

## **Appendix B2. Aquatic Resources Delineation Report**



# **Moraga-Oakland X 115 kV Rebuild Project, Contra Costa and Alameda Counties, California**

## **Aquatic Resources Delineation Report**

**July 2024**

**Pacific Gas and Electric Company**





Moraga-Oakland X 115 kV Rebuild Project, Contra Costa County, California

|                  |                                  |
|------------------|----------------------------------|
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| Client Name:     | Pacific Gas and Electric Company |
| Project Manager: | Colleen Taylor                   |
| Author:          | Pim Laulikitnont-Lee             |
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Jacobs Engineering Group Inc.

4 Embarcadero Center  
Suite 3800  
San Francisco, CA 94111  
United States  
T +1.415.356.2040  
[www.jacobs.com](http://www.jacobs.com)

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Acronyms and Abbreviations

|            |                                               |
|------------|-----------------------------------------------|
| APT        | Antecedent Precipitation Tool                 |
| CMP        | corrugated metal pipe                         |
| EBRPD      | East Bay Regional Park District               |
| HUC        | Hydrologic Unit Code                          |
| NHD        | National Hydrography Dataset                  |
| NRCS       | Natural Resources Conservation Service        |
| NWI        | National Wetland Inventory                    |
| OHWM       | ordinary high water mark                      |
| PG&E       | Pacific Gas and Electric Company              |
| project    | Moraga-Oakland X 115 Kilovolt Rebuild Project |
| RN         | Rebuild North                                 |
| RS         | Rebuild South                                 |
| SP         | sample point                                  |
| Study Area | biological study area for aquatic resources   |
| USACE      | U.S. Army Corps of Engineers                  |
| USGS       | U.S. Geological Survey                        |

# 1. Introduction

This report presents the methods and results of an aquatic resource delineation completed for the Moraga–Oakland X 115 kV Rebuild Project (project) located in Alameda and Contra Costa counties. Results and conclusions presented in this report are considered preliminary, pending verification by the U.S. Army Corps of Engineers (USACE) Regulatory Branch. The project overview, location, environmental setting, and survey methods and results are provided in the following sections.

## 1.1 Project Overview

The project will upgrade and rebuild four overhead 115 kilovolt (kV) power lines into hybrid lines in the Oakland Hills of Contra Costa and Alameda Counties. The project will span approximately 5 miles between Pacific Gas and Electric Company's (PG&E's) Moraga and Oakland X substations. The two existing double circuit lines will be rebuilt as hybrid lines, meaning the upgraded double circuit lines between the two substations will have both overhead and underground sections. Existing line towers and poles and existing conductors will either be replaced with overhead rebuild or underground components, and minor modifications will occur within the existing substations. Four transition structures will be installed to support the connection between the overhead and underground portions of each line, and another three transition structures will be installed to connect the underground portion into Oakland X Substation. Approximately 1 mile of existing overhead lines and structures will be removed where the lines are rebuilt underground. Additionally, the rebuild will include the installation of optical guide wire on aboveground structures with a communication path continuing within the underground portions.

## 1.2 Project Location

The project will be located within the City of Orinda, unincorporated Contra Costa County, and the cities of Piedmont and Oakland (Figure 1). Existing land uses in the project area include utility, open space in the City of Orinda and unincorporated Contra Costa County, and residential, parks, churches, and schools, as well as some commercial land within the cities of Piedmont and Oakland. The project is located within Sections 9, 10, 14, 15, and 16, Township 1 south, Range 3 west of the Mount Diablo Baseline and Meridian, as well as the Laguna de Los Palos Colorados and Rancho San Antonio land grants. The project is within the Oakland East (3712272) 7.5-minute U.S. Geological Survey (USGS) topographic quadrangle.

A study area for the aquatic resources delineation was established as a 10-foot-wide buffer on either sides of the proposed access routes and a 100-foot-wide buffer around all other potential work areas (including new proposed structure locations, staging areas, and new proposed substations) (Figure 2). The aquatic resource delineation study area (Study Area) encompasses approximately 226.3 acres.

## 2. Environmental Setting

### 2.1 Regional Setting

The Study Area is situated in the East Bay Hills – Mount Diablo and East Bay Terraces and Alluvium subsections of the Central California Coast section (USDA 1997). The East Bay Hills is a vaguely defined section of the Coast Ranges east of San Francisco Bay. The Study Area lies within the San Leandro Creek and Sausal Creek Watersheds. Ten tributary creeks in the San Leandro Creek Watershed drain to Upper San Leandro Reservoir, Lake Chabot, or San Leandro Creek. Within the Sausal Creek Watershed, three main tributaries flow to the Sausal Creek, which ultimately drains into the Oakland Estuary.

