endangered	-	1B.1	EUREKA	Mapped and Unprocessed
Plants - Vascular	Erysimum menziesii	Menzies wallflower	Endangered	Endangered	-	1B.1	TYEE CITY	Mapped and Unprocessed
Plants - Vascular	Silene scouleri ssp. scouleri	Scoulers catchfly	None	None	-	2B.2	EUREKA	Mapped
Plants - Vascular	Spergularia canadensis var. occidentalis	western sand-spurrey	None	None	-	2B.1	EUREKA	Mapped and Unprocessed
Plants - Vascular	Spergularia canadensis var. occidentalis	western sand-spurrey	None	None	-	2B.1	CANNIBAL ISLAND	Mapped
Plants - Vascular	Spergularia canadensis var. occidentalis	western sand-spurrey	None	None	-	2B.1	ARCATA SOUTH	Mapped
Plants - Vascular	Spergularia canadensis var. occidentalis	western sand-spurrey	None	None	-	2B.1	FIELDS LANDING	Mapped
Plants - Vascular	Carex arcta	northern clustered sedge	None	None	-	2B.2	EUREKA	Mapped
Plants - Vascular	Carex arcta	northern clustered sedge	None	None	-	2B.2	ARCATA NORTH	Mapped
Plants - Vascular	Carex leptalea	bristle-stalked sedge	None	None	-	2B.2	FIELDS LANDING	Mapped
Plants - Vascular	Carex lyngbyei	Lyngbyes sedge	None	None	-	2B.2	FIELDS LANDING	Unprocessed
Plants - Vascular	Carex lyngbyei	Lyngbyes sedge	None	None	-	2B.2	CANNIBAL ISLAND	Mapped and Unprocessed
Plants - Vascular	Carex lyngbyei	Lyngbyes sedge	None	None	-	2B.2	ARCATA NORTH	Mapped
Plants - Vascular	Carex lyngbyei	Lyngbyes sedge	None	None	-	2B.2	TYEE CITY	Mapped
Plants - Vascular	Carex lyngbyei	Lyngbyes sedge	None	None	-	2B.2	EUREKA	Mapped and Unprocessed
Plants - Vascular	Carex lyngbyei	Lyngbyes sedge	None	None	-	2B.2	ARCATA SOUTH	Mapped and Unprocessed
Plants - Vascular	Carex pratensis	northern meadow sedge	None	None	-	2B.2	ARCATA SOUTH	Mapped
Plants - Vascular	Carex pratensis	northern meadow sedge	None	None	-	2B.2	EUREKA	Mapped
Plants - Vascular	Elaeagnus parvula	small spikeweed	None	None	-		4.3 ARCATA SOUTH	Unprocessed
Plants - Vascular	Astragalus pycnostachyus var. pycnostachyus	coastal marsh milk-vetch	None	None	-	1B.2	EUREKA	Mapped
Plants - Vascular	Astragalus rattanii var. rattanii	Rattans milk-vetch	None	None	-		4.3 ARCATA NORTH	Unprocessed
Plants - Vascular	Hosackia gracilis	harlequin lotus	None	None	-		4.2 EUREKA	Unprocessed
Plants - Vascular	Hosackia gracilis	harlequin lotus	None	None	-		4.2 ARCATA SOUTH	Unprocessed
Plants - Vascular	Hosackia gracilis	harlequin lotus	None	None	-		4.2 CANNIBAL ISLAND	Unprocessed
Plants - Vascular	Hosackia gracilis	harlequin lotus	None	None	-		4.2 FIELDS LANDING	Unprocessed
Plants - Vascular	Lathyrus glandulosus	sticky pea	None	None	-		4.3 ARCATA SOUTH	Unprocessed
Plants - Vascular	Lathyrus glandulosus	sticky pea	None	None	-		4.3 ARCATA NORTH	Unprocessed
Plants - Vascular	Lathyrus japonicus	seaside pea	None	None	-	2B.1	ARCATA NORTH	Mapped
Plants - Vascular	Lathyrus japonicus	seaside pea	None	None	-	2B.1	ARCATA SOUTH	Mapped
Plants - Vascular	Lathyrus japonicus	seaside pea	None	None	-	2B.1	EUREKA	Mapped
Plants - Vascular	Lathyrus palustris	marsh pea	None	None	-	2B.2	EUREKA	Mapped
Plants - Vascular	Ribes laxiflorum	trailing black currant	None	None	-		4.3 EUREKA	Unprocessed
Plants - Vascular	Ribes laxiflorum	trailing black currant	None	None	-		4.3 ARCATA SOUTH	Unprocessed
Plants - Vascular	Ribes laxiflorum	trailing black currant	None	None	-		4.3 ARCATA NORTH	Unprocessed
Plants - Vascular	Ribes laxiflorum	trailing black currant	None	None	-		4.3 FIELDS LANDING	Unprocessed
Plants - Vascular	Ribes laxiflorum	trailing black currant	None	None	-		4.3 MCWHINNEY CREEK	Unprocessed
Plants - Vascular	Erythronium revolutum	coast fawn lily	None	None	-	2B.2	EUREKA	Mapped
Plants - Vascular	Lilium kelloggii	Kelloggs lily	None	None	-		4.3 ARCATA SOUTH	Unprocessed
Plants - Vascular	Lilium kelloggii	Kelloggs lily	None	None	-		4.3 MCWHINNEY CREEK	Unprocessed
Plants - Vascular	Lilium occidentale	western lily	Endangered	Endangered	-	1B.1	CANNIBAL ISLAND	Mapped
Plants - Vascular	Lilium occidentale	western lily	Endangered	Endangered	-	1B.1	FIELDS LANDING	Mapped
Plants - Vascular	Lilium occidentale	western lily	Endangered	Endangered	-	1B.1	ARCATA SOUTH	Mapped
Plants - Vascular	Lilium occidentale	western lily	Endangered	Endangered	-	1B.1	EUREKA	Mapped
Plants - Vascular	Lilium occidentale	western lily	Endangered	Endangered	-	1B.1	ARCATA NORTH	Mapped
Plants - Vascular	Lycopodium clavatum	running-pine	None	None	-		4.1 ARCATA NORTH	Mapped and Unprocessed
Plants - Vascular	Lycopodium clavatum	running-pine	None	None	-		4.1 EUREKA	Unprocessed
Plants - Vascular	Lycopodium clavatum	running-pine	None	None	-		4.1 ARCATA SOUTH	Mapped and Unprocessed
Plants - Vascular	Lycopodium clavatum	running-pine	None	None	-		4.1 FIELDS LANDING	Unprocessed
Plants - Vascular	Lycopodium clavatum	running-pine	None	None	-		4.1 MCWHINNEY CREEK	Mapped and Unprocessed
Plants - Vascular	Sidalcea malachroides	maple-leaved checkerbloom	None	None	-		4.2 MCWHINNEY CREEK	Mapped and Unprocessed
Plants - Vascular	Sidalcea malachroides	maple-leaved checkerbloom	None	None	-		4.2 FIELDS LANDING	Mapped and Unprocessed
Plants - Vascular	Sidalcea malachroides	maple-leaved checkerbloom	None	None	-		4.2 ARCATA SOUTH	Mapped and Unprocessed
Plants - Vascular	Sidalcea malachroides	maple-leaved checkerbloom	None	None	-		4.2 EUREKA	Mapped and Unprocessed
Plants - Vascular	Sidalcea malachroides	maple-leaved checkerbloom	None	None	-		4.2 ARCATA NORTH	Mapped and Unprocessed
Plants - Vascular	Sidalcea malviflora ssp. patula	Siskiyou checkerbloom	None	None	-	1B.2	ARCATA NORTH	Mapped
Plants - Vascular	Sidalcea malviflora ssp. patula	Siskiyou checkerbloom	None	None	-	1B.2	EUREKA	Mapped
Plants - Vascular	Sidalcea malviflora ssp. patula	Siskiyou checkerbloom	None	None	-	1B.2	FIELDS LANDING	Mapped
Plants - Vascular	Sidalcea oregana ssp. eximia	coast checkerbloom	None	None	-	1B.2	FIELDS LANDING	Mapped and Unprocessed
Plants - Vascular	Sidalcea oregana ssp. eximia	coast checkerbloom	None	None	-	1B.2	EUREKA	Mapped
Plants - Vascular	Sidalcea oregana ssp. eximia	coast checkerbloom	None	None	-	1B.2	CANNIBAL ISLAND	Mapped
Plants - Vascular	Sidalcea oregana ssp. eximia	coast checkerbloom	None	None	-	1B.2	ARCATA NORTH	Mapped
Plants - Vascular	Monotropa uniflora	ghost-pipe	None	None	-	2B.2	ARCATA SOUTH	Mapped
Plants - Vascular	Monotropa uniflora	ghost-pipe	None	None	-	2B.2	EUREKA	Mapped
Plants - Vascular	Pityopus californicus	California pinefoot	None	None	-		4.2 ARCATA NORTH	Unprocessed
Plants - Vascular	Pityopus californicus	California pinefoot	None	None	-		4.2 FIELDS LANDING	Unprocessed
Plants - Vascular	Pityopus californicus	California pinefoot	None	None	-		4.2 MCWHINNEY CREEK	Unprocessed
Plants - Vascular	Lewisia kelloggii ssp. kelloggii	Kelloggs lewisia	None	None	-		3.2 MCWHINNEY CREEK	Unprocessed
Plants - Vascular	Howells montia	Howells montia	None	None	-	2B.2	MCWHINNEY CREEK	Mapped and Unprocessed
Plants - Vascular	Montia howellii	Howells montia	None	None	-	2B.2	FIELDS LANDING	Mapped and Unprocessed
Plants - Vascular	Montia howellii	Howells montia	None	None	-	2B.2	ARCATA NORTH	Mapped
Plants - Vascular	Montia howellii	Howells montia	None	None	-	2B.2	EUREKA	Mapped
Plants - Vascular	Montia howellii	Howells montia	None	None	-	2B.2	ARCATA SOUTH	Mapped
Plants - Vascular	Abronia umbellata var. breviflora	pink sand-verbena	None	None	-	1B.1	EUREKA	Mapped and Unprocessed
Plants - Vascular	Abronia umbellata var. breviflora	pink sand-verbena	None	None	-	1B.1	ARCATA NORTH	Mapped
Plants - Vascular	Abronia umbellata var. breviflora	pink sand-verbena	None	None	-	1B.1	TYEE CITY	Mapped
Plants - Vascular	Abronia umbellata var. breviflora	pink sand-verbena	None	None	-	1B.1	FIELDS LANDING	Mapped and Unprocessed
Plants - Vascular	Oenothera wolffii	Wolfs evening-primrose	None	None	-	1B.1	ARCATA NORTH	Mapped
Plants - Vascular	Oenothera wolffii	Wolfs evening-primrose	None	None	-	1B.1	EUREKA	Mapped
Plants - Vascular	Listera cordata	heart-leaved twayblade	None	None	-		4.2 ARCATA SOUTH	Unprocessed

Plants - Vascular	Listera cordata	heart-leaved twayblade	None	None	-		4.2	ARCATA NORTH	Unprocessed
Plants - Vascular	Listera cordata	heart-leaved twayblade	None	None	-		4.2	FIELDS LANDING	Unprocessed
Plants - Vascular	Listera cordata	heart-leaved twayblade	None	None	-		4.2	MCWHINNEY CREEK	Unprocessed
Plants - Vascular	Castilleja ambigua var. humboldtensis	Humboldt Bay ows-clover	None	None	-	1B.2		FIELDS LANDING	Mapped
Plants - Vascular	Castilleja ambigua var. humboldtensis	Humboldt Bay ows-clover	None	None	-	1B.2		ARCATA NORTH	Mapped
Plants - Vascular	Castilleja ambigua var. humboldtensis	Humboldt Bay ows-clover	None	None	-	1B.2		TYEE CITY	Mapped
Plants - Vascular	Castilleja ambigua var. humboldtensis	Humboldt Bay ows-clover	None	None	-	1B.2		ARCATA SOUTH	Mapped and Unprocessed
Plants - Vascular	Castilleja ambigua var. humboldtensis	Humboldt Bay ows-clover	None	None	-	1B.2		CANNIBAL ISLAND	Mapped and Unprocessed
Plants - Vascular	Castilleja ambigua var. humboldtensis	Humboldt Bay ows-clover	None	None	-	1B.2		EUREKA	Mapped and Unprocessed
Plants - Vascular	Castilleja litoralis	Oregon coast paintbrush	None	None	-	2B.2		EUREKA	Mapped
Plants - Vascular	Castilleja litoralis	Oregon coast paintbrush	None	None	-	2B.2		CANNIBAL ISLAND	Mapped
Plants - Vascular	Chloropyron maritimum ssp. palustre	Point Reyes salty birds-beak	None	None	-	1B.2		FIELDS LANDING	Mapped
Plants - Vascular	Chloropyron maritimum ssp. palustre	Point Reyes salty birds-beak	None	None	-	1B.2		CANNIBAL ISLAND	Mapped and Unprocessed
Plants - Vascular	Chloropyron maritimum ssp. palustre	Point Reyes salty birds-beak	None	None	-	1B.2		ARCATA SOUTH	Mapped
Plants - Vascular	Chloropyron maritimum ssp. palustre	Point Reyes salty birds-beak	None	None	-	1B.2		EUREKA	Mapped and Unprocessed
Plants - Vascular	Chloropyron maritimum ssp. palustre	Point Reyes salty birds-beak	None	None	-	1B.2		TYEE CITY	Mapped
Plants - Vascular	Collinsia corymbosa	round-headed collinsia	None	None	-	1B.2		EUREKA	Mapped
Plants - Vascular	Pleuropogon refractus	nodding semaphore grass	None	None	-		4.2	EUREKA	Unprocessed
Plants - Vascular	Pleuropogon refractus	nodding semaphore grass	None	None	-		4.2	ARCATA SOUTH	Unprocessed
Plants - Vascular	Pleuropogon refractus	nodding semaphore grass	None	None	-		4.2	ARCATA NORTH	Unprocessed
Plants - Vascular	Pleuropogon refractus	nodding semaphore grass	None	None	-		4.2	FIELDS LANDING	Unprocessed
Plants - Vascular	Pleuropogon refractus	nodding semaphore grass	None	None	-		4.2	MCWHINNEY CREEK	Unprocessed
Plants - Vascular	Puccinellia pumila	dwarf alkali grass	None	None	-	2B.2		CANNIBAL ISLAND	Mapped
Plants - Vascular	Gilia capitata ssp. pacifica	Pacific gilia	None	None	-	1B.2		EUREKA	Mapped
Plants - Vascular	Gilia millefoliata	dark-eyed gilia	None	None	-	1B.2		EUREKA	Mapped and Unprocessed
Plants - Vascular	Gilia millefoliata	dark-eyed gilia	None	None	-	1B.2		CANNIBAL ISLAND	Mapped and Unprocessed
Plants - Vascular	Gilia millefoliata	dark-eyed gilia	None	None	-	1B.2		TYEE CITY	Mapped
Plants - Vascular	Gilia millefoliata	dark-eyed gilia	None	None	-	1B.2		FIELDS LANDING	Mapped
Plants - Vascular	Chrysosplenium glechomifolium	Pacific golden saxifrage	None	None	-		4.3	FIELDS LANDING	Unprocessed
Plants - Vascular	Chrysosplenium glechomifolium	Pacific golden saxifrage	None	None	-		4.3	MCWHINNEY CREEK	Unprocessed
Plants - Vascular	Chrysosplenium glechomifolium	Pacific golden saxifrage	None	None	-		4.3	ARCATA NORTH	Unprocessed
Plants - Vascular	Chrysosplenium glechomifolium	Pacific golden saxifrage	None	None	-		4.3	ARCATA SOUTH	Unprocessed
Plants - Vascular	Chrysosplenium glechomifolium	Pacific golden saxifrage	None	None	-		4.3	EUREKA	Unprocessed
Plants - Vascular	Mitellastra caulescens	leafy-stemmed mitrewort	None	None	-		4.2	ARCATA SOUTH	Mapped and Unprocessed
Plants - Vascular	Mitellastra caulescens	leafy-stemmed mitrewort	None	None	-		4.2	ARCATA NORTH	Unprocessed
Plants - Vascular	Mitellastra caulescens	leafy-stemmed mitrewort	None	None	-		4.2	MCWHINNEY CREEK	Unprocessed
Plants - Vascular	Mitellastra caulescens	leafy-stemmed mitrewort	None	None	-		4.2	FIELDS LANDING	Unprocessed
Plants - Vascular	Viola palustris	alpine marsh violet	None	None	-	2B.2		ARCATA SOUTH	Mapped
Plants - Vascular	Viola palustris	alpine marsh violet	None	None	-	2B.2		EUREKA	Mapped