### 2.2 Project Setting

#### 2.2.1 Land Use

From the eastern end of the proposed project at the existing PG&E Moraga Substation on Lost Valley Drive in Orinda, the upgraded lines would follow an approximately 5-mile-long southwestward path with an approximately 100- to 250-foot-wide right-of-way that currently terminates into the existing PG&E Oakland X Substation. The right-of-way passes through several planning jurisdictions, including the City of Orinda, Contra Costa County, the City of Piedmont, and the City of Oakland. In addition, the East Bay Regional Park District (EBRPD) and East Bay Municipal Utility District own and have jurisdiction over lands in unincorporated Contra Costa County and engage in land use planning activities. The botanical resources survey report includes further discussion on land use in the Study Area (Nomad 2022).

#### 2.2.2 Vegetation Types and Land Cover

The majority of undeveloped upland areas in the Study Area is oak woodland and nonnative annual grassland. The western portion of the Study Area, roughly west of Skyline Boulevard, is either hardscaped (pavement and sidewalks) or otherwise developed and landscaped, and disturbed habitat composed of primarily ruderal or nonnative species (Figure 1). Holland (1986) and Holland and Keil (1995) provide a generalized natural community-level description for the natural communities present within the Study Area. Both natural communities and land cover types were mapped as part of the botanical resources survey and are described in the survey report (Nomad 2022). Vegetation associated with the aquatic features identified during the aquatic resources delineation are described in the following sections.

##### 2.2.2.1 Wetlands

Wetlands in the Study Area, synonymous with freshwater seeps mapped by Nomad (2022), were dominated by herbaceous species such as tall flatsedge (*Cyperus eragrostis*), rabbit's foot grass (*Polypogon monspeliensis*), spreading rush (*Juncus patens*), Hyssop loosestrife (*Lythrum hyssopifolium*), seep monkeyflower (*Mimulus guttatus*), and sedges (*Carex* sp.). More details on these wetlands can be found in Section 4.2.1.

##### 2.2.2.2 Riverine Waters

Riverine waters within the Study Area include intermittent drainages such as Shephard Creek and Palo Seco Creek and ephemeral drainages including a concrete lined ditch and a constructed drainage. Vegetation within the creeks and along the creek banks was variable, but predominantly includes species such as tall flatsedge, perennial ryegrass (*Festuca perennis* [*Lolium perenne*]), Himalayan blackberry

(*Rubus armeniacus*), Pacific poison oak (*Toxicodendron diversilobum*), and curly dock (*Rumex crispus*). More details on these aquatic features can be found in Section 4.2.2.

### 2.2.2.3 Riparian

Within the Study Area, riparian habitat is present in mesic depression in Shepherd Canyon and an area where the access road to the staging area near on Wilder Road crosses an ephemeral drainage (Figure 1). Riparian habitat was mapped as central coast riparian scrub during the 2021 botanical resources surveys (Nomad 2022). It is dominated by arroyo willow (*Salix lasiolepis*) in the shrub layer with poison oak present and low cover of California bay (*Umbellularia californica*). Although the herbaceous layer was largely absent, mugwort (*Artemisia douglasiana*), tall flatsedge, Harding grass (*Phalaris aquatica*), and small amounts of creeping wildrye (*Elymus triticoides*) are present at the edges of this layer.

### Geology and Soils

Soils information for the Study Area was obtained from the Natural Resources Conservation Service (NRCS) Web Soil Survey (NRCS 2023a) as well as the Official Soil Series Descriptions (NRCS 2023b). Figure 3 presents the soil types within the Study Area and Table 1 presents additional information about the mapped soil series.

### 2.2.3 Climate and Precipitation

The regional climate is characterized by mild winters and hot, dry summers. Average total precipitation is 23 inches (AgACIS 2023). Monthly temperature ranges from 52 to 67 degrees Fahrenheit with an annual average of 59.5 degrees Fahrenheit. Historical weather data were collected from the Oakland Museum National Oceanic and Atmospheric Administration weather station, which was the closest and most appropriate station that collects precipitation and temperature data (WRCC 2023).

### Hydrology

The majority of the Study Area is located within the San Lorenzo Creek – Frontal San Francisco Bay Estuaries watershed (Hydrologic Unit Code [HUC] 1805000408) with a small portion in the northwestern section of the Study Area located in the San Pablo Creek – Frontal San Pablo Bay Estuaries watershed (HUC 1805000407). Both watersheds are within the larger San Pablo Bay watershed (HUC 18050002).

Hydrology in the Study Area is influenced by precipitation, surface water runoff, groundwater discharge, geologic stratigraphy, topography, and soil permeability. A total of six intermittent drainages in the Study Area are identified on the 7.5-minute USGS topographic quadrangles, including Palo Seco Creek, San Leandro Creek, Sausal Creek, Shepherd Creek, West Branch Creek, and San Pablo Creek. The portion of the Study Area east of Gudde Ridge drains into San Pablo Creek, flowing southeast through Moraga Valley before entering San Leandro Reservoir to the southeast. San Leandro Creek drains the Study Area between Gudde Ridge and Manzanita Drive and flows south-southeast into San Leandro Reservoir. Shepherd Creek drains the upper Berkeley Hills east of State Route 13 via Shepherd Canyon and flows southwest into Sausal Creek at State Route 13. Sausal Creek flows south-southwest out of the Berkeley Hills through Dimond Canyon and ultimately drains into the Oakland Estuary near Alameda Island.

**Table 1. Mapped Soil Series within the Study Area and Vicinity**

| Type / Series                | Texture   | Landscape Position and Parent Material                                                                                                    | Drainage and Permeability                                      | Hydric Soil? |
|------------------------------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|--------------|
| Cropley                      | Clay      | Cropley soils are on valleys. Parent material is alluvium.                                                                                | Moderately well drained; medium runoff                         | No           |
| Diablo                       | Clay      | Diablo soils are on mountain slopes and hillslopes. The soils formed from residuum weathered from calcareous shale.                       | Well drained; very high runoff                                 | No           |
| Lodo                         | Clay loam | Lodo soils are on mountain slopes and hillslopes. The soils formed from residuum weathered sandstone and shale.                           | Somewhat excessively drained; very high runoff                 | No           |
| Los Osos                     | Clay loam | Los Osos soils are on mountain slopes and hills. The soils formed from residuum weathered from sandstone and shale.                       | Well drained; very high runoff                                 | No           |
| Maymen                       | Loam      | Maymen soils are on hills. The soils formed from residuum weathered from sedimentary rock.                                                | Somewhat excessively drained; very high runoff                 | No           |
| Maymen-Los Gatos complex     | Loam      | Maymen-Los Gatos soil complex are on hills. The soils formed from residuum weathered from sedimentary rock.                               | Somewhat excessively drained to well drained; very high runoff | No           |
| Millsholm                    | Loam      | Millsholm soils are on hillslopes. The soils formed from loamy residuum weathered from sandstone and shale.                               | Well drained; very high runoff                                 | No           |
| Urban land-Danville complex  | Clay loam | Urban land-Danville soil complex is on alluvial fans and fan terraces. The soils formed in alluvium derived mainly from sedimentary rock. | Well drained; low runoff                                       | No           |
| Urban land-Tierra complex    | Loam      | Urban land-Tierra soil complex is on fan terraces. Parent material are mainly alluvium.                                                   | Moderately well drained; very high runoff                      | No           |
| Xerothents-Los Osos complex  | Clay loam | Xerothents-Los Osos soils complex is on hills. The soils formed from residuum weathered from sedimentary rock.                            | Well drained; very high runoff                                 | No           |
| Xerothents-Millsholm complex | Silt loam | Xerothents-Millsholm soils complex is on hills. The soils formed from residuum weathered from sandstone and shale.                        | Well drained; very high runoff                                 | No           |

**Source:**

Web Soil Survey 2.0 National Cooperative Soil Survey (NRCS 2023a)



## 3. Methods

### 3.1 Pre-field Investigation

General information on climate, vegetation, soils, hydrology, and existing wetlands was reviewed before the field survey. The following materials were included in this data review:

- NRCS's *Web Soil Survey* (soil maps and descriptions) (NRCS 2023a and 2023b) (Figure 3)
- USGS's topographic quadrangle maps (Figure 1)
- USGS's *National Hydrography Dataset* (NHD) (USGS 2023) (Figure 4)
- U.S. Fish and Wildlife Service *National Wetlands Inventory* (NWI) (USFWS 2022) (Figure 4)
- Satellite imagery (Google Earth 2023)

### 3.2 Field Survey

The aquatic resource delineation survey was conducted by two Jacobs wetland scientists, Kevin Fisher and Pim Laulikitnont-Lee, on December 12, December 28, December 29, 2023, and January 12, 2024. The aquatic resource delineation survey included all potentially jurisdictional aquatic features within the Study Area. Where the Study Area was not safely accessible or extended outside of parcels with approved permit to enter, surveys were conducted visually from accessible areas, along with a review of aerial images, public databases, and available topographic data. Specific survey methodology is provided in the following sections.