ScientificN	CommonN	Family	Lifeform	CRPR	CRPRChai	GRank	SRank	OtherStatu	CESA	FESA	BloomingP	Habitat	Microhabit	Microhabit	ElevationL	ElevationL	ElevationH
Abronia un	pink sand-	Nyctaginac	annual her	1B.1		G4G5T2	S2	BLM_S; SE	None	None	Jun-Oct	Coastal dunes			0	0	10
Angelica lu	sea-watch	Apiaceae	perennial h	4.2		G5	S3	SB_USDA	None	None	Apr-Sep	Coastal bluff scrub, Coastal dune			0	0	150
Astragalus	coastal ma	Fabaceae	perennial h	1B.2		G2T2	S2	BLM_S; SE	None	None	(Apr-May),	Coastal dunes (mesic), Coastal s			0	0	55
Astragalus	Rattan's m	Fabaceae	perennial h	4.3		G4T4	S4		None	None	Apr-Jul	Chaparral, Cismontar	Gravelly, s		30	100	825
Cardamine	seaside bit	Brassicace	perennial h	2B.2	#####	G4G5	S3		None	None	(Jan)Mar-J	Lower moi wet areas	Streambar		15	50	915
Carex arct	northern cl	Cyperaceae	perennial h	2B.2	#####	G5	S1	IUCN_LC	None	None	Jun-Sep	Bogs and fens, North Coast conif			60	195	1400
Carex lept	bristle-stalk	Cyperaceae	perennial r	2B.2	#####	G5	S1	IUCN_LC	None	None	Mar-Jul	Bogs and fens, Marshes and swa			0	0	700
Carex lyng	Lyngbye's	Cyperaceae	perennial r	2B.2	#####	G5	S3	IUCN_LC	None	None	Apr-Aug	Marshes and swamps (brackish,			0	0	10
Carex prat	northern m	Cyperaceae	perennial h	2B.2	#####	G5	S2		None	None	May-Jul	Meadows and seeps (mesic)			0	0	3200
Castilleja a	Humboldt f	Orobanchae	annual her	1B.2		G5T2	S2	BLM_S; SE	None	None	Apr-Aug	Marshes and swamps (coastal sa			0	0	3
Castilleja li	Oregon co	Orobanchae	perennial h	2B.2	#####	G3	S3		None	None	Jun	Coastal bluff scrub, C	Sandy		15	50	100
Chloropyrc	Point Reye	Orobanchae	annual her	1B.2		G4?T2	S2	BLM_S; SE	None	None	Jun-Oct	Marshes and swamps (coastal sa			0	0	10
Chrysosple	Pacific gol	Saxifragac	perennial h	4.3	#####	G5?	S3		None	None	Feb-Jun	North Coast coniferou	Roadsides		10	35	540
Collinsia c	round-head	Plantagina	annual her	1B.2		G1	S1	SB_CalBG	None	None	Apr-Jun	Coastal dunes			0	0	20
Eleocharis	small spike	Cyperaceae	perennial h	4.3		G5	S3		None	None	(Apr)Jun-A	Marshes and swamps			1	5	3020
Erysimum	Menzies' w	Brassicace	perennial h	1B.1	#####	G1	S1	SB_CalBG	CE	FE	Mar-Sep	Coastal dunes			0	0	35
Erythroniu	coast fawn	Liliaceae	perennial h	2B.2	#####	G4G5	S3	SB_UCSC	None	None	Mar-Jul(Au	Bogs and fens, Broad	Mesic, Str		0	0	1600
Fissidens	minute gol	Fissidentac	moss	1B.2		G3?	S2	USFS_S	None	None		North Coast coniferous forest (da			10	35	1024
Gilia capit	Pacific gill	Polemonia	annual her	1B.2		G5T3	S3	SB_CalBG	None	None	Apr-Aug	Chaparral (openings), Coastal bl			5	15	1665
Gilia millef	dark-eyed	Polemonia	annual her	1B.2		G2	S2	BLM_S; SE	None	None	Apr-Jul	Coastal dunes			2	5	30
Glehnia litt	American c	Apiaceae	perennial h	4.2		G5T5	S2S3	SB_CalBG	None	None	May-Aug	Coastal dunes			0	0	20
Hesperereva	short-leav	Asteraceae	annual her	1B.2	#####	G4T3	S3	BLM_S; SE	None	None	Mar-Jun	Coastal bluff scrub (sandy), Coas			0	0	215
Hosackia c	charlequin l	Fabaceae	perennial r	4.2		G3G4	S3	SB_CalBG	None	None	Mar-Jul	Broadleaf wetlands	Roadsides		0	0	700
Lasthenia (	perennial c	Asteraceae	perennial h	1B.2		G3T2	S2	BLM_S; SE	None	None	Jan-Nov	Coastal bluff scrub, Coastal dune			5	15	520
Lathyrus gl	sticky pea	Fabaceae	perennial r	4.3		G3	S3	SB_BerryS	None	None	Apr-Jun	Cismontane woodland			300	985	800
Lathyrus ja	seaside pe	Fabaceae	perennial r	2B.1	#####	G5	S2	IUCN_LC	None	None	May-Aug	Coastal dunes			1	5	30
Lathyrus p	marsh pea	Fabaceae	perennial h	2B.2	#####	G5	S2		None	None	Mar-Aug	Bogs and fens, Coast	Mesic		1	5	100
Layia carn	beach layi	Asteraceae	annual her	1B.1		G2	S2	SB_CalBG	CE	FT	Mar-Jul	Coastal dunes, Coastal scrub (sa			0	0	60
Lilium kelle	Kellogg's li	Liliaceae	perennial h	4.3		G3	S3		None	None	(Feb)May-J	Lower montane conife	Openings,		3	10	1300
Lilium occi	western lily	Liliaceae	perennial h	1B.1		G1G2	S1	SB_BerryS	CE	FE	Jun-Jul	Bogs and fens, Coastal bluff scr			2	5	185
Listera cor	heart-leav	Orchidaceae	perennial h	4.2		G5	S4		None	None	Feb-Jul	Bogs and fens, Lower montane c			5	15	1370
Lycopodiur	running-pir	Lycopodiace	perennial r	4.1	#####	G5	S3		None	None	Jun-Aug(S	Lower montane conife	Edges (oft		45	150	1225
Mitellastra	leafy-stem	Saxifragace	perennial r	4.2	#####	G5	S4		None	None	(Mar)Apr-C	Broadleafed upland fo	Mesic, Ro		5	15	1700
Monotropa	ghost-pipe	Ericaceae	perennial h	2B.2	#####	G5	S2	SB_CalBG	None	None	Jun-Aug(S	Broadleafed upland forest, North			10	35	550
Montia hov	Howell's m	Montiaceae	annual her	2B.2	#####	G3G4	S2		None	None	(Feb)Mar-I	Meadows and seeps, Roadsides			0	0	835
Oenothera	Wolf's eve	Onagraceae	perennial h	1B.1		G2	S1	SB_BerryS	None	None	May-Oct	Coastal bluff scrub, C	Mesic (usu		3	10	800
Pityopus c	California	Ericaceae	perennial h	4.2		G4G5	S4		None	None	(Mar-Apr)M	Broadleafed upland fo	Mesic		15	50	2225
Pleuropoge	nodding se	Poaceae	perennial r	4.2		G4	S4	IUCN_LC	None	None	(Feb-Mar)A	Lower montane conife	Mesic		0	0	1600
Puccinellia	dwarf alk	Poaceae	perennial h	2B.2	#####	G5	SH		None	None	Jul	Marshes and swamps (coastal sa			1	5	10
Ribes laxif	trailing bla	Grossularia	perennial c	4.3		G5?	S3		None	None	Mar-Jul(Au	North Coast coniferou	Roadsides		5	15	1395
Sidalcea m	maple-leav	Malvaceae	perennial h	4.2	#####	G3	S3		None	None	(Mar)Apr-A	Broadleafed upland fo	Disturbed		0	0	730
Sidalcea m	Siskiyou c	Malvaceae	perennial r	1B.2		G4G5T2	S2	SB_UCSC	None	None	(Mar-Apr)M	Coastal bl often road	Roadsides		15	50	1230
Sidalcea o	coast chec	Malvaceae	perennial h	1B.2		G5T1	S1		None	None	Jun-Aug	Lower montane coniferous forest			5	15	1340
Silene sco	Scouler's c	Caryophyll	perennial h	2B.2	#####	G5T4T5	S2S3		None	None	(Mar-May),	Coastal bluff scrub, Coastal prair			0	0	600
Spergularia	western sa	Caryophyll	annual her	2B.1	#####	G5T4	S1		None	None	Jun-Aug	Marshes and swamps (coastal sa			0	0	3
Sulcaria s	twisted hor	Parmeliaceae	fruticose lic	1B.2	#####	G3G4	S2	BLM_S	None	None		Coastal d	Usually on conifers.		0	0	90
Trichodon	cylindrical	Ditrichaceae	moss	2B.2	#####	G4G5	S2		None	None		Broadleaf exposed sc	Roadsides		50	165	2002
Usnea long	Methuselah	Parmeliaceae	fruticose lic	4.2	#####	G5	S4	BLM_S	None	None		Broadleaf On tree branches; usu			50	165	1460
Viola palus	alpine mar	Violaceae	perennial r	2B.2	#####	G5	S1S2		None	None	Mar-Aug	Bogs and fens (coastal), Coastal			0	0	150

Elevation	H	CAEndemi	States	Counties	Quads	EO	Total	EOA	EOB	EOC	EOD	EOX	EOU	EOHistoric	EORecent	EOExtant	EOPossible	EOExtirpat	EOThreat
35	FALSE	CA, OR, V	DNT, HUM	Arcata No	61	2	22	11	6	1	19	34	27	60	1	0	45		
490	FALSE	AK, CA, C	DNT, HUM	Albion (39	0	0	0	0	0	0	0	0	0	0	0	0	0		
180	TRUE	CA	HUM, MR	Bolinas (3	25	0	11	3	1	2	8	20	5	23	2	0	20		
2705	TRUE	CA	COL, HUM	Arcata No	0	0	0	0	0	0	0	0	0	0	0	0	0		
3000	FALSE	AK, CA, C	DNT, HUM	Ah Pah Ri	38	7	15	5	2	0	9	4	34	38	0	0	24		
4595	FALSE	AK, CA, ID	DNT, HUM	Arcata No	13	1	2	5	0	0	5	4	9	13	0	0	8		
2295	FALSE	AK, AL, AI	DNT, HUM	Cant Hook	8	0	2	1	0	2	3	6	2	6	1	1	5		
35	FALSE	AK, CA, C	DNT, HUM	Arcata No	37	5	6	11	0	0	15	17	20	37	0	0	18		
10500	FALSE	AK, CA, C	DNT, HUM	Arcata So	14	0	2	0	0	0	12	12	2	14	0	0	1		
10	TRUE	CA	HUM, MEI	Arcata No	31	5	11	4	0	0	11	21	10	31	0	0	17		
330	FALSE	CA, OR	DNT, HUM	Albion (39	44	0	7	6	0	0	31	24	20	44	0	0	11		
35	FALSE	CA, OR	ALA, HUM	Arcata So	80	7	32	5	4	11	21	37	43	69	10	1	33		
1770	FALSE	CA, OR, V	DNT, HUM	Ah Pah Ri	0	0	0	0	0	0	0	0	0	0	0	0	0		
65	TRUE	CA	HUM, MEI	Bolinas (3	13	0	1	0	0	2	10	11	2	11	0	2	5		
9910	FALSE	AL, AR, A	ALA, CCA	Antioch No	0	0	0	0	0	0	0	0	0	0	0	0	0		
115	TRUE	CA	HUM, MEI	Cannibal I	19	3	8	3	2	3	0	7	12	16	3	0	17		
5250	FALSE	CA, OR, V	DNT, HUM	Ah Pah Ri	172	24	80	41	8	0	19	23	149	172	0	0	148		
3360	FALSE	CA, OR	ALA, BUT	Arcata No	22	0	3	1	0	0	18	17	5	22	0	0	5		
5465	FALSE	CA, OR	DNT, HUM	Albion (39	92	13	30	5	1	0	43	33	59	92	0	0	47		
100	FALSE	CA, OR	ALA, CCA	Bodega H	54	1	9	17	1	4	22	40	14	50	2	2	32		
65	FALSE	AK, CA, C	DNT, HUM	Arcata No	0	0	0	0	0	0	0	0	0	0	0	0	0		
705	FALSE	CA, OR	DNT, HUM	Albion (39	72	4	26	12	1	1	28	23	49	71	1	0	42		
2295	FALSE	CA, OR, V	DNT, HUM	Albion (39	0	0	0	0	0	0	0	0	0	0	0	0	0		
1705	TRUE	CA	DNT, HUM	Albion (39	59	1	16	3	3	0	36	38	21	59	0	0	23		
2625	TRUE	CA	HUM, MEI	Arcata No	0	0	0	0	0	0	0	0	0	0	0	0	0		
100	FALSE	AK, CA, C	DNT, HUM	Arcata No	24	1	5	4	3	0	11	7	17	24	0	0	13		
330	FALSE	AK, CA, C	DNT, HUM	Arched Ro	13	1	3	1	0	0	8	8	5	13	0	0	5		
195	FALSE	CA, OR	HUM, MN	Cannibal I	25	2	10	6	0	4	3	12	13	21	2	2	23		
4265	FALSE	CA, OR	DNT, HUM	Arcata So	0	0	0	0	0	0	0	0	0	0	0	0	0		
605	FALSE	CA, OR	DNT, HUM	Arcata No	16	0	4	5	3	3	1	7	9	13	3	0	13		
4495	FALSE	AK, CA, C	DNT, HUM	Ah Pah Ri	0	0	0	0	0	0	0	0	0	0	0	0	0		
4020	FALSE	AK, CA, C	DNT, HUM	Arcata No	120	6	28	43	18	0	25	120	0	120	0	0	105		
5580	FALSE	CA, ID, M	DNT, HUM	Ah Pah Ri	21	3	4	1	1	0	12	21	0	21	0	0	9		
1805	FALSE	AK, AL, AI	DNT, HUM	Ah Pah Ri	117	2	28	53	16	0	18	8	109	117	0	0	102		
2740	FALSE	CA, OR, V	DNT, HUM	Arcata No	123	11	55	32	12	6	7	23	100	117	5	1	109		
2625	FALSE	CA, OR	DNT, HUM	Ah Pah Ri	29	1	9	5	2	0	12	20	9	29	0	0	18		
7300	FALSE	CA, OR, V	DNT, FRE	Ah Pah Ri	0	0	0	0	0	0	0	0	0	0	0	0	0		
5250	FALSE	CA, OR, V	DNT, HUM	Takilma (	0	0	0	0	0	0	0	0	0	0	0	0	0		
35	FALSE	AK, CA, C	HUM, MEI	Cannibal I	2	0	0	0	0	0	2	2	0	2	0	0	0		
4575	FALSE	AK, CA, C	DNT, HUM	Ah Pah Ri	0	0	0	0	0	0	0	0	0	0	0	0	0		
2395	FALSE	CA, OR	DNT, HUM	Ah Pah Ri	136	4	15	41	43	2	31	136	0	134	2	0	109		
4035	FALSE	CA, OR	DNT, HUM	Albion (39	60	10	22	11	1	0	16	14	46	60	0	0	41		
4395	TRUE	CA	DNT, HUM	Arcata No	19	0	1	5	1	0	12	15	4	19	0	0	8		
1970	FALSE	CA, ID, M	DNT, HUM	Bodega H	23	0	0	0	0	0	23	15	8	23	0	0	2		
10	FALSE	AK, CA, C	HUM	Arcata So	4	0	0	1	0	0	3	4	0	4	0	0	2		
295	FALSE	CA, OR, V	DNT, HUM	Annapolis	18	0	1	0	0	0	17	12	6	18	0	0	3		
6570	FALSE	AK, CA, M	HUM, LAK	Arcata No	14	0	3	0	1	0	10	7	7	14	0	0	5		
4790	FALSE	AK, CA, M	DNT, HUM	Ah Pah Ri	206	14	34	57	47	2	52	206	0	204	1	1	161		
490	FALSE	AK, AZ, C	DNT, HUM	Arcata So	10	1	1	0	0	0	8	10	0	10	0	0	1		

ThreatList	ThreatList	Notes	Threats	Taxonomy	FullScienti	Synonyms	ElementCc	USDAPlan	DateAdded	LastUpdate
12	Altered flo	Most occurrences have few plant			Abronia un	Abronia un	PDNYC010N4		1/1/1988 0:00	3/1/2022 0:00
0		Possibly threatened by non-native			Angelica lucida		PDAP1070	ANLU	1/1/2001 0:00	2/1/2022 0:00
16	Altered flo	Possibly threatened by cattle tran			Astragalus pycnostach		PDFAB0F7	ASPYP	1/1/2001 0:00	12/6/2022 0:00
0					Astragalus rattanii var		PDFAB0F7	ASRAR3	1/1/1988 0:00	5/2/2023 0:00
7	Altered flo	Many occurrences are historical;			Cardamine angulata		PDBRA0K1	CAAN5	4/10/2012 0:00	6/6/2023 0:00
6	Altered flo	Does plant Possibly threatened by			Carex arcta		PMCYP031	CAAR2	1/1/2001 0:00	6/6/2023 0:00
7	Altered flood/tidal/hyd	Threatened by hydrolo			Carex leptalea		PMCYP031	CALE10	1/1/1994 0:00	7/7/2023 0:00
6	Developm	Possibly threatened by grazing, n			Carex lyngbyei		PMCYP031	CALY3	1/1/2001 0:00	7/14/2021 0:00
2	Grazing, L	On review list in OR.			Carex praticola		PMCYP031	CAPR7	1/1/1984 0:00	7/7/2023 0:00
12	Agriculture	Threatened by coastal developm			Castilleja a	Castilleja a	PDSCR0D402		1/1/1974 0:00	8/6/2024 0:00
6	Erosion/ru	Threatened by development, recr			Castilleja li	Castilleja li	PDSCR0D012		1/1/2001 0:00	10/4/2021 0:00
16	Altered flo	Once rather common in proper h			Chloropyrc	Cordylanti	PDSCR0J0C3		1/1/1974 0:00	12/6/2022 0:00
0					Chrysosplenium glech		PDSAX070	CHGL5	10/15/2015 0:00	8/1/2023 0:00
4	Developm	Scattered distribution. Need quar			Collinsia corymbosa		PDSCR0H	COCO2	1/1/1994 0:00	1/13/2023 0:00
0		See Wasmann Journal of Biology			Eleocharis	Heleochar	PMCYP09	ELPA5	1/1/1980 0:00	5/26/2021 0:00
10	Developm	Plants treated as sspp. eureka			Erysimum	Erysimum	PDBRA160	ERME5	1/1/1974 0:00	5/26/2021 0:00
12	Altered flo	On watch li Threatened by logging			Erythronium revolutu		PMLIL0U0	ERRE5	1/1/2001 0:00	3/6/2024 0:00
4	Erosion/ru	See Erythea 2:97-101 (1894) for			Fissidens pauperculus		NBMUS2V	FIPA5	1/1/2001 0:00	5/26/2021 0:00
12	Development, Erosio	Threatened by develo			Gilia capitata ssp. pac		PDPLM040	GICAP	1/1/2001 0:00	6/4/2024 0:00
7	Developm	Threatened by development, veh			Gilia millefoliata		PDPLM040	GIMI	1/1/2001 0:00	12/6/2022 0:00
0		Threatened by non-native plants			Glehnia littoralis ssp. l		PDAP1130	GLLIL	1/1/2001 0:00	12/6/2022 0:00
9	Developm	Threatened by development, corr			Hesperervax sparsiflor		PDASTE50	HESPB	1/1/1994 0:00	12/6/2022 0:00
0		Designated Threatened by develo			Hosackia c	Lotus forn	PDFAB2A0D0		1/1/2004 0:00	12/5/2023 0:00
7	Erosion/ru	Threatened by competition from r			Lasthenia	Lasthenia	PDAST5L0	LACAM3	1/1/2001 0:00	12/6/2022 0:00
0		See Madrono 33(2):136-143 (198			Lathyrus glandulosus		PDFAB251	LAGL8	1/1/1988 0:00	1/5/2022 0:00
9	Developm	Threatened by non-native plants			Lathyrus japonicus		PDFAB250	LAJA	1/1/2001 0:00	7/14/2021 0:00
6	Altered flo	See University of Washington Pu			Lathyrus palustris		PDFAB250	LAPA4	1/1/1994 0:00	1/5/2022 0:00
12	Biocides, l	Reclassified Threatened by coasta			Layia carnosa		PDAST5N0	LACA4	1/1/1988 0:00	6/6/2023 0:00
0		Endangere Possibly threatened by			Lilium kelloggii		PMLIL1A0	LIKE2	1/1/1974 0:00	12/6/2022 0:00
7	Developm	Most CA occurrences under DFG			Lilium occidentale		PMLIL1A0	LIOC2	1/1/1974 0:00	8/2/2022 0:00
0		Easily overlooked. Threat			Listera cor	Listera cor	PMORC1N	LICO6	1/1/1974 0:00	9/27/2021 0:00
9	Altered flood/tidal/hyd	Threatened by logging			Lycopodium clavatum		PPLYC010	LYCL	1/1/1974 0:00	4/5/2022 0:00
4	Foot traffic	Threatened by logging and road			Mitellastra	Mitella cal	PDSAX0N020		1/1/2001 0:00	3/1/2022 0:00
11	Biocides, Developme	Threatened by foot tra			Monotropa uniflora		PDMON03	MOUN3	1/1/1974 0:00	12/6/2022 0:00
14	Altered flo	Rediscovered Threatened			Montia howellii		PDPOR05	MOHO	1/1/1994 0:00	4/5/2022 0:00
14	Altered flood/tidal/hyd	Threatened by road m			Oenothera	Oenothera	PDONA00	OEWO	1/1/1980 0:00	4/5/2022 0:00
0		State-listed Threatened by logging			Pityopus californicus		PDMON05010		1/1/1974 0:00	4/2/2024 0:00
0		Threatened by roadsic			Pleuropogon	Lophochla	PMPOA4Y	PLRE2	1/1/1974 0:00	12/6/2022 0:00
0		Known in CA from only two occur			Puccinellia pumila		PMPOA53	PUPU3	1/1/1988 0:00	8/2/2022 0:00
0		Threatened by logging			Ribes laxiflorum		PDGRO02	RILA3	1/1/1974 0:00	6/8/2022 0:00
13	Altered flo	SCL Co. (427A) occurrence base			Sidalcea malachroides		PDMAL110	SIMA	1/1/1994 0:00	6/8/2022 0:00
11	Agriculture, Biocides,	Threatened by road w			Sidalcea malviflora ss		PDMAL110	SIMAP	1/1/1994 0:00	12/5/2023 0:00
8	Biocides, l	Known from approximately ten oc			Sidalcea oregana ssp.		PDMAL110	SIOR	1/1/1994 0:00	5/26/2021 0:00
4	Grazing, l	Potentially threatened by habitat			Silene scouleri ssp. sc		PDCAR0U	SISCS2	12/13/2017 0:00	5/26/2021 0:00
5	Developm	Known in CA only from Humboldt			Spergularia canadens		PDCAR0W	SPCAO	1/1/2001 0:00	5/26/2021 0:00
4	Developm	Largest known population in CA is			Sulcaria sp	Bryoria ps	NLT0042560		3/1/2014 0:00	10/8/2021 0:00
3	Logging, C	Threatened by logging, road mair			Trichodon cylindricus		NBMUS7N	TRCY6	1/1/2001 0:00	6/8/2022 0:00
6	Agriculture	Threatened by development, roac			Usnea longissima		NLLEC5P4	USLO50	3/1/2014 0:00	8/6/2024 0:00
2	Other, Re	Often overlooked and rarely colle			Viola palustris		PDVIO041	VIPA4	1/1/1994 0:00	5/26/2021 0:00