The aquatic resource delineation survey methodology followed the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987), the ordinary high water mark (OHWM) *Regulatory Guidance Letter No. 05-05* (USACE 2005), the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region Version 2.0* (USACE 2008), *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (Lichvar and McColley 2008), and the *Interim Draft Rapid Ordinary High Water Mark (OHWM) Field Identification Data Sheet* (USACE 2022). Wetland indicator statuses for plants were taken from *The National Wetland Plant List*, version 3.5 (USACE 2020).

The locations of wetland sample points, OHWM transects, and the boundaries of aquatic resources were mapped in the field with a global positioning system receiver with sub-meter accuracy. Several wetland sample points were collected to document the absence of aquatic features mapped by the NWI or NHD (sample point [SP] 1, SP-2, and SP-6). Geographic information system software (ArcGIS 10.5) was used to process the collected geodata for developing aquatic resource maps. Cowardin classification codes were assigned to aquatic resources based on guidance from Cowardin et al. (1979).

#### 3.2.1 Identification of Wetlands

The USACE uses the three-parameter approach (vegetation, soils, and hydrology) to determine the presence of wetlands. As a general rule, under this method, evidence of a minimum of one positive indicator for each parameter must be found (under normal circumstances and in nonproblem areas) to make a positive wetland determination. Wetland data points were collected according to USACE standards where apparent vegetation, hydrology patterns, and soil moisture gradients indicated that there is the potential for wetlands to occur. Wetland determination data forms are included in Appendix A.

### 3.2.2 Identification of Other Waters of the U.S.

Riverine aquatic resources were delineated based on guidance provided in USACE *Regulatory Guidance Letter 05-05* (USACE 2005) and *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (Lichvar and McColley 2008). The following physical characteristics were considered when making OHWM determinations:

- Natural line impressed on the bank
- Shelving
- Changes in the character of the soil
- Destruction of terrestrial vegetation
- Wracking
- Vegetation matted down, bent, or absent
- Sediment sorting
- Leaf litter disturbed or washed away
- Scour
- Deposition
- Bed and banks
- Water staining
- Changes in plant community or cover

OHWM data sheets are included in Appendix A.

## 4. Results

### 4.1 Hydrologic Conditions at the Time of the Survey

The USACE Antecedent Precipitation Tool (APT) was used to define precipitation conditions over the period of time preceding the December 2023 and January 2024 delineation surveys, and data were collected for a location at the approximate center of the Study Area. Regional precipitation in the months preceding the surveys was considered to be drier than normal based on the APT data (Appendix A). The data, according to the Palmer Drought Severity Index, indicate incipient wetness conditions (Dai 2019).

Although hydrologic conditions were drier than normal for the survey dates, this did not appear to influence the extent of aquatic resources or the surveyor's ability to delineate boundaries. Surveys were able to rely on the distribution of relatively persistent indicators (for example, hydric soils, hydrophytic vegetation, and OHWMs) to delineate the boundaries of aquatic resources. Furthermore, the region was not in drought conditions and the survey was conducted in the wet season.

### 4.2 Aquatic Resources

The field delineation identified aquatic resources mostly along the proposed project's access routes; however, several aquatic resources were identified adjacent to or within proposed work and staging areas (Figure 5). The aquatic resource delineation identified five wetlands comprising approximately 0.133 acre, approximately 0.357 acre (approximately 1,748 linear feet) of riverine – intermittent waters, approximately 0.029 acre (approximately 465 linear feet) of riverine – ephemeral waters, and approximately 1,514 linear feet of culverted waters in the Study Area.

Table 3 presents an overview of the types and amounts of potential jurisdictional waters in the Study Area, and descriptions of the delineated features are presented in the following paragraphs. The delineated aquatic resources are shown in Figure 5. USACE wetland and OHWM data sheets are presented in Appendix B, and representative photographs are presented in Appendix C.

#### 4.2.1 Wetlands

A total of five wetlands were delineated within the Study Area (Table 3, Figure 5). A wetland complex consisting of three separate features (W-01a, W-01b, and W-01c) was delineated along Edgewood Road east of the proposed staging area on Wilder Road. These wetlands are formed from groundwater discharge at the base of a hillslope. Local topography is flat to slightly concave. Two wetlands (W-02 and W-03) were delineated on hillslopes adjacent to the proposed staging area just southeast of the proposed overhead structures Rebuild North (RN) 8 and Rebuild South (RS) 9. Wetland hydrology appeared to be associated with hillslope seeps. The local topography was flat to slightly convex. A total of approximately 0.133 acre of wetlands were delineated within the Study Area.

#### 4.2.2 Other Waters

##### 4.2.2.1 Riverine – Intermittent

Ten riverine – intermittent waters were delineated within the Study Area. A break in the bank slope and changes in species cover and composition were the most common indicators of the OHWM used in the delineation (Lichvar and McColley 2008). One of the riverine – intermittent waters, Alder Creek, was recently daylighted and restored on EBRPD property along Fire Trail 61-16 off Pinehurst Road (Figure 4).

Riverine – intermittent waters delineated within the Study Area total approximately 0.357 acre and approximately 1,748 linear feet.

### 4.2.2.2 Riverine – Ephemeral

Five riverine – ephemeral waters were delineated within the Study Area. These ephemeral waters cross many parts of the Study Area, draining water from surrounding hillslopes in the upper watersheds. Ephemeral flow regime was distinguished from intermittent flow regime primarily based on stream order, channel slope, and presence/absence of flow following recent storm events. Riverine – ephemeral waters delineated within the Study Area total approximately 0.029 acre and approximately 465 linear feet.

### 4.2.2.3 Culverted Waters

“Culverted waters” are piped connections between upstream and downstream segments of potentially jurisdictional waters. Ten culverted water features were mapped within the Study Area. These features convey potential waters of the U.S. under roadway and access routes. A total of 1,514 linear feet of culverted waters were delineated within the Study Area.

## 4.3 Other Areas Investigated

SP-1 was established east of Moraga Substation (Figure 5, Map 2; Appendix C, Photo 4). The area was dominated by hydrophytes including poison hemlock (*Conium maculatum*) and spreading rush. However, there was no evidence of hydric soils or wetland hydrology; therefore, no aquatic resources were delineated at this location and the feature was determined to be an upland swale.

SP-2 was established in a swale east of Moraga Substation just north of SP-1 (Figure 5, Map 2; Appendix C, Photo 5). The area was dominated by hydrophytes including spreading rush and beardless wild rye (*Elymus triticoides*). However, there was no evidence of hydric soils or wetland hydrology; therefore, no aquatic resources were delineated at this location and the feature was determined to be an upland swale.

Seven stormwater basins were investigated along Alder Creek (R-8 and R-9) and the access route at the EBRPD Wilcox Station Staging Area (Figure 5, Map 12 and 13). These stormwater basins were constructed as part of the Alder Creek Restoration Project and were determined to be part of the Best Management Practices measures of the restoration project. Therefore, no aquatic resources were delineated.

Table 2. Aquatic Resources Delineated within the Biological Study Area

| Feature ID                        | Cowardin Code <sup>a</sup> | Latitude, Longitude    | Approximate Area (acres) | Length (linear feet) | Figure 5 Mapbook Page | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------------------------------|----------------------------|------------------------|--------------------------|----------------------|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>WETLANDS</b>                   |                            |                        |                          |                      |                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <i>Wetlands</i>                   |                            |                        |                          |                      |                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| W-01a                             | PEM                        | 37.852134, -122.170409 | 0.035                    | -                    | 4                     | Wetlands W-01a, W-01b, and W-01c are three separate features that form a wetland complex (Appendix C, Photo 8). This wetland complex was delineated along Edgewood Road east of the proposed staging area on Wilder Road. These wetlands are situated on flat to slightly concave terrain. They are formed by groundwater discharge at the base of a hillslope. Vegetation was dominated by tall flatsedge and soils met the Depleted Matrix (F3) hydric soil indicator. Wetland hydrology present were Saturation (A3) and Oxidized Rhizospheres along Living Roots (C3).                                                              |
| W-01b                             | PEM                        | 37.852097, -122.170484 | 0.015                    | -                    | 4                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| W-01c                             | PEM                        | 37.852314, -122.170912 | 0.045                    | -                    | 4                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| W-02                              | PEM                        | 37.843238, -122.177197 | 0.010                    | -                    | 7                     | Wetlands W-02 and W-03 are seep wetlands formed on hillslopes adjacent to the proposed staging area just southeast of the proposed overhead structures RN8 and RS8. (Appendix C, Photo 9 and 10). Wetland hydrology appeared to be associated with hillslope seeps; feature W-02 appeared to have remnants of a livestock watering system. The local topography was flat to slightly convex. Surface water (A1) and Saturation (A3) were the wetland hydrology indicators present at both wetlands. Vegetation was dominated by tall flatsedge and rabbit's foot grass and soils met the Redox Dark Surface (F6) hydric soil indicator. |
| W-03                              | PEM                        | 37.842856, -122.177209 | 0.028                    | -                    | 7                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Approximate Total Wetlands</b> |                            |                        | <b>0.133</b>             | -                    |                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>OTHER WATERS</b>               |                            |                        |                          |                      |                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <i>Riverine Intermittent</i>      |                            |                        |                          |                      |                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| R-1                               | R4SB                       | 37.849133, -122.160615 | 0.0041                   | 51                   | 1                     | R-1 is part of San Pablo Creek and is approximately 30 feet wide at OHWM.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