Appendix C

Wetland Data Sheets

U.S. Army Corps of Engineers WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region See ERDC/EL TR-10-3; the proponent agency is CECW-COR				OMB Control #: 0710-0024, Exp:4/30/2024 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)	
Project/Site: <u>HCSO Hoover St LS Flood Protection Project</u>		City/County: <u>Eureka</u>		Sampling Date: <u>10/18/2024</u>	
Applicant/Owner: <u>HCSO</u>		State: <u>California</u>		Sampling Point: <u>W3-T1-U</u>	
Investigator(S): <u>Christian Hernandez</u>		Section, Township, Range: <u>-</u>			
Landform (Hillside, Terrace, Etc.): <u>Hillside</u>		Local Relief (Concave, Convex, None): <u>Convex</u>		Slope (%): <u>10-20</u>	
Subregion (LRR): <u>A</u>		Lat: <u>40.80090442</u>		Long: <u>-124.13722134</u>	
Datum: <u>WGS84</u>					
Soil Map Unit Name: <u>1008—Hydraquents mucky silt loam, strongly saline, 0-1 percent slopes, very frequently flooded</u>		NW1 Classification: <u>N/A</u>			
Are climatic / hydrologic conditions on the site typical for this time of year? ☒ Yes ☐ No (If no, explain in Remarks.)					
Are ☒ Vegetation, ☐ Soil, or ☐ Hydrology significantly disturbed? Are "Normal Circumstances" present? ☒ Yes ☐ No					
Are ☐ Vegetation, ☐ Soil, or ☐ Hydrology naturally problematic? (If needed, explain any answers in Remarks.)					
SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.					
Hydrophytic Vegetation Present? ☐ Yes ☒ No					
Hydric Soil Present? ☐ Yes ☒ No					
Wetland Hydrology Present? ☐ Yes ☒ No		Is the Sampled Area within a Wetland? ☐ Yes ☒ No			
Remarks: Recently mowed. .					

VEGETATION – Use scientific names of plants.

Sampling Point: W3-T1-U

Tree Stratum (Plot Size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33</u> (A/B)
1. _	-	-	-	
2. _	-	-	-	
3. _	-	-	-	
4. _	-	-	-	
5. _	-	-	-	
6. _	-	-	-	
7. _	-	-	-	
8. _	-	-	-	
	0	=Total Cover	-	
Sapling/Shrub Stratum (Plot Size: 15 ft)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species 0 x 1 = 0 FACW species 0 x 2 = 0 FAC species 38 x 3 = 114 FACU species 110 x 4 = 440 UPL species 0 x 5 = 0 Column Totals: 148 (A) 554 (B) Prevalence Index = B/A = <u>3.74</u>
1. _	-	-	-	
2. _	-	-	-	
3. _	-	-	-	
4. _	-	-	-	
5. _	-	-	-	
6. _	-	-	-	
7. _	-	-	-	
8. _	-	-	-	
	0	=Total Cover	-	
Herb Stratum (Plot Size: 5 ft)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators: ☐ 1- Rapid Test for Hydrophytic Vegetation ☐ 2- Dominance Test is >50% ☐ 3 - Prevalence Index is ≤3.0 ¹ ☐ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ☐ 5 – Wetland Non-Vascular Plants ¹ ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Cynodon dactylon (Bermuda Grass)</u>	<u>70</u>	<u>Yes</u>	<u>FACU</u>	
2. <u>Hypochaeris radicata (Hairy Cat's-Ear)</u>	<u>15</u>	<u>No</u>	<u>FACU</u>	
3. <u>Lotus corniculatus (Garden Bird's-Foot-Trefoil)</u>	<u>8</u>	<u>No</u>	<u>FAC</u>	
4. _	-	-	-	
5. _	-	-	-	
6. _	-	-	-	
7. _	-	-	-	
8. _	-	-	-	
	93	=Total Cover	-	
Woody Vine Stratum (Plot Size: 15 ft)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Present ☐ Yes ☒ No
1. <u>Rubus armeniacus (Himalayan Blackberry)</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Hedera helix (English Ivy)</u>	<u>25</u>	<u>Yes</u>	<u>FACU</u>	
3. _	-	-	-	
4. _	-	-	-	
5. _	-	-	-	
6. _	-	-	-	
7. _	-	-	-	
8. _	-	-	-	
	55	=Total Cover	-	

% Bare Ground in Herb Stratum: 0

Remarks:
 Problematic Hydrophytic Vegetation Explanation:

SOIL

SAMPLING POINT: W3-T1-U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR 5/4	100	-	-	-	-	Medium to very fine, loamy sand	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)	Indicators for Problematic Hydric Soils ³ :
☐ Histosol (A1)	☐ 2 cm Muck (A10) (LRR A, E)
☐ Histic Epipedon (A2)	☐ Iron-Manganese Masses (F12) (LRR D)
☐ Black Histic (A3)	☐ Red Parent Material (F21)
☐ Hydrogen Sulfide (A4)	☐ Very Shallow Dark Surface (F22)
☐ 1 cm Muck (A9) (LRR D, G)	☐ Other (Explain in Remarks)
☐ Depleted Below Dark Surface (A11)	³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
☐ Thick Dark Surface (A12)	
☐ Sandy Mucky Mineral (S1)	
☐ 2.5 cm Mucky Peat or Peat (S2) (LRR G)	
☐ Sandy Gleyed Matrix (S4)	
☐ Sandy Redox (S5)	
☐ Indicators of hydrophytic vegetation and Stripped Matrix (S6)	
☐ Loamy Mucky Mineral (F1) (except MLRA 1)	
☐ Loamy Gleyed Matrix (F2)	
☐ Depleted Matrix (F3)	
☐ Redox Dark Surface (F6)	
☐ Depleted Dark Surface (F7)	
☐ Redox Depressions (F8)	

Restrictive Layer (if observed): Type: Gravel Depth (inches): 6	Hydric Soil Present? ☐ Yes ☒ No
--	---

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:	Secondary Indicators (2 or more required)
Primary Indicators (minimum of one is required; check all that apply) ☐ Surface Water (A1) ☐ High Water Table (A2) ☐ Saturation (A3) ☐ Water Marks (B1) ☐ Sediment Deposits (B2) ☐ Drift Deposits (B3) ☐ Algal Mat or Crust (B4) ☐ Iron Deposits (B5) ☐ Surface Soil Cracks (B6) ☐ Inundation Visible on Aerial Imagery (B7) ☐ Sparsely Vegetated Concave Surface (B8) ☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) ☐ Salt Crust (B11) ☐ Aquatic Fauna (B13) ☐ Hydrogen Sulfide Odor (C1) ☐ Oxidized Rhizospheres on Living Roots (C3) ☐ Presence of Reduced Iron (C4) ☐ Recent Iron Reduction in Tilled Soils (C6) ☐ Stunted or Stressed Plants (D1) (LRR A) ☐ Other (Explain in Remarks)	☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) ☐ Drainage Patterns (B10) ☐ Dry-Season Water Table (C2) ☐ Saturation Visible on Aerial Imagery (C9) ☐ Geomorphic Position (D2) ☐ Shallow Aquitard (D3) ☐ FAC-Neutral Test (D5) ☐ Raised Ant Mounds (D6) (LRR A) ☐ Frost-Heaved Hummocks (D7)

Field Observations: Surface Water Present? ☐ Yes ☒ No Depth (inches): Water Table Present? ☐ Yes ☒ No Depth (inches): Saturation Present? ☐ Yes ☒ No Depth (inches): (includes capillary fringe)	Wetland Hydrology Present? ☐ Yes ☒ No
---	---

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

U.S. Army Corps of Engineers WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region See ERDC/EL TR-10-3; the proponent agency is CECW-COR				OMB Control #: 0710-0024, Exp:4/30/2024 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)																																																																																																																																																																														
Project/Site: <u>HCSO Hoover St LS Flood Protection Project</u>		City/County: <u>Eureka</u>		Sampling Date: <u>10/18/2024</u>																																																																																																																																																																														
Applicant/Owner: <u>HCSO</u>		State: <u>California</u>		Sampling Point: <u>W3-T1-W</u>																																																																																																																																																																														
Investigator(S): <u>Christian Hernandez</u>		Section, Township, Range: <u>-</u>																																																																																																																																																																																
Landform (Hillside, Terrace, Etc.): <u>Slough</u>		Local Relief (Concave, Convex, None): <u>Concave</u>		Slope (%): <u>10-20</u>																																																																																																																																																																														
Subregion (LRR): <u>A</u>		Lat: <u>40.80091514</u>		Long: <u>-124.13725307</u>																																																																																																																																																																														
Datum: <u>WGS84</u>																																																																																																																																																																																		
Soil Map Unit Name: <u>1008—Hydraquents mucky silt loam, strongly saline, 0-1 percent slopes, very frequently flooded</u>		NW1 Classification: <u>N/A</u>																																																																																																																																																																																
Are climatic / hydrologic conditions on the site typical for this time of year? ☒ Yes ☐ No (If no, explain in Remarks.)																																																																																																																																																																																		
Are ☒ Vegetation, ☐ Soil, or ☐ Hydrology significantly disturbed? Are "Normal Circumstances" present? ☒ Yes ☐ No																																																																																																																																																																																		
Are ☐ Vegetation, ☐ Soil, or ☐ Hydrology naturally problematic? (If needed, explain any answers in Remarks.)																																																																																																																																																																																		
SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.																																																																																																																																																																																		
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Hydrophytic Vegetation Present?</td> <td style="width: 10%;">☒ Yes</td> <td style="width: 10%;">☐ No</td> <td rowspan="3" style="width: 30%; vertical-align: top;"> Is the Sampled Area within a Wetland? ☒ Yes ☐ No </td> </tr> <tr> <td>Hydric Soil Present?</td> <td>☒ Yes</td> <td>☐ No</td> </tr> <tr> <td>Wetland Hydrology Present?</td> <td>☒ Yes</td> <td>☐ No</td> </tr> <tr> <td colspan="4">Remarks: Recently mowed. .</td> </tr> </table>						Hydrophytic Vegetation Present?	☒ Yes	☐ No	Is the Sampled Area within a Wetland? ☒ Yes ☐ No	Hydric Soil Present?	☒ Yes	☐ No	Wetland Hydrology Present?	☒ Yes	☐ No	Remarks: Recently mowed. .																																																																																																																																																																		
Hydrophytic Vegetation Present?	☒ Yes	☐ No	Is the Sampled Area within a Wetland? ☒ Yes ☐ No																																																																																																																																																																															
Hydric Soil Present?	☒ Yes	☐ No																																																																																																																																																																																
Wetland Hydrology Present?	☒ Yes	☐ No																																																																																																																																																																																
Remarks: Recently mowed. .																																																																																																																																																																																		
VEGETATION – Use scientific names of plants. Sampling Point: <u>W3-T1-W</u>																																																																																																																																																																																		
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th style="width: 35%;">Tree Stratum (Plot Size: 30 ft)</th> <th style="width: 10%;">Absolute % Cover</th> <th style="width: 10%;">Dominant Species?</th> <th style="width: 10%;">Indicator Status</th> <th style="width: 35%;">Dominance Test worksheet:</th> </tr> <tr> <td>1. <u>-</u></td> <td>-</td> <td>-</td> <td>-</td> <td rowspan="8"> Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B) </td> </tr> <tr><td>2. <u>-</u></td><td>-</td><td>-</td><td>-</td></tr> <tr><td>3. <u>-</u></td><td>-</td><td>-</td><td>-</td></tr> <tr><td>4. <u>-</u></td><td>-</td><td>-</td><td>-</td></tr> <tr><td>5. <u>-</u></td><td>-</td><td>-</td><td>-</td></tr> <tr><td>6. <u>-</u></td><td>-</td><td>-</td><td>-</td></tr> <tr><td>7. <u>-</u></td><td>-</td><td>-</td><td>-</td></tr> <tr><td>8. <u>-</u></td><td>-</td><td>-</td><td>-</td></tr> <tr> <td><u>0</u></td> <td>=Total Cover</td> <td></td> <td></td> <td rowspan="10"> Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species x 1 = FACW species x 2 = FAC species x 3 = FACU species x 4 = UPL species x 5 = Column Totals: (A) (B) Prevalence Index = B/A = </td> </tr> <tr> <td colspan="4">Sapling/Shrub Stratum (Plot Size: 15 ft)</td> </tr> <tr> <td>1. <u>-</u></td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr><td>2. <u>-</u></td><td>-</td><td>-</td><td>-</td></tr> <tr><td>3. <u>-</u></td><td>-</td><td>-</td><td>-</td></tr> <tr><td>4. <u>-</u></td><td>-</td><td>-</td><td>-</td></tr> <tr><td>5. <u>-</u></td><td>-</td><td>-</td><td>-</td></tr> <tr><td>6. <u>-</u></td><td>-</td><td>-</td><td>-</td></tr> <tr><td>7. <u>-</u></td><td>-</td><td>-</td><td>-</td></tr> <tr><td>8. <u>-</u></td><td>-</td><td>-</td><td>-</td></tr> <tr> <td><u>0</u></td> <td>=Total Cover</td> <td></td> <td></td> </tr> <tr> <td colspan="4">Herb Stratum (Plot Size: 5 ft)</td> </tr> <tr> <td>1. <u>Distichlis spicata (Coastal Salt Grass)</u></td> <td><u>40</u></td> <td><u>Yes</u></td> <td><u>FACW</u></td> <td rowspan="10"> FAC species x 3 = FACU species x 4 = UPL species x 5 = Column Totals: (A) (B) Prevalence Index = B/A = </td> </tr> <tr> <td>2. <u>Atriplex prostrata (Hastate Orache)</u></td> <td><u>24</u></td> <td><u>Yes</u></td> <td><u>FAC</u></td> </tr> <tr> <td>3. <u>Jaumea carnosa (Marsh Jaumea)</u></td> <td><u>20</u></td> <td><u>Yes</u></td> <td><u>OBL</u></td> </tr> <tr> <td>4. <u>Medicago polymorpha (Toothed Medick)</u></td> <td><u>10</u></td> <td><u>No</u></td> <td><u>FACU</u></td> </tr> <tr> <td>5. <u>Plantago coronopus (Buck-Horn Plantain)</u></td> <td><u>6</u></td> <td><u>No</u></td> <td><u>FAC</u></td> </tr> <tr><td>6. <u>-</u></td><td>-</td><td>-</td><td>-</td></tr> <tr><td>7. <u>-</u></td><td>-</td><td>-</td><td>-</td></tr> <tr><td>8. <u>-</u></td><td>-</td><td>-</td><td>-</td></tr> <tr> <td><u>100</u></td> <td>=Total Cover</td> <td></td> <td></td> </tr> <tr> <td colspan="4">Woody Vine Stratum (Plot Size: 15 ft)</td> </tr> <tr> <td>1. <u>Rubus armeniacus (Himalayan Blackberry)</u></td> <td><u>40</u></td> <td><u>Yes</u></td> <td><u>FAC</u></td> <td rowspan="10"> Hydrophytic Vegetation Indicators: ☐ 1- Rapid Test for Hydrophytic Vegetation ☒ 2- Dominance Test is >50% ☐ 3 - Prevalence Index is ≤3.0¹ ☐ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet) ☐ 5 – Wetland Non-Vascular Plants¹ ☐ Problematic Hydrophytic Vegetation¹ (Explain) ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. </td> </tr> <tr><td>2. <u>-</u></td><td>-</td><td>-</td><td>-</td></tr> <tr><td>3. <u>-</u></td><td>-</td><td>-</td><td>-</td></tr> <tr><td>4. <u>-</u></td><td>-</td><td>-</td><td>-</td></tr> <tr><td>5. <u>-</u></td><td>-</td><td>-</td><td>-</td></tr> <tr><td>6. <u>-</u></td><td>-</td><td>-</td><td>-</td></tr> <tr><td>7. <u>-</u></td><td>-</td><td>-</td><td>-</td></tr> <tr><td>8. <u>-</u></td><td>-</td><td>-</td><td>-</td></tr> <tr> <td><u>40</u></td> <td>=Total Cover</td> <td></td> <td></td> </tr> <tr> <td colspan="4">% Bare Ground in Herb Stratum: <u>0</u></td> </tr> <tr> <td colspan="4"> Hydrophytic Vegetation Present ☒ Yes ☐ No </td> </tr> </table>						Tree Stratum (Plot Size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	1. <u>-</u>	-	-	-	Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)	2. <u>-</u>	-	-	-	3. <u>-</u>	-	-	-	4. <u>-</u>	-	-	-	5. <u>-</u>	-	-	-	6. <u>-</u>	-	-	-	7. <u>-</u>	-	-	-	8. <u>-</u>	-	-	-	<u>0</u>	=Total Cover			Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species x 1 = FACW species x 2 = FAC species x 3 = FACU species x 4 = UPL species x 5 = Column Totals: (A) (B) Prevalence Index = B/A =	Sapling/Shrub Stratum (Plot Size: 15 ft)				1. <u>-</u>	-	-	-	2. <u>-</u>	-	-	-	3. <u>-</u>	-	-	-	4. <u>-</u>	-	-	-	5. <u>-</u>	-	-	-	6. <u>-</u>	-	-	-	7. <u>-</u>	-	-	-	8. <u>-</u>	-	-	-	<u>0</u>	=Total Cover			Herb Stratum (Plot Size: 5 ft)				1. <u>Distichlis spicata (Coastal Salt Grass)</u>	<u>40</u>	<u>Yes</u>	<u>FACW</u>	FAC species x 3 = FACU species x 4 = UPL species x 5 = Column Totals: (A) (B) Prevalence Index = B/A =	2. <u>Atriplex prostrata (Hastate Orache)</u>	<u>24</u>	<u>Yes</u>	<u>FAC</u>	3. <u>Jaumea carnosa (Marsh Jaumea)</u>	<u>20</u>	<u>Yes</u>	<u>OBL</u>	4. <u>Medicago polymorpha (Toothed Medick)</u>	<u>10</u>	<u>No</u>	<u>FACU</u>	5. <u>Plantago coronopus (Buck-Horn Plantain)</u>	<u>6</u>	<u>No</u>	<u>FAC</u>	6. <u>-</u>	-	-	-	7. <u>-</u>	-	-	-	8. <u>-</u>	-	-	-	<u>100</u>	=Total Cover			Woody Vine Stratum (Plot Size: 15 ft)				1. <u>Rubus armeniacus (Himalayan Blackberry)</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	Hydrophytic Vegetation Indicators: ☐ 1- Rapid Test for Hydrophytic Vegetation ☒ 2- Dominance Test is >50% ☐ 3 - Prevalence Index is ≤3.0 ¹ ☐ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ☐ 5 – Wetland Non-Vascular Plants ¹ ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	2. <u>-</u>	-	-	-	3. <u>-</u>	-	-	-	4. <u>-</u>	-	-	-	5. <u>-</u>	-	-	-	6. <u>-</u>	-	-	-	7. <u>-</u>	-	-	-	8. <u>-</u>	-	-	-	<u>40</u>	=Total Cover			% Bare Ground in Herb Stratum: <u>0</u>				Hydrophytic Vegetation Present ☒ Yes ☐ No			
Tree Stratum (Plot Size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:																																																																																																																																																																														
1. <u>-</u>	-	-	-	Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)																																																																																																																																																																														
2. <u>-</u>	-	-	-																																																																																																																																																																															
3. <u>-</u>	-	-	-																																																																																																																																																																															
4. <u>-</u>	-	-	-																																																																																																																																																																															
5. <u>-</u>	-	-	-																																																																																																																																																																															
6. <u>-</u>	-	-	-																																																																																																																																																																															
7. <u>-</u>	-	-	-																																																																																																																																																																															
8. <u>-</u>	-	-	-																																																																																																																																																																															
<u>0</u>	=Total Cover			Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species x 1 = FACW species x 2 = FAC species x 3 = FACU species x 4 = UPL species x 5 = Column Totals: (A) (B) Prevalence Index = B/A =																																																																																																																																																																														
Sapling/Shrub Stratum (Plot Size: 15 ft)																																																																																																																																																																																		
1. <u>-</u>	-	-	-																																																																																																																																																																															
2. <u>-</u>	-	-	-																																																																																																																																																																															
3. <u>-</u>	-	-	-																																																																																																																																																																															
4. <u>-</u>	-	-	-																																																																																																																																																																															
5. <u>-</u>	-	-	-																																																																																																																																																																															
6. <u>-</u>	-	-	-																																																																																																																																																																															
7. <u>-</u>	-	-	-																																																																																																																																																																															
8. <u>-</u>	-	-	-																																																																																																																																																																															
<u>0</u>	=Total Cover																																																																																																																																																																																	
Herb Stratum (Plot Size: 5 ft)																																																																																																																																																																																		
1. <u>Distichlis spicata (Coastal Salt Grass)</u>	<u>40</u>	<u>Yes</u>	<u>FACW</u>	FAC species x 3 = FACU species x 4 = UPL species x 5 = Column Totals: (A) (B) Prevalence Index = B/A =																																																																																																																																																																														
2. <u>Atriplex prostrata (Hastate Orache)</u>	<u>24</u>	<u>Yes</u>	<u>FAC</u>																																																																																																																																																																															
3. <u>Jaumea carnosa (Marsh Jaumea)</u>	<u>20</u>	<u>Yes</u>	<u>OBL</u>																																																																																																																																																																															
4. <u>Medicago polymorpha (Toothed Medick)</u>	<u>10</u>	<u>No</u>	<u>FACU</u>																																																																																																																																																																															
5. <u>Plantago coronopus (Buck-Horn Plantain)</u>	<u>6</u>	<u>No</u>	<u>FAC</u>																																																																																																																																																																															
6. <u>-</u>	-	-	-																																																																																																																																																																															
7. <u>-</u>	-	-	-																																																																																																																																																																															
8. <u>-</u>	-	-	-																																																																																																																																																																															
<u>100</u>	=Total Cover																																																																																																																																																																																	
Woody Vine Stratum (Plot Size: 15 ft)																																																																																																																																																																																		
1. <u>Rubus armeniacus (Himalayan Blackberry)</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	Hydrophytic Vegetation Indicators: ☐ 1- Rapid Test for Hydrophytic Vegetation ☒ 2- Dominance Test is >50% ☐ 3 - Prevalence Index is ≤3.0 ¹ ☐ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ☐ 5 – Wetland Non-Vascular Plants ¹ ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																																																																																																																																																																														
2. <u>-</u>	-	-	-																																																																																																																																																																															
3. <u>-</u>	-	-	-																																																																																																																																																																															
4. <u>-</u>	-	-	-																																																																																																																																																																															
5. <u>-</u>	-	-	-																																																																																																																																																																															
6. <u>-</u>	-	-	-																																																																																																																																																																															
7. <u>-</u>	-	-	-																																																																																																																																																																															
8. <u>-</u>	-	-	-																																																																																																																																																																															
<u>40</u>	=Total Cover																																																																																																																																																																																	
% Bare Ground in Herb Stratum: <u>0</u>																																																																																																																																																																																		
Hydrophytic Vegetation Present ☒ Yes ☐ No																																																																																																																																																																																		
Remarks: Problematic Hydrophytic Vegetation Explanation:																																																																																																																																																																																		

SOIL

SAMPLING POINT: W3-T1-W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
<u>0-4</u>	<u>10YR 2/2</u>	<u>100</u>	—	—	—	—	<u>Loam (class unknown)</u>	—
<u>4-10</u>	<u>2.5YR 3/1</u>	<u>100</u>	—	—	—	—	<u>Medium silt loam</u>	—
<u>10-16</u>	<u>5GY 6/1</u>	<u>100</u>	—	—	—	—	<u>Moderately coarse, sandy loam</u>	—

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)	Indicators for Problematic Hydric Soils ³ :
☐ Histosol (A1)	☐ Sandy Gleyed Matrix (S4)
☐ Histic Epipedon (A2)	☐ Sandy Redox (S5)
☐ Black Histic (A3)	☐ Indicators of hydrophytic vegetation and Stripped Matrix (S6)
☐ Hydrogen Sulfide (A4)	☐ Loamy Mucky Mineral (F1)
☐ 1 cm Muck (A9) (LRR D, G)	(except MLRA 1)
☒ Depleted Below Dark Surface (A11)	☒ Loamy Gleyed Matrix (F2)
☐ Thick Dark Surface (A12)	☐ Depleted Matrix (F3)
☐ Sandy Mucky Mineral (S1)	☐ Redox Dark Surface (F6)
☐ 2.5 cm Mucky Peat or Peat (S2)	☐ Depleted Dark Surface (F7)
LRR G)	☐ Redox Depressions (F8)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: Depth (inches):	Hydric Soil Present? ☒ Yes ☐ No
---	---

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:	Secondary Indicators (2 or more required)
Primary Indicators (minimum of one is required; check all that apply) ☒ Surface Water (A1) ☒ High Water Table (A2) ☒ Saturation (A3) ☐ Water Marks (B1) ☐ Sediment Deposits (B2) ☐ Drift Deposits (B3) ☐ Algal Mat or Crust (B4) ☐ Iron Deposits (B5) ☐ Surface Soil Cracks (B6) ☐ Inundation Visible on Aerial Imagery (B7) ☐ Sparsely Vegetated Concave Surface (B8) ☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) ☐ Salt Crust (B11) ☐ Aquatic Fauna (B13) ☐ Hydrogen Sulfide Odor (C1) ☐ Oxidized Rhizospheres on Living Roots (C3) ☐ Presence of Reduced Iron (C4) ☐ Recent Iron Reduction in Tilled Soils (C6) ☐ Stunted or Stressed Plants (D1) (LRR A) ☐ Other (Explain in Remarks)	☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) ☒ Drainage Patterns (B10) ☐ Dry-Season Water Table (C2) ☐ Saturation Visible on Aerial Imagery (C9) ☒ Geomorphic Position (D2) ☐ Shallow Aquitard (D3) ☒ FAC-Neutral Test (D5) ☐ Raised Ant Mounds (D6) (LRR A) ☐ Frost-Heaved Hummocks (D7)

Field Observations: Surface Water Present? ☒ Yes ☐ No Depth (inches): 1 Water Table Present? ☒ Yes ☐ No Depth (inches): 11 Saturation Present? ☒ Yes ☐ No Depth (inches): 0 (includes capillary fringe)	Wetland Hydrology Present? ☒ Yes ☐ No
--	---

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Western Mountains, Valleys, and Coast – Version 2.0

SOIL

SAMPLING POINT: W2-T1-W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
<u>0-4</u>	<u>2.5YR 3/2</u>	<u>100</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>Coarse, loamy sand</u>	<u>Highly organic</u>
<u>4-12</u>	<u>2.5YR 4/2</u>	<u>80</u>	<u>7.5YR 5/8</u>	<u>20</u>	<u>C</u>	<u>M</u>	<u>Coarse, loamy sand</u>	<u>-</u>

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)	Indicators for Problematic Hydric Soils ³ :
☐ Histosol (A1) ☐ Histic Epipedon (A2) ☐ Black Histic (A3) ☐ Hydrogen Sulfide (A4) ☐ 1 cm Muck (A9) (LRR D, G) ☐ Depleted Below Dark Surface (A11) ☐ Thick Dark Surface (A12) ☐ Sandy Mucky Mineral (S1) ☐ 2.5 cm Mucky Peat or Peat (S2) (LRR G)	☐ Sandy Gleyed Matrix (S4) ☒ Sandy Redox (S5) ☐ Indicators of hydrophytic vegetation and Stripped Matrix (S6) ☐ Loamy Mucky Mineral (F1) (except MLRA 1) ☐ Loamy Gleyed Matrix (F2) ☐ Depleted Matrix (F3) ☐ Redox Dark Surface (F6) ☐ Depleted Dark Surface (F7) ☐ Redox Depressions (F8)
	☐ 2 cm Muck (A10) (LRR A, E) ☐ Iron-Manganese Masses (F12) (LRR D) ☐ Red Parent Material (F21) ☐ Very Shallow Dark Surface (F22) ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: Gravel Depth (inches): 3	Hydric Soil Present? ☒ Yes ☐ No
--	---

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:	Secondary Indicators (2 or more required)
<u>Primary Indicators (minimum of one is required; check all that apply)</u>	
☐ Surface Water (A1) ☐ High Water Table (A2) ☐ Saturation (A3) ☐ Water Marks (B1) ☐ Sediment Deposits (B2) ☐ Drift Deposits (B3) ☐ Algal Mat or Crust (B4) ☐ Iron Deposits (B5) ☐ Surface Soil Cracks (B6) ☐ Inundation Visible on Aerial Imagery (B7) ☐ Sparsely Vegetated Concave Surface (B8)	☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) ☐ Drainage Patterns (B10) ☐ Dry-Season Water Table (C2) ☐ Saturation Visible on Aerial Imagery (C9) ☒ Geomorphic Position (D2) ☐ Shallow Aquitard (D3) ☒ FAC-Neutral Test (D5) ☐ Raised Ant Mounds (D6) (LRR A) ☐ Frost-Heaved Hummocks (D7)
☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) ☐ Salt Crust (B11) ☐ Aquatic Fauna (B13) ☐ Hydrogen Sulfide Odor (C1) ☐ Oxidized Rhizospheres on Living Roots (C3) ☐ Presence of Reduced Iron (C4) ☐ Recent Iron Reduction in Tilled Soils (C6) ☐ Stunted or Stressed Plants (D1) (LRR A) ☐ Other (Explain in Remarks)	

Field Observations: Surface Water Present? ☐ Yes ☒ No Depth (inches): Water Table Present? ☐ Yes ☒ No Depth (inches): Saturation Present? ☐ Yes ☒ No Depth (inches): (includes capillary fringe)	Wetland Hydrology Present? ☒ Yes ☐ No
---	---

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

U.S. Army Corps of Engineers WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region See ERDC/EL TR-10-3; the proponent agency is CECW-COR				OMB Control #: 0710-0024, Exp:4/30/2024 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)	
Project/Site: <u>HCSO Hoover St LS Flood Protection Project</u>		City/County: <u>Eureka</u>		Sampling Date: <u>10/18/2024</u>	
Applicant/Owner: <u>HCSO</u>		State: <u>California</u>		Sampling Point: <u>W1/2-T1-U</u>	
Investigator(S): <u>Christian Hernandez</u>		Section, Township, Range: <u>-</u>			
Landform (Hillside, Terrace, Etc.): <u>Slough</u>		Local Relief (Concave, Convex, None): <u>Convex</u>		Slope (%): <u>1-3</u>	
Subregion (LRR): <u>A</u>		Lat: <u>40.80108115</u>		Long: <u>-124.13726854</u>	
Datum: <u>WGS84</u>					
Soil Map Unit Name: <u>1008—Hydraquents mucky silt loam, strongly saline, 0-1 percent slopes, very frequently flooded</u>		NW1 Classification: <u>N/A</u>			
Are climatic / hydrologic conditions on the site typical for this time of year? ☒ Yes ☐ No (If no, explain in Remarks.)					
Are ☒ Vegetation, ☐ Soil, or ☐ Hydrology significantly disturbed? Are "Normal Circumstances" present? ☒ Yes ☐ No					
Are ☐ Vegetation, ☐ Soil, or ☐ Hydrology naturally problematic? (If needed, explain any answers in Remarks.)					
SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.					
Hydrophytic Vegetation Present? ☐ Yes ☒ No					
Hydric Soil Present? ☐ Yes ☒ No					
Wetland Hydrology Present? ☐ Yes ☒ No		Is the Sampled Area within a Wetland? ☐ Yes ☒ No			
Remarks: Recently mowed. .					

VEGETATION – Use scientific names of plants.

Sampling Point: W1-T1-U

Tree Stratum (Plot Size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _	-	-	-	
2. _	-	-	-	
3. _	-	-	-	
4. _	-	-	-	
5. _	-	-	-	
6. _	-	-	-	
7. _	-	-	-	
8. _	-	-	-	
	0	=Total Cover	-	
Sapling/Shrub Stratum (Plot Size: 15 ft)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Baccharis pilularis</u>	<u>14</u>	<u>Yes</u>	<u>UP</u>	
2. _	-	-	-	
3. _	-	-	-	
4. _	-	-	-	
5. _	-	-	-	
6. _	-	-	-	
7. _	-	-	-	
8. _	-	-	-	
	14	=Total Cover	-	
Herb Stratum (Plot Size: 5 ft)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Plantago lanceolata (English Plantain)</u>	<u>25</u>	<u>Yes</u>	<u>FACU</u>	
2. <u>Distichlis spicata (Coastal Salt Grass)</u>	<u>17</u>	<u>Yes</u>	<u>FACW</u>	
3. <u>Hypochaeris radicata (Hairy Cat's-Ear)</u>	<u>15</u>	<u>Yes</u>	<u>FACU</u>	
4. <u>Medicago polymorpha (Toothed Medick)</u>	<u>10</u>	<u>No</u>	<u>FACU</u>	
5. <u>Daucus carota (Queen Anne's-Lace)</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	
6. _	-	-	-	
7. _	-	-	-	
8. _	-	-	-	
	72	=Total Cover	-	
Woody Vine Stratum (Plot Size: 15 ft)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _	-	-	-	
2. _	-	-	-	
3. _	-	-	-	
4. _	-	-	-	
5. _	-	-	-	
6. _	-	-	-	
7. _	-	-	-	
8. _	-	-	-	
	0	=Total Cover	-	
% Bare Ground in Herb Stratum: <u>0</u>				

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	17	x 2 = 34
FAC species	0	x 3 = 0
FACU species	55	x 4 = 220
UPL species	14	x 5 = 70
Column Totals:	86 (A)	324 (B)

Prevalence Index = B/A = 3.77

Hydrophytic Vegetation Indicators:

☐ 1- Rapid Test for Hydrophytic Vegetation

☐ 2- Dominance Test is >50%

☐ 3 - Prevalence Index is ≤3.0¹

☐ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

☐ 5 – Wetland Non-Vascular Plants¹

☐ Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present ☐ Yes ☒ No

Remarks:

Problematic Hydrophytic Vegetation Explanation:

SOIL

SAMPLING POINT: W1/2-T1-U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR 4/1	100	—	—	—	—	Coarse, loamy sand	Gravel at 3 in
—	—	—	—	—	—	—	—	—

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) ☐ Histosol (A1) ☐ Histic Epipedon (A2) ☐ Black Histic (A3) ☐ Hydrogen Sulfide (A4) ☐ 1 cm Muck (A9) (LRR D, G) ☐ Depleted Below Dark Surface (A11) ☐ Thick Dark Surface (A12) ☐ Sandy Mucky Mineral (S1) ☐ 2.5 cm Mucky Peat or Peat (S2) (LRR G) ☐ Sandy Gleyed Matrix (S4) ☐ Sandy Redox (S5) ☐ Indicators of hydrophytic vegetation and Stripped Matrix (S6) ☐ Loamy Mucky Mineral (F1) (except MLRA 1) ☐ Loamy Gleyed Matrix (F2) ☐ Depleted Matrix (F3) ☐ Redox Dark Surface (F6) ☐ Depleted Dark Surface (F7) ☐ Redox Depressions (F8)	Indicators for Problematic Hydric Soils³: ☐ 2 cm Muck (A10) (LRR A, E) ☐ Iron-Manganese Masses (F12) (LRR D) ☐ Red Parent Material (F21) ☐ Very Shallow Dark Surface (F22) ☐ Other (Explain in Remarks) ³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
---	--

Restrictive Layer (if observed): Type: Gravel Depth (inches): 3	Hydric Soil Present? ☐ Yes ☒ No
--	---

Remarks:

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ☐ Surface Water (A1) ☐ High Water Table (A2) ☐ Saturation (A3) ☐ Water Marks (B1) ☐ Sediment Deposits (B2) ☐ Drift Deposits (B3) ☐ Algal Mat or Crust (B4) ☐ Iron Deposits (B5) ☐ Surface Soil Cracks (B6) ☐ Inundation Visible on Aerial Imagery (B7) ☐ Sparsely Vegetated Concave Surface (B8) ☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) ☐ Salt Crust (B11) ☐ Aquatic Fauna (B13) ☐ Hydrogen Sulfide Odor (C1) ☐ Oxidized Rhizospheres on Living Roots (C3) ☐ Presence of Reduced Iron (C4) ☐ Recent Iron Reduction in Tilled Soils (C6) ☐ Stunted or Stressed Plants (D1) (LRR A) ☐ Other (Explain in Remarks)	<u>Secondary Indicators (2 or more required)</u> ☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) ☐ Drainage Patterns (B10) ☐ Dry-Season Water Table (C2) ☐ Saturation Visible on Aerial Imagery (C9) ☐ Geomorphic Position (D2) ☐ Shallow Aquitard (D3) ☐ FAC-Neutral Test (D5) ☐ Raised Ant Mounds (D6) (LRR A) ☐ Frost-Heaved Hummocks (D7)
--	--

Field Observations: Surface Water Present? ☐ Yes ☒ No Water Table Present? ☐ Yes ☒ No Saturation Present? ☐ Yes ☒ No (includes capillary fringe)	Depth (inches): Depth (inches): Depth (inches): Wetland Hydrology Present? ☐ Yes ☒ No
--	--

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

U.S. Army Corps of Engineers WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region See ERDC/EL TR-10-3; the proponent agency is CECW-COR				OMB Control #: 0710-0024, Exp:4/30/2024 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)	
Project/Site: <u>HCSO Hoover St LS Flood Protection Project</u>		City/County: <u>Eureka</u>		Sampling Date: <u>10/18/2024</u>	
Applicant/Owner: <u>HCSO</u>		State: <u>California</u>		Sampling Point: <u>W1-T1-W</u>	
Investigator(S): <u>Christian Hernandez</u>		Section, Township, Range: <u>-</u>			
Landform (Hillside, Terrace, Etc.): <u>Slough</u>		Local Relief (Concave, Convex, None): <u>Undulating</u>		Slope (%): <u>0-2</u>	
Subregion (LRR): <u>A</u>		Lat: <u>40.801079</u>		Long: <u>-124.13717812</u>	
Datum: <u>WGS84</u>					
Soil Map Unit Name: <u>1008—Hydraquents mucky silt loam, strongly saline, 0-1 percent slopes, very frequently flooded</u>		NWI Classification: <u>N/A</u>			
Are climatic / hydrologic conditions on the site typical for this time of year? ☒ Yes ☐ No (If no, explain in Remarks.)					
Are ☒ Vegetation, ☐ Soil, or ☐ Hydrology significantly disturbed? Are "Normal Circumstances" present? ☒ Yes ☐ No					
Are ☐ Vegetation, ☐ Soil, or ☐ Hydrology naturally problematic? (If needed, explain any answers in Remarks.)					
SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.					
Hydrophytic Vegetation Present? ☒ Yes ☐ No		Is the Sampled Area within a Wetland? ☒ Yes ☐ No			
Hydric Soil Present? ☒ Yes ☐ No					
Wetland Hydrology Present? ☒ Yes ☐ No					
Remarks: Recently mowed.					