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| Feature ID | Cowardin Code <sup>a</sup> | Latitude, Longitude    | Approximate Area (acres) | Length (linear feet) | Figure 5 Mapbook Page | Description                                                                                                                                                                                                                                                                                                                                                             |
|------------|----------------------------|------------------------|--------------------------|----------------------|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| R-2        | R4SB                       | 37.846936, -122.161852 | 0.042                    | 189                  | 1                     | Stream approximately 8 feet wide at OHWM. The open channel ends southwest of Moraga Substation and becomes culverted (feature CW-1) under the substation.                                                                                                                                                                                                               |
| R-4        | R6                         | 37.850397, -122.169449 | 0.003                    | 21                   | 4                     | Stream is approximately 8 feet wide at OHWM. The channel has filled with sediment in some places. It is culverted under (feature CW-3). (Appendix C, Photo 6).                                                                                                                                                                                                          |
| R-5        | R4SB                       | 37.854921, -122.176605 | 0.008                    | 40                   | 5                     | Stream is approximately 11 feet wide upstream of the bridge and tapers to 5 feet in the downstream section.                                                                                                                                                                                                                                                             |
| R-8        | R4SB                       | 37.843351, -122.180463 | 0.028                    | 79                   | 8                     | R-8 and R-9 are part of the recently daylighted and restored Alder Creek that drains into San Leandro Creek (Appendix C, Photo 11 and 12). R-8 is approximately 14 feet wide and R-9 is approximately 12 feet wide at the OHWM.                                                                                                                                         |
| R-9        | R4SB                       | 37.840788, -122.181186 | 0.011                    | 40                   | 8                     |                                                                                                                                                                                                                                                                                                                                                                         |
| R-10       | R4SB                       | 37.835736, -122.191000 | 0.006                    | 83                   | 10                    | Stream is approximately 3 feet wide on a hillslope, draining to CW-7 and into Shephard Creek (Appendix C, Photo 13). The feature was not mapped by the NHD but NWI identified the feature as a riverine, intermittent, streambed.                                                                                                                                       |
| R-12       | R4SB                       | 37.825569, -122.201999 | 0.064                    | 608                  | 12                    | Stream is identified by the NHD as Shephard Creek. The width of this drainage varies from 3 to 7 feet wide at the OHWM (Appendix C, Photo 16). This feature is not mapped on NWI.                                                                                                                                                                                       |
| R-13       | R4SB                       | 37.821866, -122.205169 | 0.067                    | 243                  | 13                    | Stream is tributary to Shephard Creek. Approximately 12 feet wide (Appendix C, Photo 17) at OHWM. The stream is identified by the NWI as a riverine, intermittent, streambed feature but is not identified by the NHD.                                                                                                                                                  |
| R-14       | RS4SB                      | 37.818747, -122.207186 | 0.087                    | 394                  | 14                    | Stream is approximately 8 feet wide at the OHWM. Stream is identified by the NHD as two blue line streams, Palo Seco Creek and Shephard Creek, and NWI identifies the feature as riverine, intermittent, streambed (Appendix C, Photo 18 and 19). The southeastern portion of the stream is part of Palo Seco Creek associated with CW-8 that drains into Sausal Creek. |