VEGETATION – Use scientific names of plants.

Sampling Point: W1-T1-W

Tree Stratum (Plot Size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B)
1. <u>-</u>	-	-	-	
2. <u>-</u>	-	-	-	
3. <u>-</u>	-	-	-	
4. <u>-</u>	-	-	-	
5. <u>-</u>	-	-	-	
6. <u>-</u>	-	-	-	
7. <u>-</u>	-	-	-	
8. <u>-</u>	-	-	-	
	0	=Total Cover	-	
Sapling/Shrub Stratum (Plot Size: 15 ft)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species 0 x 1 = 0 FACW species 75 x 2 = 150 FAC species 5 x 3 = 15 FACU species 10 x 4 = 40 UPL species 0 x 5 = 0 Column Totals: 90 (A) 205 (B) Prevalence Index = B/A = <u>2.28</u>
1. <u>-</u>	-	-	-	
2. <u>-</u>	-	-	-	
3. <u>-</u>	-	-	-	
4. <u>-</u>	-	-	-	
5. <u>-</u>	-	-	-	
6. <u>-</u>	-	-	-	
7. <u>-</u>	-	-	-	
8. <u>-</u>	-	-	-	
	0	=Total Cover	-	
Herb Stratum (Plot Size: 5 ft)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators: ☐ 1- Rapid Test for Hydrophytic Vegetation ☐ 2- Dominance Test is >50% ☒ 3 - Prevalence Index is ≤3.0 ¹ ☐ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ☐ 5 – Wetland Non-Vascular Plants ¹ ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u><i>Distichlis spicata</i> (Coastal Salt Grass)</u>	<u>75</u>	<u>Yes</u>	<u>FACW</u>	
2. <u><i>Medicago polymorpha</i> (Toothed Medick)</u>	<u>10</u>	<u>No</u>	<u>FACU</u>	
3. <u><i>Plantago coronopus</i> (Buck-Horn Plantain)</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
4. <u>-</u>	-	-	-	
5. <u>-</u>	-	-	-	
6. <u>-</u>	-	-	-	
7. <u>-</u>	-	-	-	
8. <u>-</u>	-	-	-	
	90	=Total Cover	-	
Woody Vine Stratum (Plot Size: 15 ft)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Present ☒ Yes ☐ No
1. <u>-</u>	-	-	-	
2. <u>-</u>	-	-	-	
3. <u>-</u>	-	-	-	
4. <u>-</u>	-	-	-	
5. <u>-</u>	-	-	-	
6. <u>-</u>	-	-	-	
7. <u>-</u>	-	-	-	
8. <u>-</u>	-	-	-	
	0	=Total Cover	-	

% Bare Ground in Herb Stratum: 10

Remarks:
 Problematic Hydrophytic Vegetation Explanation:

SOIL

SAMPLING POINT: W1-T1-W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features			Texture	Remarks	
	Color (moist)	%	Color (moist)	%	Type ¹			
<u>0-6</u>	<u>2.5YR 3/2</u>	<u>90</u>	<u>7.5YR 5/8</u>	<u>10</u>	<u>C</u>	<u>M</u>	<u>Coarse, loamy sand</u>	<u>Very cobbly</u>
<u>6-12</u>	<u>2.5YR 3/2</u>	<u>60</u>	<u>7.5YR 5/8</u>	<u>40</u>	<u>C</u>	<u>M</u>	<u>Coarse, loamy sand</u>	<u>-</u>
<u> </u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)	Indicators for Problematic Hydric Soils ³ :
☐ Histosol (A1) ☐ Sandy Gleyed Matrix (S4)	☐ 2 cm Muck (A10) (LRR A, E)
☐ Histic Epipedon (A2) ☒ Sandy Redox (S5)	☐ Iron-Manganese Masses (F12) (LRR D)
☐ Black Histic (A3) ☐ Indicators of hydrophytic vegetation and Stripped Matrix (S6)	☐ Red Parent Material (F21)
☐ Hydrogen Sulfide (A4) ☐ Loamy Mucky Mineral (F1)	☐ Very Shallow Dark Surface (F22)
☐ 1 cm Muck (A9) (LRR D, G) (except MLRA 1)	☐ Other (Explain in Remarks)
☐ Depleted Below Dark Surface (A11) ☐ Loamy Gleyed Matrix (F2)	³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
☐ Thick Dark Surface (A12) ☐ Depleted Matrix (F3)	
☐ Sandy Mucky Mineral (S1) ☐ Redox Dark Surface (F6)	
☐ 2.5 cm Mucky Peat or Peat (S2) (LRR G) ☐ Depleted Dark Surface (F7)	
☐ Redox Depressions (F8)	

Restrictive Layer (if observed): Type: Geofabric, gravel Depth (inches): 3	Hydric Soil Present? ☒ Yes ☐ No
---	---

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:	Secondary Indicators (2 or more required)
Primary Indicators (minimum of one is required; check all that apply)	
☐ Surface Water (A1) ☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
☐ High Water Table (A2) ☐ Salt Crust (B11)	☐ Drainage Patterns (B10)
☐ Saturation (A3) ☐ Aquatic Fauna (B13)	☐ Dry-Season Water Table (C2)
☐ Water Marks (B1) ☐ Hydrogen Sulfide Odor (C1)	☐ Saturation Visible on Aerial Imagery (C9)
☐ Sediment Deposits (B2) ☐ Oxidized Rhizospheres on Living Roots (C3)	☒ Geomorphic Position (D2)
☐ Drift Deposits (B3) ☐ Presence of Reduced Iron (C4)	☐ Shallow Aquitard (D3)
☐ Algal Mat or Crust (B4) ☐ Recent Iron Reduction in Tilled Soils (C6)	☒ FAC-Neutral Test (D5)
☐ Iron Deposits (B5) ☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)
☐ Surface Soil Cracks (B6) ☐ Other (Explain in Remarks)	☐ Frost-Heaved Hummocks (D7)
☐ Inundation Visible on Aerial Imagery (B7)	
☐ Sparsely Vegetated Concave Surface (B8)	

Field Observations: Surface Water Present? ☐ Yes ☒ No Depth (inches): Water Table Present? ☐ Yes ☒ No Depth (inches): Saturation Present? ☐ Yes ☒ No Depth (inches): (includes capillary fringe)	Wetland Hydrology Present? ☒ Yes ☐ No
---	---

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

U.S. Army Corps of Engineers WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region See ERDC/EL TR-10-3; the proponent agency is CECW-COR				OMB Control #: 0710-0024, Exp:4/30/2024 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)	
Project/Site: <u>HCSO Hoover St LS Flood Protection Project</u>		City/County: <u>Eureka</u>		Sampling Date: <u>10/18/2024</u>	
Applicant/Owner: <u>HCSO</u>		State: <u>California</u>		Sampling Point: <u>Up1</u>	
Investigator(S): <u>Christian Hernandez</u>		Section, Township, Range: <u>-</u>			
Landform (Hillside, Terrace, Etc.): <u>Slough</u>		Local Relief (Concave, Convex, None): <u>Convex</u>		Slope (%): <u>0-2</u>	
Subregion (LRR): <u>A</u>		Lat: <u>40.80100355</u>		Long: <u>-124.13708432</u>	
Datum: <u>WGS84</u>					
Soil Map Unit Name: <u>1008—Hydraquents mucky silt loam, strongly saline, 0-1 percent slopes, very frequently flooded</u>		NW1 Classification: <u>N/A</u>			
Are climatic / hydrologic conditions on the site typical for this time of year? ☒ Yes ☐ No (If no, explain in Remarks.)					
Are ☒ Vegetation, ☐ Soil, or ☐ Hydrology significantly disturbed? Are "Normal Circumstances" present? ☒ Yes ☐ No					
Are ☐ Vegetation, ☐ Soil, or ☐ Hydrology naturally problematic? (If needed, explain any answers in Remarks.)					
SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.					
Hydrophytic Vegetation Present? ☐ Yes ☒ No					
Hydric Soil Present? ☐ Yes ☒ No					
Wetland Hydrology Present? ☐ Yes ☒ No		Is the Sampled Area within a Wetland? ☐ Yes ☒ No			
Remarks: Recently mowed.					

VEGETATION – Use scientific names of plants.

Sampling Point: Up1

Tree Stratum (Plot Size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _	-	-	-	
2. _	-	-	-	
3. _	-	-	-	
4. _	-	-	-	
5. _	-	-	-	
6. _	-	-	-	
7. _	-	-	-	
8. _	-	-	-	
	0	=Total Cover	-	
Sapling/Shrub Stratum (Plot Size: 15 ft)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _	-	-	-	
2. _	-	-	-	
3. _	-	-	-	
4. _	-	-	-	
5. _	-	-	-	
6. _	-	-	-	
7. _	-	-	-	
8. _	-	-	-	
	0	=Total Cover	-	
Herb Stratum (Plot Size: 5 ft)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Hypochaeris radicata (Hair Cat's-Ear)</u>	<u>24</u>	<u>Yes</u>	<u>FACU</u>	
2. <u>Leontodon saxatilis (Lesser Hawkbit)</u>	<u>23</u>	<u>Yes</u>	<u>FACU</u>	
3. <u>Plantago coronopus (Buck-Horn Plantain)</u>	<u>15</u>	<u>No</u>	<u>FAC</u>	
4. <u>Medicago polymorpha (Toothed Medick)</u>	<u>12</u>	<u>No</u>	<u>FACU</u>	
5. <u>Daucus carota (Queen Anne's-Lace)</u>	<u>8</u>	<u>No</u>	<u>FACU</u>	
6. <u>Bellis perennis</u>	<u>4</u>	<u>No</u>	<u>UP</u>	
7. _	-	-	-	
8. _	-	-	-	
	86	=Total Cover	-	
Woody Vine Stratum (Plot Size: 15 ft)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _	-	-	-	
2. _	-	-	-	
3. _	-	-	-	
4. _	-	-	-	
5. _	-	-	-	
6. _	-	-	-	
7. _	-	-	-	
8. _	-	-	-	
	0	=Total Cover	-	
% Bare Ground in Herb Stratum: <u>0</u>				

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	0	x 2 = 0
FAC species	15	x 3 = 45
FACU species	67	x 4 = 268
UPL species	4	x 5 = 20
Column Totals:	86 (A)	333 (B)

Prevalence Index = B/A = 3.87

Hydrophytic Vegetation Indicators:

☐ 1- Rapid Test for Hydrophytic Vegetation
☐ 2- Dominance Test is >50%
☐ 3 - Prevalence Index is ≤3.0¹
☐ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
☐ 5 – Wetland Non-Vascular Plants¹
☐ Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present ☐ Yes ☒ No

Remarks:
 Problematic Hydrophytic Vegetation Explanation:

SOIL

SAMPLING POINT: Up1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR 4/1	100	—	—	—	—	Coarse, loamy sand	Pit dug to 6 inches due to cobble layer.
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)	Indicators for Problematic Hydric Soils ³ :
☐ Histosol (A1)	☐ 2 cm Muck (A10) (LRR A, E)
☐ Histic Epipedon (A2)	☐ Iron-Manganese Masses (F12) (LRR D)
☐ Black Histic (A3)	☐ Red Parent Material (F21)
☐ Hydrogen Sulfide (A4)	☐ Very Shallow Dark Surface (F22)
☐ 1 cm Muck (A9) (LRR D, G)	☐ Other (Explain in Remarks)
☐ Depleted Below Dark Surface (A11)	³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
☐ Thick Dark Surface (A12)	
☐ Sandy Mucky Mineral (S1)	
☐ 2.5 cm Mucky Peat or Peat (S2) (LRR G)	
☐ Sandy Gleyed Matrix (S4)	
☐ Sandy Redox (S5)	
☐ Indicators of hydrophytic vegetation and Stripped Matrix (S6)	
☐ Loamy Mucky Mineral (F1) (except MLRA 1)	
☐ Loamy Gleyed Matrix (F2)	
☐ Depleted Matrix (F3)	
☐ Redox Dark Surface (F6)	
☐ Depleted Dark Surface (F7)	
☐ Redox Depressions (F8)	

Restrictive Layer (if observed): Type: Cobble Depth (inches): 3	Hydric Soil Present? ☐ Yes ☒ No
--	---

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:	Secondary Indicators (2 or more required)
Primary Indicators (minimum of one is required; check all that apply) ☐ Surface Water (A1) ☐ High Water Table (A2) ☐ Saturation (A3) ☐ Water Marks (B1) ☐ Sediment Deposits (B2) ☐ Drift Deposits (B3) ☐ Algal Mat or Crust (B4) ☐ Iron Deposits (B5) ☐ Surface Soil Cracks (B6) ☐ Inundation Visible on Aerial Imagery (B7) ☐ Sparsely Vegetated Concave Surface (B8) ☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) ☐ Salt Crust (B11) ☐ Aquatic Fauna (B13) ☐ Hydrogen Sulfide Odor (C1) ☐ Oxidized Rhizospheres on Living Roots (C3) ☐ Presence of Reduced Iron (C4) ☐ Recent Iron Reduction in Tilled Soils (C6) ☐ Stunted or Stressed Plants (D1) (LRR A) ☐ Other (Explain in Remarks)	☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) ☐ Drainage Patterns (B10) ☐ Dry-Season Water Table (C2) ☐ Saturation Visible on Aerial Imagery (C9) ☐ Geomorphic Position (D2) ☐ Shallow Aquitard (D3) ☐ FAC-Neutral Test (D5) ☐ Raised Ant Mounds (D6) (LRR A) ☐ Frost-Heaved Hummocks (D7)

Field Observations: Surface Water Present? ☐ Yes ☒ No Depth (inches): Water Table Present? ☐ Yes ☒ No Depth (inches): Saturation Present? ☐ Yes ☒ No Depth (inches): (includes capillary fringe)	Wetland Hydrology Present? ☐ Yes ☒ No
---	---

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:



ghd.com

➔ The Power of Commitment

Appendix D

Web Soil Survey



United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for Humboldt County, Central Part, California



May 26, 2026

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

Preface	2
How Soil Surveys Are Made	5
Soil Map	8
Soil Map.....	9
Legend.....	10
Map Unit Legend.....	11
Map Unit Descriptions.....	11
Humboldt County, Central Part, California.....	13
230—Hookton-Tablebluff complex, 2 to 9 percent slopes.....	13
257—Lepoil-Candymountain complex, 2 to 15 percent slopes.....	15
1008—Hydraquents mucky silt loam, strongly saline, 0-1 percent slopes, very frequently flooded.....	17
Soil Information for All Uses	20
Soil Properties and Qualities.....	20
Soil Physical Properties.....	20
Plasticity Index.....	20
Percent Clay.....	23
References	27
Glossary	29

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

Custom Soil Resource Report

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map



Custom Soil Resource Report

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features

 Blowout

 Borrow Pit

 Clay Spot

 Closed Depression

 Gravel Pit

 Gravelly Spot

 Landfill

 Lava Flow

 Marsh or swamp

 Mine or Quarry

 Miscellaneous Water

 Perennial Water

 Rock Outcrop

 Saline Spot

 Sandy Spot

 Severely Eroded Spot

 Sinkhole

 Slide or Slip

 Sodic Spot

 Spoil Area

 Stony Spot

 Very Stony Spot

 Wet Spot

 Other

 Special Line Features

Water Features

 Streams and Canals

Transportation

 Rails

 Interstate Highways

 US Routes

 Major Roads

 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Humboldt County, Central Part, California
Survey Area Data: Version 12, Sep 5, 2025

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 1, 2022—Jun 19, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
230	Hookton-Tablebluff complex, 2 to 9 percent slopes	0.1	8.3%
257	Lepoil-Candymountain complex, 2 to 15 percent slopes	0.4	45.8%
1008	Hydraquents mucky silt loam, strongly saline, 0-1 percent slopes, very frequently flooded	0.4	45.9%
Totals for Area of Interest		1.0	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

Custom Soil Resource Report

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Humboldt County, Central Part, California

230—Hookton-Tablebluff complex, 2 to 9 percent slopes

Map Unit Setting

National map unit symbol: 2ljdr

Landscape: Alluvial plains

Elevation: 30 to 820 feet

Mean annual precipitation: 41 to 53 inches

Mean annual air temperature: 52 to 55 degrees F

Frost-free period: 270 to 330 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Hookton and similar soils: 45 percent

Tablebluff and similar soils: 40 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hookton

Setting

Landscape: Alluvial plains

Landform: Erosion remnants

Landform position (two-dimensional): Summit

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Mixed alluvium

Typical profile

A1 - 0 to 4 inches: loam

A2 - 4 to 15 inches: loam

Bt - 15 to 27 inches: clay loam

Bw1 - 27 to 39 inches: clay loam

Bw2 - 39 to 60 inches: clay loam

Properties and qualities

Slope: 2 to 9 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Somewhat poorly drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)

Depth to water table: About 10 to 20 inches

Frequency of flooding: None

Frequency of ponding: None

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: High (about 10.9 inches)

Interpretive groups

Land capability classification (irrigated): 2e

Land capability classification (nonirrigated): 2e

Hydrologic Soil Group: C/D

Ecological site: R004BA203CA - Riparian

Hydric soil rating: No

Description of Tablebluff

Setting

Landscape: Alluvial plains
Landform: Erosion remnants
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Eolian deposits over mixed alluvium

Typical profile

Ap1 - 0 to 6 inches: silty clay loam
Ap2 - 6 to 11 inches: silty clay loam
AB - 11 to 16 inches: silt loam
Bt1 - 16 to 20 inches: silty clay loam
Bt2 - 20 to 29 inches: silty clay loam
Bt3 - 29 to 42 inches: silty clay loam
Bt4 - 42 to 49 inches: silty clay loam
Bt5 - 49 to 73 inches: clay loam

Properties and qualities

Slope: 2 to 9 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 20 to 39 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very high (about 12.2 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: F004B1101CA - Low elevation marine and floodplain terraces
Hydric soil rating: No

Minor Components

Urban land, residential

Percent of map unit: 5 percent
Landscape: Hills
Landform: Dissected marine terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Anthropogenic features: Urban land
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Megwil,

Percent of map unit: 5 percent
Landscape: Coastal plains

Custom Soil Resource Report

Landform: Dissected marine terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F004BX120CA - Redwood-Sitka spruce/California huckleberry-salmonberry/western swordfern-deer fern, marine terraces, loam
Hydric soil rating: No

Cannonball

Percent of map unit: 5 percent
Landscape: Coastal plains
Landform: Dissected marine terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F004BX121CA - Redwood-Sitka spruce/salal-California huckleberry/western swordfern, marine terraces, marine deposits, sandy loam and loam
Hydric soil rating: No

257—Lepoil-Candymountain complex, 2 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2p9zc
Landscape: Coastal plains
Elevation: 10 to 800 feet
Mean annual precipitation: 35 to 90 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 275 to 325 days
Farmland classification: Not prime farmland

Map Unit Composition

Lepoil and similar soils: 45 percent
Candymountain and similar soils: 40 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lepoil

Setting

Landscape: Coastal plains
Landform: Dissected remnants of marine marine terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed marine deposits derived from sedimentary rock

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 16 inches: loam
Bt - 16 to 69 inches: clay loam
2CBt - 69 to 75 inches: very fine sandy loam
2C - 75 to 83 inches: fine sand

Properties and qualities

Slope: 2 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.06 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 11.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: F004BX121CA - Redwood-Sitka spruce/salal-California huckleberry/western swordfern, marine terraces, marine deposits, sandy loam and loam
Hydric soil rating: No

Description of Candymountain

Setting

Landscape: Coastal plains
Landform: Dissected remnants of marine marine terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed marine deposits derived from sedimentary rock

Typical profile

Oi - 0 to 4 inches: slightly decomposed plant material
A - 4 to 15 inches: fine sandy loam
Bw - 15 to 31 inches: fine sandy loam
BC - 31 to 45 inches: fine sandy loam
C - 45 to 60 inches: very fine sand

Properties and qualities

Slope: 2 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Custom Soil Resource Report

Available water supply, 0 to 60 inches: Moderate (about 8.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: B

Ecological site: F004BX121CA - Redwood-Sitka spruce/salal-California
huckleberry/western swordfern, marine terraces, marine deposits, sandy loam
and loam

Hydric soil rating: No

Minor Components

Cannonball

Percent of map unit: 10 percent

Landscape: Coastal plains

Landform: Dissected marine terraces

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: F004BX121CA - Redwood-Sitka spruce/salal-California
huckleberry/western swordfern, marine terraces, marine deposits, sandy loam
and loam

Hydric soil rating: No

Hutsinpillar

Percent of map unit: 5 percent

Landscape: Uplifted coastal plains

Landform: Drainageways, Depressions on marine terraces

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Tread

Down-slope shape: Linear, concave

Across-slope shape: Linear, concave

Hydric soil rating: Yes

1008—Hydraquents mucky silt loam, strongly saline, 0-1 percent slopes, very frequently flooded

Map Unit Setting

National map unit symbol: 2t14z

Landscape: Bays

Elevation: 0 to 10 feet

Mean annual precipitation: 35 to 80 inches

Mean annual air temperature: 50 to 55 degrees F

Frost-free period: 275 to 365 days

Farmland classification: Not prime farmland

Map Unit Composition

Hydraquents, high tidal, and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hydraquents, High Tidal

Setting

Landscape: Bays

Landform: Tidal marshes

Landform position (three-dimensional): Talf

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Mucky, silty, and clayey estuarine deposits

Typical profile

Az - 0 to 13 inches: mucky silt loam

Cg1 - 13 to 37 inches: mucky silty clay loam

Cg2 - 37 to 51 inches: mucky silty clay loam

Cgse - 51 to 79 inches: mucky silt loam

Properties and qualities

Slope: 0 to 1 percent

Depth to restrictive feature: 0 inches to salic; 20 to 79 inches to sulfuric

Drainage class: Very poorly drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high
(0.06 to 2.00 in/hr)

Depth to water table: About 0 to 16 inches

Frequency of flooding: Very frequent

Frequency of ponding: None

Maximum salinity: Strongly saline (30.0 to 80.0 mmhos/cm)

Sodium adsorption ratio, maximum: 75.0

Available water supply, 0 to 60 inches: Very low (about 0.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8

Hydrologic Soil Group: C/D

Ecological site: R004BA205CA - Marshlands

Hydric soil rating: Yes

Minor Components

Hydraquents, low tidal

Percent of map unit: 10 percent

Landscape: Bays

Landform: Tidal channels

Landform position (three-dimensional): Talf

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: Yes

Water, marine

Percent of map unit: 5 percent

Landscape: Bays

Landform: Tidal channels

Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Physical Properties

Soil Physical Properties are measured or inferred from direct observations in the field or laboratory. Examples of soil physical properties include percent clay, organic matter, saturated hydraulic conductivity, available water capacity, and bulk density.

Plasticity Index

Plasticity index (PI) is one of the standard Atterberg limits used to indicate the plasticity characteristics of a soil. It is defined as the numerical difference between the liquid limit and plastic limit of the soil. It is the range of water content in which a soil exhibits the characteristics of a plastic solid.

The plastic limit is the water content that corresponds to an arbitrary limit between the plastic and semisolid states of a soil. The liquid limit is the water content, on a percent by weight basis, of the soil (passing #40 sieve) at which the soil changes from a plastic to a liquid state.

Soils that have a high plasticity index have a wide range of moisture content in which the soil performs as a plastic material. Highly and moderately plastic clays have large PI values. Plasticity index is used in classifying soils in the Unified and AASHTO classification systems.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Custom Soil Resource Report Map—Plasticity Index



Custom Soil Resource Report

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Background

 Aerial Photography

Soils

Soil Rating Polygons

-  ≤ 9.2
-  > 9.2 and ≤ 10.8
-  > 10.8 and ≤ 15.4
-  Not rated or not available

Soil Rating Lines

-  ≤ 9.2
-  > 9.2 and ≤ 10.8
-  > 10.8 and ≤ 15.4
-  Not rated or not available

Soil Rating Points

-  ≤ 9.2
-  > 9.2 and ≤ 10.8
-  > 10.8 and ≤ 15.4
-  Not rated or not available

Water Features

 Streams and Canals

Transportation

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Humboldt County, Central Part, California
Survey Area Data: Version 12, Sep 5, 2025

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 1, 2022—Jun 19, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Plasticity Index

Map unit symbol	Map unit name	Rating (percent)	Acres in AOI	Percent of AOI
230	Hookton-Tablebluff complex, 2 to 9 percent slopes	10.8	0.1	8.3%
257	Lepoil-Candymountain complex, 2 to 15 percent slopes	15.4	0.4	45.8%
1008	Hydraquents mucky silt loam, strongly saline, 0-1 percent slopes, very frequently flooded	9.2	0.4	45.9%
Totals for Area of Interest			1.0	100.0%

Rating Options—Plasticity Index

Units of Measure: percent

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): All Layers (Weighted Average)

Percent Clay

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. The estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter. The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, saturated hydraulic conductivity (Ksat), plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earth-moving operations.

Most of the material is in one of three groups of clay minerals or a mixture of these clay minerals. The groups are kaolinite, smectite, and hydrous mica, the best known member of which is illite.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Custom Soil Resource Report Map—Percent Clay



Custom Soil Resource Report

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Background

 Aerial Photography

Soils

Soil Rating Polygons

-  ≤ 23.2
-  > 23.2 and ≤ 24.1
-  > 24.1 and ≤ 27.6
-  Not rated or not available

Soil Rating Lines

-  ≤ 23.2
-  > 23.2 and ≤ 24.1
-  > 24.1 and ≤ 27.6
-  Not rated or not available

Soil Rating Points

-  ≤ 23.2
-  > 23.2 and ≤ 24.1
-  > 24.1 and ≤ 27.6
-  Not rated or not available

Water Features

 Streams and Canals

Transportation

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Humboldt County, Central Part, California
Survey Area Data: Version 12, Sep 5, 2025

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 1, 2022—Jun 19, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Percent Clay

Map unit symbol	Map unit name	Rating (percent)	Acres in AOI	Percent of AOI
230	Hookton-Tablebluff complex, 2 to 9 percent slopes	27.6	0.1	8.3%
257	Lepoil-Candymountain complex, 2 to 15 percent slopes	23.2	0.4	45.8%
1008	Hydraquents mucky silt loam, strongly saline, 0-1 percent slopes, very frequently flooded	24.1	0.4	45.9%
Totals for Area of Interest			1.0	100.0%

Rating Options—Percent Clay*Units of Measure:* percent*Aggregation Method:* Dominant Component*Component Percent Cutoff:* None Specified*Tie-break Rule:* Higher*Interpret Nulls as Zero:* No*Layer Options (Horizon Aggregation Method):* All Layers (Weighted Average)

References

- American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.
- American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.
- Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.
- Federal Register. July 13, 1994. Changes in hydric soils of the United States.
- Federal Register. September 18, 2002. Hydric soils of the United States.
- Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.
- National Research Council. 1995. Wetlands: Characteristics and boundaries.
- Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262
- Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577
- Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580
- Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.
- United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.
- United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374
- United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084>

Custom Soil Resource Report

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

Glossary

Many of the terms relating to landforms, geology, and geomorphology are defined in more detail in the following National Soil Survey Handbook link: "[National Soil Survey Handbook](#)."

ABC soil

A soil having an A, a B, and a C horizon.

Ablation till

Loose, relatively permeable earthy material deposited during the downwasting of nearly static glacial ice, either contained within or accumulated on the surface of the glacier.

AC soil

A soil having only an A and a C horizon. Commonly, such soil formed in recent alluvium or on steep, rocky slopes.

Aeration, soil

The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil

Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alkali (sodic) soil

A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Alluvial cone

A semiconical type of alluvial fan having very steep slopes. It is higher, narrower, and steeper than a fan and is composed of coarser and thicker layers of material deposited by a combination of alluvial episodes and (to a much lesser degree) landslides (debris flow). The coarsest materials tend to be concentrated at the apex of the cone.

Alluvial fan

A low, outspread mass of loose materials and/or rock material, commonly with gentle slopes. It is shaped like an open fan or a segment of a cone. The material was deposited by a stream at the place where it issues from a narrow mountain valley or upland valley or where a tributary stream is near or at its junction with the main stream. The fan is steepest near its apex, which points upstream, and slopes gently and convexly outward (downstream) with a gradual decrease in gradient.

Alluvium

Unconsolidated material, such as gravel, sand, silt, clay, and various mixtures of these, deposited on land by running water.

Alpha,alpha-dipyridyl

A compound that when dissolved in ammonium acetate is used to detect the presence of reduced iron (Fe II) in the soil. A positive reaction implies reducing conditions and the likely presence of redoximorphic features.

Animal unit month (AUM)

The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

Aquic conditions

Current soil wetness characterized by saturation, reduction, and redoximorphic features.

Argillic horizon

A subsoil horizon characterized by an accumulation of illuvial clay.

Arroyo

The flat-floored channel of an ephemeral stream, commonly with very steep to vertical banks cut in unconsolidated material. It is usually dry but can be transformed into a temporary watercourse or short-lived torrent after heavy rain within the watershed.

Aspect

The direction toward which a slope faces. Also called slope aspect.

Association, soil

A group of soils or miscellaneous areas geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity)

The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low: 0 to 3

Low: 3 to 6

Moderate: 6 to 9

High: 9 to 12

Very high: More than 12

Backslope

The position that forms the steepest and generally linear, middle portion of a hillslope. In profile, backslopes are commonly bounded by a convex shoulder above and a concave footslope below.

Backswamp

A flood-plain landform. Extensive, marshy or swampy, depressed areas of flood plains between natural levees and valley sides or terraces.

Badland

A landscape that is intricately dissected and characterized by a very fine drainage network with high drainage densities and short, steep slopes and narrow interfluvies. Badlands develop on surfaces that have little or no vegetative cover overlying unconsolidated or poorly cemented materials (clays, silts, or sandstones) with, in some cases, soluble minerals, such as gypsum or halite.

Bajada

A broad, gently inclined alluvial piedmont slope extending from the base of a mountain range out into a basin and formed by the lateral coalescence of a series of alluvial fans. Typically, it has a broadly undulating transverse profile, parallel to the mountain front, resulting from the convexities of component fans. The term is generally restricted to constructional slopes of intermontane basins.

Basal area

The area of a cross section of a tree, generally referring to the section at breast height and measured outside the bark. It is a measure of stand density, commonly expressed in square feet.

Base saturation

The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

Base slope (geomorphology)

A geomorphic component of hills consisting of the concave to linear (perpendicular to the contour) slope that, regardless of the lateral shape, forms an apron or wedge at the bottom of a hillside dominated by colluvium and slope-wash sediments (for example, slope alluvium).

Bedding plane

A planar or nearly planar bedding surface that visibly separates each successive layer of stratified sediment or rock (of the same or different lithology)

from the preceding or following layer; a plane of deposition. It commonly marks a change in the circumstances of deposition and may show a parting, a color difference, a change in particle size, or various combinations of these. The term is commonly applied to any bedding surface, even one that is conspicuously bent or deformed by folding.

Bedding system

A drainage system made by plowing, grading, or otherwise shaping the surface of a flat field. It consists of a series of low ridges separated by shallow, parallel dead furrows.

Bedrock

The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bedrock-controlled topography

A landscape where the configuration and relief of the landforms are determined or strongly influenced by the underlying bedrock.

Bench terrace

A raised, level or nearly level strip of earth constructed on or nearly on a contour, supported by a barrier of rocks or similar material, and designed to make the soil suitable for tillage and to prevent accelerated erosion.

Bisequum

Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons.

Blowout (map symbol)

A saucer-, cup-, or trough-shaped depression formed by wind erosion on a preexisting dune or other sand deposit, especially in an area of shifting sand or loose soil or where protective vegetation is disturbed or destroyed. The adjoining accumulation of sand derived from the depression, where recognizable, is commonly included. Blowouts are commonly small.

Borrow pit (map symbol)

An open excavation from which soil and underlying material have been removed, usually for construction purposes.

Bottom land

An informal term loosely applied to various portions of a flood plain.

Boulders

Rock fragments larger than 2 feet (60 centimeters) in diameter.

Breaks

A landscape or tract of steep, rough or broken land dissected by ravines and gullies and marking a sudden change in topography.

Breast height

An average height of 4.5 feet above the ground surface; the point on a tree where diameter measurements are ordinarily taken.

Brush management

Use of mechanical, chemical, or biological methods to make conditions favorable for reseeding or to reduce or eliminate competition from woody vegetation and thus allow understory grasses and forbs to recover. Brush management increases forage production and thus reduces the hazard of erosion. It can improve the habitat for some species of wildlife.

Butte

An isolated, generally flat-topped hill or mountain with relatively steep slopes and talus or precipitous cliffs and characterized by summit width that is less than the height of bounding escarpments; commonly topped by a caprock of resistant material and representing an erosion remnant carved from flat-lying rocks.

Cable yarding

A method of moving felled trees to a nearby central area for transport to a processing facility. Most cable yarding systems involve use of a drum, a pole, and wire cables in an arrangement similar to that of a rod and reel used for fishing. To reduce friction and soil disturbance, felled trees generally are reeled in while one end is lifted or the entire log is suspended.

Calcareous soil

A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

Caliche

A general term for a prominent zone of secondary carbonate accumulation in surficial materials in warm, subhumid to arid areas. Caliche is formed by both geologic and pedologic processes. Finely crystalline calcium carbonate forms a nearly continuous surface-coating and void-filling medium in geologic (parent) materials. Cementation ranges from weak in nonindurated forms to very strong in indurated forms. Other minerals (e.g., carbonates, silicate, and sulfate) may occur as accessory cements. Most petrocalcic horizons and some calcic horizons are caliche.

California bearing ratio (CBR)

The load-supporting capacity of a soil as compared to that of standard crushed limestone, expressed as a ratio. First standardized in California. A soil having a CBR of 16 supports 16 percent of the load that would be supported by standard crushed limestone, per unit area, with the same degree of distortion.

Canopy

The leafy crown of trees or shrubs. (See Crown.)

Canyon

A long, deep, narrow valley with high, precipitous walls in an area of high local relief.

Capillary water

Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Catena

A sequence, or “chain,” of soils on a landscape that formed in similar kinds of parent material and under similar climatic conditions but that have different characteristics as a result of differences in relief and drainage.

Cation

An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity

The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Catsteps

See Terracettes.

Cement rock

Shaly limestone used in the manufacture of cement.

Channery soil material

Soil material that has, by volume, 15 to 35 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches (15 centimeters) along the longest axis. A single piece is called a channer.

Chemical treatment

Control of unwanted vegetation through the use of chemicals.

Chiseling

Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

Cirque

A steep-walled, semicircular or crescent-shaped, half-bowl-like recess or hollow, commonly situated at the head of a glaciated mountain valley or high on the side of a mountain. It was produced by the erosive activity of a mountain glacier. It commonly contains a small round lake (tarn).

Clay

As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay depletions

See Redoximorphic features.

Clay film

A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Clay spot (map symbol)

A spot where the surface texture is silty clay or clay in areas where the surface layer of the soils in the surrounding map unit is sandy loam, loam, silt loam, or coarser.

Claypan

A dense, compact subsoil layer that contains much more clay than the overlying materials, from which it is separated by a sharply defined boundary. The layer restricts the downward movement of water through the soil. A claypan is commonly hard when dry and plastic and sticky when wet.

Climax plant community

The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Coarse textured soil

Sand or loamy sand.

Cobble (or cobblestone)

A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Cobbly soil material

Material that has 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material has 35 to 60 percent of these rock fragments, and extremely cobbly soil material has more than 60 percent.

COLE (coefficient of linear extensibility)

See Linear extensibility.

Colluvium

Unconsolidated, unsorted earth material being transported or deposited on side slopes and/or at the base of slopes by mass movement (e.g., direct gravitational action) and by local, unconcentrated runoff.

Complex slope

Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

Complex, soil

A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Concretions

See Redoximorphic features.

Conglomerate

A coarse grained, clastic sedimentary rock composed of rounded or subangular rock fragments more than 2 millimeters in diameter. It commonly has a matrix of sand and finer textured material. Conglomerate is the consolidated equivalent of gravel.

Conservation cropping system

Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Conservation tillage

A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil

Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the "Soil Survey Manual."

Contour stripcropping

Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section

The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Coprogenous earth (sedimentary peat)

A type of limnic layer composed predominantly of fecal material derived from aquatic animals.

Corrosion (geomorphology)

A process of erosion whereby rocks and soil are removed or worn away by natural chemical processes, especially by the solvent action of running water, but also by other reactions, such as hydrolysis, hydration, carbonation, and oxidation.

Corrosion (soil survey interpretations)

Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

Cover crop

A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Crop residue management

Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Cropping system

Growing crops according to a planned system of rotation and management practices.

Cross-slope farming

Deliberately conducting farming operations on sloping farmland in such a way that tillage is across the general slope.

Crown

The upper part of a tree or shrub, including the living branches and their foliage.

Cryoturbate

A mass of soil or other unconsolidated earthy material moved or disturbed by frost action. It is typically coarser than the underlying material.