| Feature ID                                     | Cowardin Code <sup>a</sup> | Latitude, Longitude    | Approximate Area (acres) | Length (linear feet) | Figure 5 Mapbook Page | Description                                                                                                                                                                                                                                                                             |
|------------------------------------------------|----------------------------|------------------------|--------------------------|----------------------|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Approximate Total Riverine Intermittent Waters |                            |                        | 0.357                    | 1,748                |                       |                                                                                                                                                                                                                                                                                         |
| Riverine Ephemeral                             |                            |                        |                          |                      |                       |                                                                                                                                                                                                                                                                                         |
| R-3                                            | R6                         | 37.849395, -122.163269 | 0.015                    | 171                  | 1                     | This is a small tributary of San Pablo Creek. Stream is approximately 6 feet wide at OHWM. It is culverted under a dirt road crossing (feature CW-2).                                                                                                                                   |
| R-6                                            | R6                         | 37.849235, -122.174658 | 0.002                    | 26                   | 3                     | Stream is approximately 2 feet wide at OHWM. The channel appears to be disturbed and not defined across the road (Appendix C, Photo 7).                                                                                                                                                 |
| R-7                                            | R6                         | 37.845214, -122.177123 | 0.002                    | 15                   | 7                     | This is a steep drainage downstream of CW-6. There is erosion and scour at the culvert outlet causing the channel to be over-widened in the Study Area.                                                                                                                                 |
| R-11                                           | R6                         | 37.827073, -122.203331 | 0.009                    | 203                  | 12                    | Stream is approximately 3 feet wide at OHWM. It is a constructed drainage with defined bed and bank adjacent to a managed native plant garden dominated by spreading rush (Appendix C, Photo 14). The drainage ends and dissipates to sheetflow along the trail (Appendix C, Photo 15). |
| R-15                                           | R6                         | 37.816887, -122.209666 | 0.001                    | 50                   | 14                    | Feature is in a 1-foot-wide concrete-lined ditch draining that conveys flow to CW-10 (Appendix C, Photo 20).                                                                                                                                                                            |
| Approximate Total Ephemeral Riverine Waters    |                            |                        | 0.029                    | 465                  |                       |                                                                                                                                                                                                                                                                                         |
| Culverted Waters                               |                            |                        |                          |                      |                       |                                                                                                                                                                                                                                                                                         |
| CW-1                                           | R4r                        | 37.847694, -122.160625 | -                        | 771                  | 1                     | Culvert conveys flow from R-2 through Moraga Substation then drains into San Pablo Creek.                                                                                                                                                                                               |
| CW-2                                           | R6r                        | 37.849553, -122.163171 | -                        | 13                   | 1                     | Culvert conveys flow from R-3 through a 24-inch corrugated metal pipe (CMP) then drains into San Pablo Creek.                                                                                                                                                                           |
| CW-3                                           | R4r                        | 37.850393, -122.169473 | -                        | 19                   | 4                     | Culvert conveys flow from R-4 through a 36-inch CMP which then drains into San Pablo Creek.                                                                                                                                                                                             |

## Aquatic Resources Delineation Report

| Feature ID                                | Cowardin Code <sup>a</sup> | Latitude, Longitude    | Approximate Area (acres) | Length (linear feet) | Figure 5 Mapbook Page | Description                                                                                                                                       |
|-------------------------------------------|----------------------------|------------------------|--------------------------|----------------------|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| CW-4                                      | R4r                        | 37.851675, -122.170047 | -                        | 57                   | 4                     | Culvert conveys waters outside of the Study Area through a corrugated high-density polyethylene pipe through the Study Area into San Pablo Creek. |
| CW-5                                      | R6r                        | 37.853855, -122.17256  | -                        | 51                   | 4                     | Culvert conveys waters outside of the Study Area through a 36-inch CMP through the Study Area into San Pablo Creek.                               |
| CW-6                                      | R6r                        | 37.845174, -122.177058 | -                        | 30                   | 7                     | Culvert conveys water flow into R-7 through a 24-inch CMP.                                                                                        |
| CW-7                                      | R4r                        | 37.835575, -122.191000 | -                        | 39                   | 10                    | Culvert receives surface flow downstream from R-10 into a box culvert draining into Shephard Creek.                                               |
| CW-8                                      | R4r                        | 37.818633, -122.208159 | -                        | 72                   | 14                    | Culverted section of R-14.                                                                                                                        |
| CW-9                                      | R4r                        | 37.818544, -122.208159 | -                        | 370                  | 14                    | Culvert conveys flow from R-14 through a box culvert that drains southwest to Sausal Creek.                                                       |
| CW-10                                     | R6r                        | 37.816962, -122.209893 | -                        | 92                   | 14, 15                | Culvert receives flow from R-15 (concrete lined ditch) and drains towards Sausal Creek.                                                           |
| <b>Approximate Total Culverted Waters</b> |                            |                        | -                        | <b>1,514</b>         |                       |                                                                                                                                                   |