Cuesta

An asymmetric ridge capped by resistant rock layers of slight or moderate dip (commonly less than 15 percent slopes); a type of homocline produced by differential erosion of interbedded resistant and weak rocks. A cuesta has a long, gentle slope on one side (dip slope) that roughly parallels the inclined beds; on the other side, it has a relatively short and steep or clifflike slope (scarp) that cuts through the tilted rocks.

Culmination of the mean annual increment (CMAI)

The average annual increase per acre in the volume of a stand. Computed by dividing the total volume of the stand by its age. As the stand increases in age, the mean annual increment continues to increase until mortality begins to reduce the rate of increase. The point where the stand reaches its maximum annual rate of growth is called the culmination of the mean annual increment.

Cutbanks cave

The walls of excavations tend to cave in or slough.

Decreasers

The most heavily grazed climax range plants. Because they are the most palatable, they are the first to be destroyed by overgrazing.

Deferred grazing

Postponing grazing or resting grazing land for a prescribed period.

Delta

A body of alluvium having a surface that is fan shaped and nearly flat; deposited at or near the mouth of a river or stream where it enters a body of relatively quiet water, generally a sea or lake.

Dense layer

A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of digging and can affect filling and compacting.

Depression, closed (map symbol)

A shallow, saucer-shaped area that is slightly lower on the landscape than the surrounding area and that does not have a natural outlet for surface drainage.

Depth, soil

Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep, 20 to 40 inches; shallow, 10 to 20 inches; and very shallow, less than 10 inches.

Desert pavement

A natural, residual concentration or layer of wind-polished, closely packed gravel, boulders, and other rock fragments mantling a desert surface. It forms where wind action and sheetwash have removed all smaller particles or where rock fragments have migrated upward through sediments to the surface. It typically protects the finer grained underlying material from further erosion.

Diatomaceous earth

A geologic deposit of fine, grayish siliceous material composed chiefly or entirely of the remains of diatoms.

Dip slope

A slope of the land surface, roughly determined by and approximately conforming to the dip of the underlying bedrock.

Diversion (or diversion terrace)

A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Divided-slope farming

A form of field stripcropping in which crops are grown in a systematic arrangement of two strips, or bands, across the slope to reduce the hazard of water erosion. One strip is in a close-growing crop that provides protection from erosion, and the other strip is in a crop that provides less protection from erosion. This practice is used where slopes are not long enough to permit a full stripcropping pattern to be used.

Drainage class (natural)

Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained, and very poorly drained*. These classes are defined in the “Soil Survey Manual.”

Drainage, surface

Runoff, or surface flow of water, from an area.

Drainageway

A general term for a course or channel along which water moves in draining an area. A term restricted to relatively small, linear depressions that at some time move concentrated water and either do not have a defined channel or have only a small defined channel.

Draw

A small stream valley that generally is shallower and more open than a ravine or gulch and that has a broader bottom. The present stream channel may appear inadequate to have cut the drainageway that it occupies.

Drift

A general term applied to all mineral material (clay, silt, sand, gravel, and boulders) transported by a glacier and deposited directly by or from the ice or transported by running water emanating from a glacier. Drift includes unstratified material (till) that forms moraines and stratified deposits that form outwash plains, eskers, kames, varves, and glaciofluvial sediments. The term is generally applied to Pleistocene glacial deposits in areas that no longer contain glaciers.

Drumlin

A low, smooth, elongated oval hill, mound, or ridge of compact till that has a core of bedrock or drift. It commonly has a blunt nose facing the direction from which the ice approached and a gentler slope tapering in the other direction. The longer axis is parallel to the general direction of glacier flow. Drumlins are products of streamline (laminar) flow of glaciers, which molded the subglacial floor through a combination of erosion and deposition.

Duff

A generally firm organic layer on the surface of mineral soils. It consists of fallen plant material that is in the process of decomposition and includes everything from the litter on the surface to underlying pure humus.

Dune

A low mound, ridge, bank, or hill of loose, windblown granular material (generally sand), either barren and capable of movement from place to place or covered and stabilized with vegetation but retaining its characteristic shape.

Earthy fill

See Mine spoil.

Ecological site

An area where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. An ecological site is the product of all the environmental factors responsible for its development. It is typified by an association of species that differ from those on other ecological sites in kind and/or proportion of species or in total production.

Eluviation

The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Endosaturation

A type of saturation of the soil in which all horizons between the upper boundary of saturation and a depth of 2 meters are saturated.

Eolian deposit

Sand-, silt-, or clay-sized clastic material transported and deposited primarily by wind, commonly in the form of a dune or a sheet of sand or loess.

Ephemeral stream

A stream, or reach of a stream, that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times.

Episaturation

A type of saturation indicating a perched water table in a soil in which saturated layers are underlain by one or more unsaturated layers within 2 meters of the surface.

Erosion

The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (accelerated)

Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

Erosion (geologic)

Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion pavement

A surficial lag concentration or layer of gravel and other rock fragments that remains on the soil surface after sheet or rill erosion or wind has removed the finer soil particles and that tends to protect the underlying soil from further erosion.

Erosion surface

A land surface shaped by the action of erosion, especially by running water.

Escarpment

A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Most commonly applied to cliffs produced by differential erosion. Synonym: scarp.

Escarpment, bedrock (map symbol)

A relatively continuous and steep slope or cliff, produced by erosion or faulting, that breaks the general continuity of more gently sloping land surfaces. Exposed material is hard or soft bedrock.

Escarpment, nonbedrock (map symbol)

A relatively continuous and steep slope or cliff, generally produced by erosion but in some places produced by faulting, that breaks the continuity of more gently sloping land surfaces. Exposed earthy material is nonsoil or very shallow soil.

Esker

A long, narrow, sinuous, steep-sided ridge of stratified sand and gravel deposited as the bed of a stream flowing in an ice tunnel within or below the ice (subglacial) or between ice walls on top of the ice of a wasting glacier and left

behind as high ground when the ice melted. Eskers range in length from less than a kilometer to more than 160 kilometers and in height from 3 to 30 meters.

Extrusive rock

Igneous rock derived from deep-seated molten matter (magma) deposited and cooled on the earth's surface.

Fallow

Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grain is grown. The soil is tilled for at least one growing season for weed control and decomposition of plant residue.

Fan remnant

A general term for landforms that are the remaining parts of older fan landforms, such as alluvial fans, that have been either dissected or partially buried.

Fertility, soil

The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Fibric soil material (peat)

The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

Field moisture capacity

The moisture content of a soil, expressed as a percentage of the oven-dry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity*, *normal moisture capacity*, or *capillary capacity*.

Fill slope

A sloping surface consisting of excavated soil material from a road cut. It commonly is on the downhill side of the road.

Fine textured soil

Sandy clay, silty clay, or clay.

Firebreak

An area cleared of flammable material to stop or help control creeping or running fires. It also serves as a line from which to work and to facilitate the movement of firefighters and equipment. Designated roads also serve as firebreaks.

First bottom

An obsolete, informal term loosely applied to the lowest flood-plain steps that are subject to regular flooding.

Flaggy soil material

Material that has, by volume, 15 to 35 percent flagstones. Very flaggy soil material has 35 to 60 percent flagstones, and extremely flaggy soil material has more than 60 percent flagstones.

Flagstone

A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist 6 to 15 inches (15 to 38 centimeters) long.

Flood plain

The nearly level plain that borders a stream and is subject to flooding unless protected artificially.

Flood-plain landforms

A variety of constructional and erosional features produced by stream channel migration and flooding. Examples include backswamps, flood-plain splays, meanders, meander belts, meander scrolls, oxbow lakes, and natural levees.

Flood-plain splay

A fan-shaped deposit or other outspread deposit formed where an overloaded stream breaks through a levee (natural or artificial) and deposits its material (commonly coarse grained) on the flood plain.

Flood-plain step

An essentially flat, terrace-like alluvial surface within a valley that is frequently covered by floodwater from the present stream; any approximately horizontal surface still actively modified by fluvial scour and/or deposition. May occur individually or as a series of steps.

Fluvial

Of or pertaining to rivers or streams; produced by stream or river action.

Foothills

A region of steeply sloping hills that fringes a mountain range or high-plateau escarpment. The hills have relief of as much as 1,000 feet (300 meters).

Footslope

The concave surface at the base of a hillslope. A footslope is a transition zone between upslope sites of erosion and transport (shoulders and backslopes) and downslope sites of deposition (toeslopes).

Forb

Any herbaceous plant not a grass or a sedge.

Forest cover

All trees and other woody plants (underbrush) covering the ground in a forest.

Forest type

A stand of trees similar in composition and development because of given physical and biological factors by which it may be differentiated from other stands.

Fragipan

A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Genesis, soil

The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Gilgai

Commonly, a succession of microbasins and microknolls in nearly level areas or of microvalleys and microridges parallel with the slope. Typically, the microrelief of clayey soils that shrink and swell considerably with changes in moisture content.

Glaciofluvial deposits

Material moved by glaciers and subsequently sorted and deposited by streams flowing from the melting ice. The deposits are stratified and occur in the form of outwash plains, valley trains, deltas, kames, eskers, and kame terraces.

Glaciolacustrine deposits

Material ranging from fine clay to sand derived from glaciers and deposited in glacial lakes mainly by glacial meltwater. Many deposits are bedded or laminated.

Gleyed soil

Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

Graded stripcropping

Growing crops in strips that grade toward a protected waterway.

Grassed waterway

A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel

Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravel pit (map symbol)

An open excavation from which soil and underlying material have been removed and used, without crushing, as a source of sand or gravel.

Gravelly soil material

Material that has 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Gravelly spot (map symbol)

A spot where the surface layer has more than 35 percent, by volume, rock fragments that are mostly less than 3 inches in diameter in an area that has less than 15 percent rock fragments.

Green manure crop (agronomy)

A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water

Water filling all the unblocked pores of the material below the water table.

Gully (map symbol)

A small, steep-sided channel caused by erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage whereas a rill is of lesser depth and can be smoothed over by ordinary tillage.

Hard bedrock

Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

Hard to reclaim

Reclamation is difficult after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Hardpan

A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

Head slope (geomorphology)

A geomorphic component of hills consisting of a laterally concave area of a hillside, especially at the head of a drainageway. The overland waterflow is converging.

Hemic soil material (mucky peat)

Organic soil material intermediate in degree of decomposition between the less decomposed fibric material and the more decomposed sapric material.

High-residue crops

Such crops as small grain and corn used for grain. If properly managed, residue from these crops can be used to control erosion until the next crop in the rotation is established. These crops return large amounts of organic matter to the soil.

Hill

A generic term for an elevated area of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline. Slopes are generally more than 15 percent. The distinction between a hill and a mountain is arbitrary and may depend on local usage.

Hillslope

A generic term for the steeper part of a hill between its summit and the drainage line, valley flat, or depression floor at the base of a hill.

Horizon, soil

A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the "Soil Survey Manual." The major horizons of mineral soil are as follows:

O horizon: An organic layer of fresh and decaying plant residue.

L horizon: A layer of organic and mineral limnic materials, including coprogenous earth (sedimentary peat), diatomaceous earth, and marl.

A horizon: The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon: The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon: The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon: The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon: Soft, consolidated bedrock beneath the soil.

R layer: Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

M layer: A root-limiting subsoil layer consisting of nearly continuous, horizontally oriented, human-manufactured materials.

W layer: A layer of water within or beneath the soil.

Humus

The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups

Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties include depth to a seasonal high water table, the infiltration rate, and depth to a layer that significantly restricts the downward movement of water. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

Igneous rock

Rock that was formed by cooling and solidification of magma and that has not been changed appreciably by weathering since its formation. Major varieties include plutonic and volcanic rock (e.g., andesite, basalt, and granite).

Illuviation

The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Impervious soil

A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Increasers

Species in the climax vegetation that increase in amount as the more desirable plants are reduced by close grazing. Increasers commonly are the shorter plants and the less palatable to livestock.

Infiltration

The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration capacity

The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate

The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intake rate

The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Very low: Less than 0.2

Low: 0.2 to 0.4

Moderately low: 0.4 to 0.75

Moderate: 0.75 to 1.25

Moderately high: 1.25 to 1.75

High: 1.75 to 2.5

Very high: More than 2.5

Interfluve

A landform composed of the relatively undissected upland or ridge between two adjacent valleys containing streams flowing in the same general direction. An elevated area between two drainageways that sheds water to those drainageways.

Interfluve (geomorphology)

A geomorphic component of hills consisting of the uppermost, comparatively level or gently sloping area of a hill; shoulders of backwearing hillslopes can narrow the upland or can merge, resulting in a strongly convex shape.

Intermittent stream

A stream, or reach of a stream, that does not flow year-round but that is commonly dry for 3 or more months out of 12 and whose channel is generally below the local water table. It flows only during wet periods or when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Invaders

On range, plants that encroach into an area and grow after the climax vegetation has been reduced by grazing. Generally, plants invade following disturbance of the surface.

Iron depletions

See Redoximorphic features.

Irrigation

Application of water to soils to assist in production of crops. Methods of irrigation are:

Basin: Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Border: Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Controlled flooding: Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation: Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle): Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow: Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler: Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation: Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding: Water, released at high points, is allowed to flow onto an area without controlled distribution.

Kame

A low mound, knob, hummock, or short irregular ridge composed of stratified sand and gravel deposited by a subglacial stream as a fan or delta at the margin of a melting glacier; by a supraglacial stream in a low place or hole on the surface of the glacier; or as a ponded deposit on the surface or at the margin of stagnant ice.

Karst (topography)

A kind of topography that formed in limestone, gypsum, or other soluble rocks by dissolution and that is characterized by closed depressions, sinkholes, caves, and underground drainage.

Knoll

A small, low, rounded hill rising above adjacent landforms.

Ksat

See Saturated hydraulic conductivity.

Lacustrine deposit

Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

Lake plain

A nearly level surface marking the floor of an extinct lake filled by well sorted, generally fine textured, stratified deposits, commonly containing varves.

Lake terrace

A narrow shelf, partly cut and partly built, produced along a lakeshore in front of a scarp line of low cliffs and later exposed when the water level falls.

Landfill (map symbol)

An area of accumulated waste products of human habitation, either above or below natural ground level.

Landslide

A general, encompassing term for most types of mass movement landforms and processes involving the downslope transport and outward deposition of soil and rock materials caused by gravitational forces; the movement may or may not involve saturated materials. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

Large stones

Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Lava flow (map symbol)

A solidified, commonly lobate body of rock formed through lateral, surface outpouring of molten lava from a vent or fissure.

Leaching

The removal of soluble material from soil or other material by percolating water.

Levee (map symbol)

An embankment that confines or controls water, especially one built along the banks of a river to prevent overflow onto lowlands.

Linear extensibility

Refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. Linear extensibility is used to determine the shrink-swell potential of soils. It is an expression of the volume change between the water content of the clod at $1/3$ - or $1/10$ -bar tension (33kPa or 10kPa tension) and oven dryness. Volume change is influenced by the amount and type of clay minerals in the soil. The volume change is the percent change for the whole soil. If it is expressed as a fraction, the resulting value is COLE, coefficient of linear extensibility.

Liquid limit

The moisture content at which the soil passes from a plastic to a liquid state.

Loam

Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Loess

Material transported and deposited by wind and consisting dominantly of silt-sized particles.

Low strength

The soil is not strong enough to support loads.

Low-residue crops

Such crops as corn used for silage, peas, beans, and potatoes. Residue from these crops is not adequate to control erosion until the next crop in the rotation is established. These crops return little organic matter to the soil.

Marl

An earthy, unconsolidated deposit consisting chiefly of calcium carbonate mixed with clay in approximately equal proportions; formed primarily under freshwater lacustrine conditions but also formed in more saline environments.

Marsh or swamp (map symbol)

A water-saturated, very poorly drained area that is intermittently or permanently covered by water. Sedges, cattails, and rushes are the dominant vegetation in marshes, and trees or shrubs are the dominant vegetation in swamps. Not used in map units where the named soils are poorly drained or very poorly drained.

Mass movement

A generic term for the dislodgment and downslope transport of soil and rock material as a unit under direct gravitational stress.

Masses

See Redoximorphic features.

Meander belt

The zone within which migration of a meandering channel occurs; the flood-plain area included between two imaginary lines drawn tangential to the outer bends of active channel loops.

Meander scar

A crescent-shaped, concave or linear mark on the face of a bluff or valley wall, produced by the lateral erosion of a meandering stream that impinged upon and undercut the bluff.

Meander scroll

One of a series of long, parallel, close-fitting, crescent-shaped ridges and troughs formed along the inner bank of a stream meander as the channel migrated laterally down-valley and toward the outer bank.

Mechanical treatment

Use of mechanical equipment for seeding, brush management, and other management practices.

Medium textured soil

Very fine sandy loam, loam, silt loam, or silt.

Mesa

A broad, nearly flat topped and commonly isolated landmass bounded by steep slopes or precipitous cliffs and capped by layers of resistant, nearly horizontal rocky material. The summit width is characteristically greater than the height of the bounding escarpments.

Metamorphic rock

Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement at depth in the earth's crust. Nearly all such rocks are crystalline.

Mine or quarry (map symbol)

An open excavation from which soil and underlying material have been removed and in which bedrock is exposed. Also denotes surface openings to underground mines.

Mine spoil

An accumulation of displaced earthy material, rock, or other waste material removed during mining or excavation. Also called earthy fill.

Mineral soil

Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage

Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area

A kind of map unit that has little or no natural soil and supports little or no vegetation.

Miscellaneous water (map symbol)

Small, constructed bodies of water that are used for industrial, sanitary, or mining applications and that contain water most of the year.

Moderately coarse textured soil

Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil

Clay loam, sandy clay loam, or silty clay loam.

Mollic epipedon

A thick, dark, humus-rich surface horizon (or horizons) that has high base saturation and pedogenic soil structure. It may include the upper part of the subsoil.

Moraine

In terms of glacial geology, a mound, ridge, or other topographically distinct accumulation of unsorted, unstratified drift, predominantly till, deposited primarily by the direct action of glacial ice in a variety of landforms. Also, a general term for a landform composed mainly of till (except for kame moraines, which are composed mainly of stratified outwash) that has been deposited by a glacier. Some types of moraines are disintegration, end, ground, kame, lateral, recessional, and terminal.

Morphology, soil

The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil

Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—*few*, *common*, and *many*; size—*fine*, *medium*, and *coarse*; and contrast—*faint*, *distinct*, and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).

Mountain

A generic term for an elevated area of the land surface, rising more than 1,000 feet (300 meters) above surrounding lowlands, commonly of restricted summit area (relative to a plateau) and generally having steep sides. A mountain can

occur as a single, isolated mass or in a group forming a chain or range. Mountains are formed primarily by tectonic activity and/or volcanic action but can also be formed by differential erosion.

Muck

Dark, finely divided, well decomposed organic soil material. (See Sapric soil material.)

Mucky peat

See Hemic soil material.

Mudstone

A blocky or massive, fine grained sedimentary rock in which the proportions of clay and silt are approximately equal. Also, a general term for such material as clay, silt, claystone, siltstone, shale, and argillite and that should be used only when the amounts of clay and silt are not known or cannot be precisely identified.

Munsell notation

A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Natric horizon

A special kind of argillic horizon that contains enough exchangeable sodium to have an adverse effect on the physical condition of the subsoil.

Neutral soil

A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

Nodules

See Redoximorphic features.

Nose slope (geomorphology)

A geomorphic component of hills consisting of the projecting end (laterally convex area) of a hillside. The overland waterflow is predominantly divergent. Nose slopes consist dominantly of colluvium and slope-wash sediments (for example, slope alluvium).

Nutrient, plant

Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter

Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low: Less than 0.5 percent

Low: 0.5 to 1.0 percent

Moderately low: 1.0 to 2.0 percent

Moderate: 2.0 to 4.0 percent

High: 4.0 to 8.0 percent

Very high: More than 8.0 percent

Outwash

Stratified and sorted sediments (chiefly sand and gravel) removed or “washed out” from a glacier by meltwater streams and deposited in front of or beyond the end moraine or the margin of a glacier. The coarser material is deposited nearer to the ice.

Outwash plain

An extensive lowland area of coarse textured glaciofluvial material. An outwash plain is commonly smooth; where pitted, it generally is low in relief.

Paleoterrace

An erosional remnant of a terrace that retains the surface form and alluvial deposits of its origin but was not emplaced by, and commonly does not grade to, a present-day stream or drainage network.

Pan

A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan*, *fragipan*, *claypan*, *plowpan*, and *traffic pan*.

Parent material

The unconsolidated organic and mineral material in which soil forms.

Peat

Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

Ped

An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedisediment

A layer of sediment, eroded from the shoulder and backslope of an erosional slope, that lies on and is being (or was) transported across a gently sloping erosional surface at the foot of a receding hill or mountain slope.

Pedon

The smallest volume that can be called “a soil.” A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation

The movement of water through the soil.

Perennial water (map symbol)

Small, natural or constructed lakes, ponds, or pits that contain water most of the year.

Permafrost

Ground, soil, or rock that remains at or below 0 degrees C for at least 2 years. It is defined on the basis of temperature and is not necessarily frozen.

pH value

A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Phase, soil

A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

Piping

Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Pitting

Pits caused by melting around ice. They form on the soil after plant cover is removed.

Plastic limit

The moisture content at which a soil changes from semisolid to plastic.

Plasticity index

The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plateau (geomorphology)

A comparatively flat area of great extent and elevation; specifically, an extensive land region that is considerably elevated (more than 100 meters) above the adjacent lower lying terrain, is commonly limited on at least one side by an abrupt descent, and has a flat or nearly level surface. A comparatively large part of a plateau surface is near summit level.

Playa

The generally dry and nearly level lake plain that occupies the lowest parts of closed depressions, such as those on intermontane basin floors. Temporary flooding occurs primarily in response to precipitation and runoff. Playa deposits are fine grained and may or may not have a high water table and saline conditions.

Plinthite

The sesquioxide-rich, humus-poor, highly weathered mixture of clay with quartz and other diluents. It commonly appears as red mottles, usually in platy, polygonal, or reticulate patterns. Plinthite changes irreversibly to an ironstone hardpan or to irregular aggregates on repeated wetting and drying, especially if it is exposed also to heat from the sun. In a moist soil, plinthite can be cut with a spade. It is a form of laterite.

Plowpan

A compacted layer formed in the soil directly below the plowed layer.

Ponding

Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poorly graded

Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Pore linings

See Redoximorphic features.

Potential native plant community

See Climax plant community.

Potential rooting depth (effective rooting depth)

Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

Prescribed burning

Deliberately burning an area for specific management purposes, under the appropriate conditions of weather and soil moisture and at the proper time of day.

Productivity, soil

The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil

A vertical section of the soil extending through all its horizons and into the parent material.

Proper grazing use

Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and

promotes the accumulation of litter and mulch necessary to conserve soil and water.

Rangeland

Land on which the potential natural vegetation is predominantly grasses, grasslike plants, forbs, or shrubs suitable for grazing or browsing. It includes natural grasslands, savannas, many wetlands, some deserts, tundras, and areas that support certain forb and shrub communities.

Reaction, soil

A measure of acidity or alkalinity of a soil, expressed as pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Ultra acid: Less than 3.5

Extremely acid: 3.5 to 4.4

Very strongly acid: 4.5 to 5.0

Strongly acid: 5.1 to 5.5

Moderately acid: 5.6 to 6.0

Slightly acid: 6.1 to 6.5

Neutral: 6.6 to 7.3

Slightly alkaline: 7.4 to 7.8

Moderately alkaline: 7.9 to 8.4

Strongly alkaline: 8.5 to 9.0

Very strongly alkaline: 9.1 and higher

Red beds

Sedimentary strata that are mainly red and are made up largely of sandstone and shale.

Redoximorphic concentrations

See Redoximorphic features.

Redoximorphic depletions

See Redoximorphic features.

Redoximorphic features

Redoximorphic features are associated with wetness and result from alternating periods of reduction and oxidation of iron and manganese compounds in the soil. Reduction occurs during saturation with water, and oxidation occurs when the soil is not saturated. Characteristic color patterns are created by these processes. The reduced iron and manganese ions may be removed from a soil if vertical or lateral fluxes of water occur, in which case there is no iron or manganese precipitation in that soil. Wherever the iron and manganese are oxidized and precipitated, they form either soft masses or hard concretions or nodules. Movement of iron and manganese as a result of redoximorphic processes in a soil may result in redoximorphic features that are defined as follows:

1. Redoximorphic concentrations.—These are zones of apparent accumulation of iron-manganese oxides, including:
 - A. Nodules and concretions, which are cemented bodies that can be removed from the soil intact. Concretions are distinguished from nodules on the basis of internal organization. A concretion typically has concentric layers that are visible to the naked eye. Nodules do not have visible organized internal structure; *and*
 - B. Masses, which are noncemented concentrations of substances within the soil matrix; *and*
 - C. Pore linings, i.e., zones of accumulation along pores that may be either coatings on pore surfaces or impregnations from the matrix adjacent to the pores.
2. Redoximorphic depletions.—These are zones of low chroma (chromas less than those in the matrix) where either iron-manganese oxides alone or both iron-manganese oxides and clay have been stripped out, including:
 - A. Iron depletions, i.e., zones that contain low amounts of iron and manganese oxides but have a clay content similar to that of the adjacent matrix; *and*
 - B. Clay depletions, i.e., zones that contain low amounts of iron, manganese, and clay (often referred to as silt coatings or skeletans).
3. Reduced matrix.—This is a soil matrix that has low chroma *in situ* but undergoes a change in hue or chroma within 30 minutes after the soil material has been exposed to air.

Reduced matrix

See Redoximorphic features.

Regolith

All unconsolidated earth materials above the solid bedrock. It includes material weathered in place from all kinds of bedrock and alluvial, glacial, eolian, lacustrine, and pyroclastic deposits.

Relief

The relative difference in elevation between the upland summits and the lowlands or valleys of a given region.

Residuum (residual soil material)

Unconsolidated, weathered or partly weathered mineral material that accumulated as bedrock disintegrated in place.

Rill

A very small, steep-sided channel resulting from erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. A rill generally is not an obstacle to wheeled vehicles and is shallow enough to be smoothed over by ordinary tillage.

Riser

The vertical or steep side slope (e.g., escarpment) of terraces, flood-plain steps, or other stepped landforms; commonly a recurring part of a series of natural, steplike landforms, such as successive stream terraces.

Road cut

A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

Rock fragments

Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rock outcrop (map symbol)

An exposure of bedrock at the surface of the earth. Not used where the named soils of the surrounding map unit are shallow over bedrock or where "Rock outcrop" is a named component of the map unit.

Root zone

The part of the soil that can be penetrated by plant roots.

Runoff

The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Saline soil

A soil containing soluble salts in an amount that impairs growth of plants. A saline soil does not contain excess exchangeable sodium.

Saline spot (map symbol)

An area where the surface layer has an electrical conductivity of 8 mmhos/cm more than the surface layer of the named soils in the surrounding map unit. The surface layer of the surrounding soils has an electrical conductivity of 2 mmhos/cm or less.

Sand

As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone

Sedimentary rock containing dominantly sand-sized particles.

Sandy spot (map symbol)

A spot where the surface layer is loamy fine sand or coarser in areas where the surface layer of the named soils in the surrounding map unit is very fine sandy loam or finer.

Sapric soil material (muck)

The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Saturated hydraulic conductivity (Ksat)

The ease with which pores of a saturated soil transmit water. Formally, the proportionality coefficient that expresses the relationship of the rate of water movement to hydraulic gradient in Darcy's Law, a law that describes the rate of water movement through porous media. Commonly abbreviated as "Ksat." Terms describing saturated hydraulic conductivity are:

Very high: 100 or more micrometers per second (14.17 or more inches per hour)

High: 10 to 100 micrometers per second (1.417 to 14.17 inches per hour)

Moderately high: 1 to 10 micrometers per second (0.1417 inch to 1.417 inches per hour)

Moderately low: 0.1 to 1 micrometer per second (0.01417 to 0.1417 inch per hour)

Low: 0.01 to 0.1 micrometer per second (0.001417 to 0.01417 inch per hour)

Very low: Less than 0.01 micrometer per second (less than 0.001417 inch per hour).

To convert inches per hour to micrometers per second, multiply inches per hour by 7.0572. To convert micrometers per second to inches per hour, multiply micrometers per second by 0.1417.

Saturation

Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

Scarification

The act of abrading, scratching, loosening, crushing, or modifying the surface to increase water absorption or to provide a more tillable soil.

Sedimentary rock

A consolidated deposit of clastic particles, chemical precipitates, or organic remains accumulated at or near the surface of the earth under normal low temperature and pressure conditions. Sedimentary rocks include consolidated equivalents of alluvium, colluvium, drift, and eolian, lacustrine, and marine deposits. Examples are sandstone, siltstone, mudstone, claystone, shale, conglomerate, limestone, dolomite, and coal.

Sequum

A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

Series, soil

A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Severely eroded spot (map symbol)

An area where, on the average, 75 percent or more of the original surface layer has been lost because of accelerated erosion. Not used in map units in which "severely eroded," "very severely eroded," or "gullied" is part of the map unit name.

Shale

Sedimentary rock that formed by the hardening of a deposit of clay, silty clay, or silty clay loam and that has a tendency to split into thin layers.

Sheet erosion

The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Short, steep slope (map symbol)

A narrow area of soil having slopes that are at least two slope classes steeper than the slope class of the surrounding map unit.

Shoulder

The convex, erosional surface near the top of a hillslope. A shoulder is a transition from summit to backslope.

Shrink-swell

The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Shrub-coppice dune

A small, streamlined dune that forms around brush and clump vegetation.

Side slope (geomorphology)

A geomorphic component of hills consisting of a laterally planar area of a hillside. The overland waterflow is predominantly parallel. Side slopes are dominantly colluvium and slope-wash sediments.

Silica

A combination of silicon and oxygen. The mineral form is called quartz.

Silica-sesquioxide ratio

The ratio of the number of molecules of silica to the number of molecules of alumina and iron oxide. The more highly weathered soils or their clay fractions in warm-temperate, humid regions, and especially those in the tropics, generally have a low ratio.

Silt

As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone

An indurated silt having the texture and composition of shale but lacking its fine lamination or fissility; a massive mudstone in which silt predominates over clay.

Similar soils

Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

Sinkhole (map symbol)

A closed, circular or elliptical depression, commonly funnel shaped, characterized by subsurface drainage and formed either by dissolution of the surface of underlying bedrock (e.g., limestone, gypsum, or salt) or by collapse of underlying caves within bedrock. Complexes of sinkholes in carbonate-rock terrain are the main components of karst topography.

Site index

A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.

Slickensides (pedogenic)

Grooved, striated, and/or glossy (shiny) slip faces on structural peds, such as wedges; produced by shrink-swell processes, most commonly in soils that have a high content of expansive clays.

Slide or slip (map symbol)

A prominent landform scar or ridge caused by fairly recent mass movement or descent of earthy material resulting from failure of earth or rock under shear stress along one or several surfaces.

Slope

The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

Slope alluvium

Sediment gradually transported down the slopes of mountains or hills primarily by nonchannel alluvial processes (i.e., slope-wash processes) and characterized by particle sorting. Lateral particle sorting is evident on long slopes. In a profile sequence, sediments may be distinguished by differences in size and/or specific gravity of rock fragments and may be separated by stone lines. Burnished peds and sorting of rounded or subrounded pebbles or cobbles distinguish these materials from unsorted colluvial deposits.

Slow refill

The slow filling of ponds, resulting from restricted water transmission in the soil.

Slow water movement

Restricted downward movement of water through the soil. See Saturated hydraulic conductivity.

Sodic (alkali) soil

A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Sodic spot (map symbol)

An area where the surface layer has a sodium adsorption ratio that is at least 10 more than that of the surface layer of the named soils in the surrounding map unit. The surface layer of the surrounding soils has a sodium adsorption ratio of 5 or less.

Sodicity

The degree to which a soil is affected by exchangeable sodium. Sodicity is expressed as a sodium adsorption ratio (SAR) of a saturation extract, or the ratio of Na^+ to $\text{Ca}^{++} + \text{Mg}^{++}$. The degrees of sodicity and their respective ratios are:

Slight: Less than 13:1

Moderate: 13-30:1

Strong: More than 30:1

Sodium adsorption ratio (SAR)

A measure of the amount of sodium (Na) relative to calcium (Ca) and magnesium (Mg) in the water extract from saturated soil paste. It is the ratio of the Na concentration divided by the square root of one-half of the Ca + Mg concentration.

Soft bedrock

Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil

A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief and by the passage of time.

Soil separates

Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand: 2.0 to 1.0

Coarse sand: 1.0 to 0.5

Medium sand: 0.5 to 0.25

Fine sand: 0.25 to 0.10

Very fine sand: 0.10 to 0.05

Silt: 0.05 to 0.002

Clay: Less than 0.002

Solum

The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.

Spoil area (map symbol)

A pile of earthy materials, either smoothed or uneven, resulting from human activity.

Stone line

In a vertical cross section, a line formed by scattered fragments or a discrete layer of angular and subangular rock fragments (commonly a gravel- or cobble-sized lag concentration) that formerly was draped across a topographic surface and was later buried by additional sediments. A stone line generally caps material that was subject to weathering, soil formation, and erosion before burial. Many stone lines seem to be buried erosion pavements, originally formed by sheet and rill erosion across the land surface.

Stones

Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stony

Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Stony spot (map symbol)

A spot where 0.01 to 0.1 percent of the soil surface is covered by rock fragments that are more than 10 inches in diameter in areas where the surrounding soil has no surface stones.

Strath terrace

A type of stream terrace; formed as an erosional surface cut on bedrock and thinly mantled with stream deposits (alluvium).

Stream terrace

One of a series of platforms in a stream valley, flanking and more or less parallel to the stream channel, originally formed near the level of the stream; represents the remnants of an abandoned flood plain, stream bed, or valley floor produced during a former state of fluvial erosion or deposition.

Stripcropping

Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to wind erosion and water erosion.

Structure, soil

The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are:

Platy: Flat and laminated

Prismatic: Vertically elongated and having flat tops

Columnar: Vertically elongated and having rounded tops

Angular blocky: Having faces that intersect at sharp angles (planes)

Subangular blocky: Having subrounded and planar faces (no sharp angles)

Granular: Small structural units with curved or very irregular faces

Structureless soil horizons are defined as follows:

Single grained: Entirely noncoherent (each grain by itself), as in loose sand

Massive: Occurring as a coherent mass

Stubble mulch

Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind erosion and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil

Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling

Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Substratum

The part of the soil below the solum.

Subsurface layer

Any surface soil horizon (A, E, AB, or EB) below the surface layer.

Summer fallow

The tillage of uncropped land during the summer to control weeds and allow storage of moisture in the soil for the growth of a later crop. A practice common in semiarid regions, where annual precipitation is not enough to produce a crop every year. Summer fallow is frequently practiced before planting winter grain.

Summit

The topographically highest position of a hillslope. It has a nearly level (planar or only slightly convex) surface.

Surface layer

The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Surface soil

The A, E, AB, and EB horizons, considered collectively. It includes all subdivisions of these horizons.

Talus

Rock fragments of any size or shape (commonly coarse and angular) derived from and lying at the base of a cliff or very steep rock slope. The accumulated mass of such loose broken rock formed chiefly by falling, rolling, or sliding.

Taxadjuncts

Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior. Soils are recognized as taxadjuncts only when one or more of their characteristics are slightly outside the range defined for the family of the series for which the soils are named.

Terminal moraine

An end moraine that marks the farthest advance of a glacier. It typically has the form of a massive arcuate or concentric ridge, or complex of ridges, and is underlain by till and other types of drift.

Terrace (conservation)

An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field

generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geomorphology)

A steplike surface, bordering a valley floor or shoreline, that represents the former position of a flood plain, lake, or seashore. The term is usually applied both to the relatively flat summit surface (tread) that was cut or built by stream or wave action and to the steeper descending slope (scarp or riser) that has graded to a lower base level of erosion.

Terracettes

Small, irregular steplike forms on steep hillslopes, especially in pasture, formed by creep or erosion of surficial materials that may be induced or enhanced by trampling of livestock, such as sheep or cattle.

Texture, soil

The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay, and clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying “coarse,” “fine,” or “very fine.”

Thin layer

Otherwise suitable soil material that is too thin for the specified use.

Till

Dominantly unsorted and nonstratified drift, generally unconsolidated and deposited directly by a glacier without subsequent reworking by meltwater, and consisting of a heterogeneous mixture of clay, silt, sand, gravel, stones, and boulders; rock fragments of various lithologies are embedded within a finer matrix that can range from clay to sandy loam.

Till plain

An extensive area of level to gently undulating soils underlain predominantly by till and bounded at the distal end by subordinate recessional or end moraines.

Tilth, soil

The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toeslope

The gently inclined surface at the base of a hillslope. Toeslopes in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors.

Topsoil

The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Trace elements

Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

Tread

The flat to gently sloping, topmost, laterally extensive slope of terraces, flood-plain steps, or other stepped landforms; commonly a recurring part of a series of natural steplike landforms, such as successive stream terraces.

Tuff

A generic term for any consolidated or cemented deposit that is 50 percent or more volcanic ash.

Upland

An informal, general term for the higher ground of a region, in contrast with a low-lying adjacent area, such as a valley or plain, or for land at a higher elevation than the flood plain or low stream terrace; land above the footslope zone of the hillslope continuum.

Valley fill

The unconsolidated sediment deposited by any agent (water, wind, ice, or mass wasting) so as to fill or partly fill a valley.

Variegation

Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

Varve

A sedimentary layer or a lamina or sequence of laminae deposited in a body of still water within a year. Specifically, a thin pair of graded glaciolacustrine layers seasonally deposited, usually by meltwater streams, in a glacial lake or other body of still water in front of a glacier.

Very stony spot (map symbol)

A spot where 0.1 to 3.0 percent of the soil surface is covered by rock fragments that are more than 10 inches in diameter in areas where the surface of the surrounding soil is covered by less than 0.01 percent stones.

Water bars

Smooth, shallow ditches or depressional areas that are excavated at an angle across a sloping road. They are used to reduce the downward velocity of water and divert it off and away from the road surface. Water bars can easily be driven over if constructed properly.

Weathering

All physical disintegration, chemical decomposition, and biologically induced changes in rocks or other deposits at or near the earth's surface by atmospheric or biologic agents or by circulating surface waters but involving essentially no transport of the altered material.

Well graded

Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wet spot (map symbol)

A somewhat poorly drained to very poorly drained area that is at least two drainage classes wetter than the named soils in the surrounding map unit.

Wilting point (or permanent wilting point)

The moisture content of soil, on an oven-dry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Windthrow

The uprooting and tipping over of trees by the wind.



ghd.com

→ The Power of Commitment