<sup>a</sup> Source: Cowardin et al. 1979



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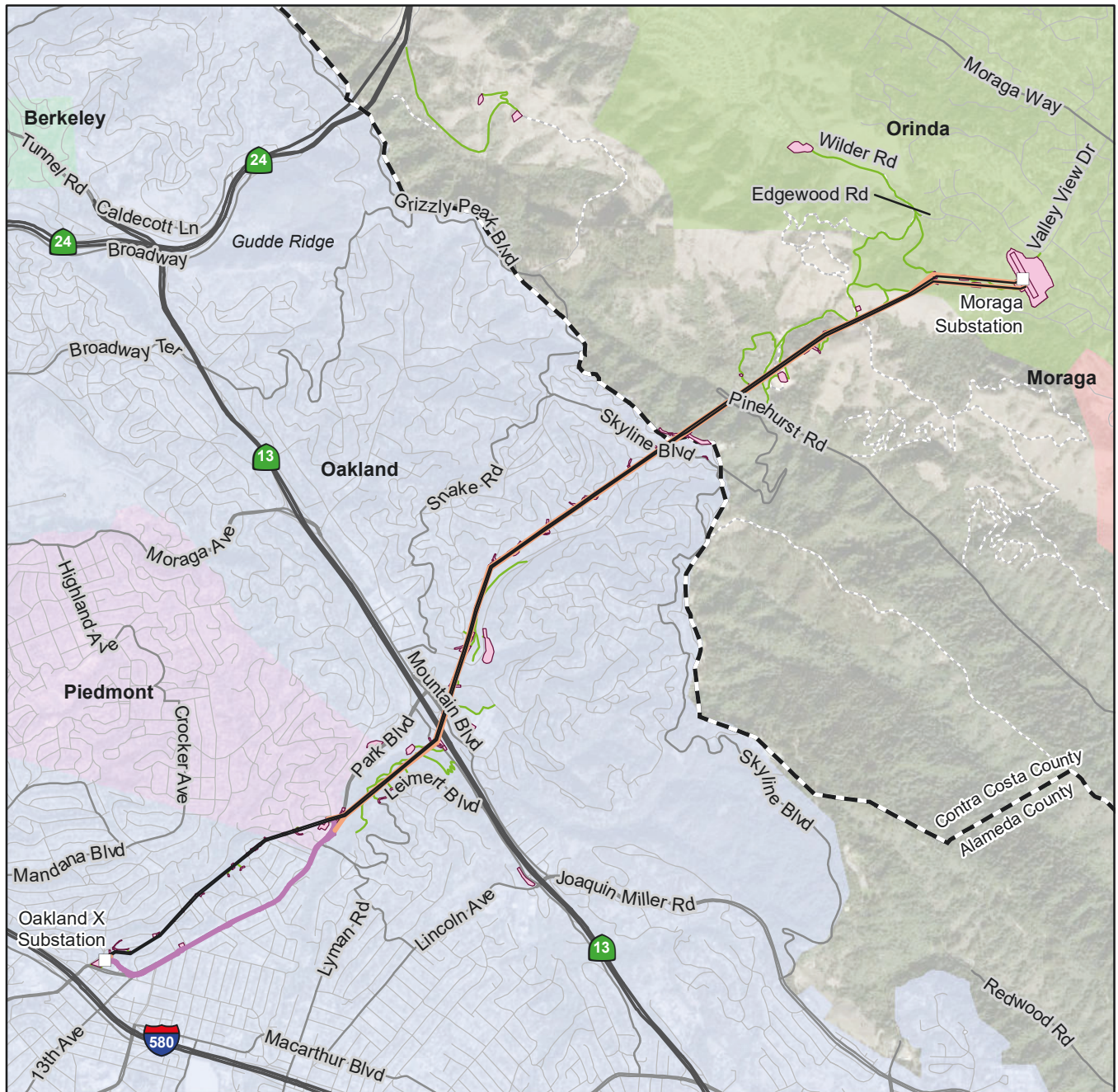
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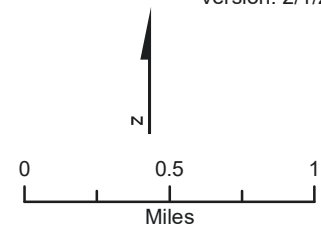
## Figures



Version: 2/1/2024

### Legend

- |                           |                    |
|---------------------------|--------------------|
| Substation                | Interstate/Highway |
| Project Access            | Major Road         |
| Temporary Work Area       | Road               |
| <b>Overhead Routes</b>    | Unpaved Road       |
| Existing                  | County Boundary    |
| Proposed                  | City of Berkeley   |
| <b>Underground Routes</b> | City of Moraga     |
| Proposed                  | City of Oakland    |
|                           | City of Orinda     |
|                           | City of Piedmont   |

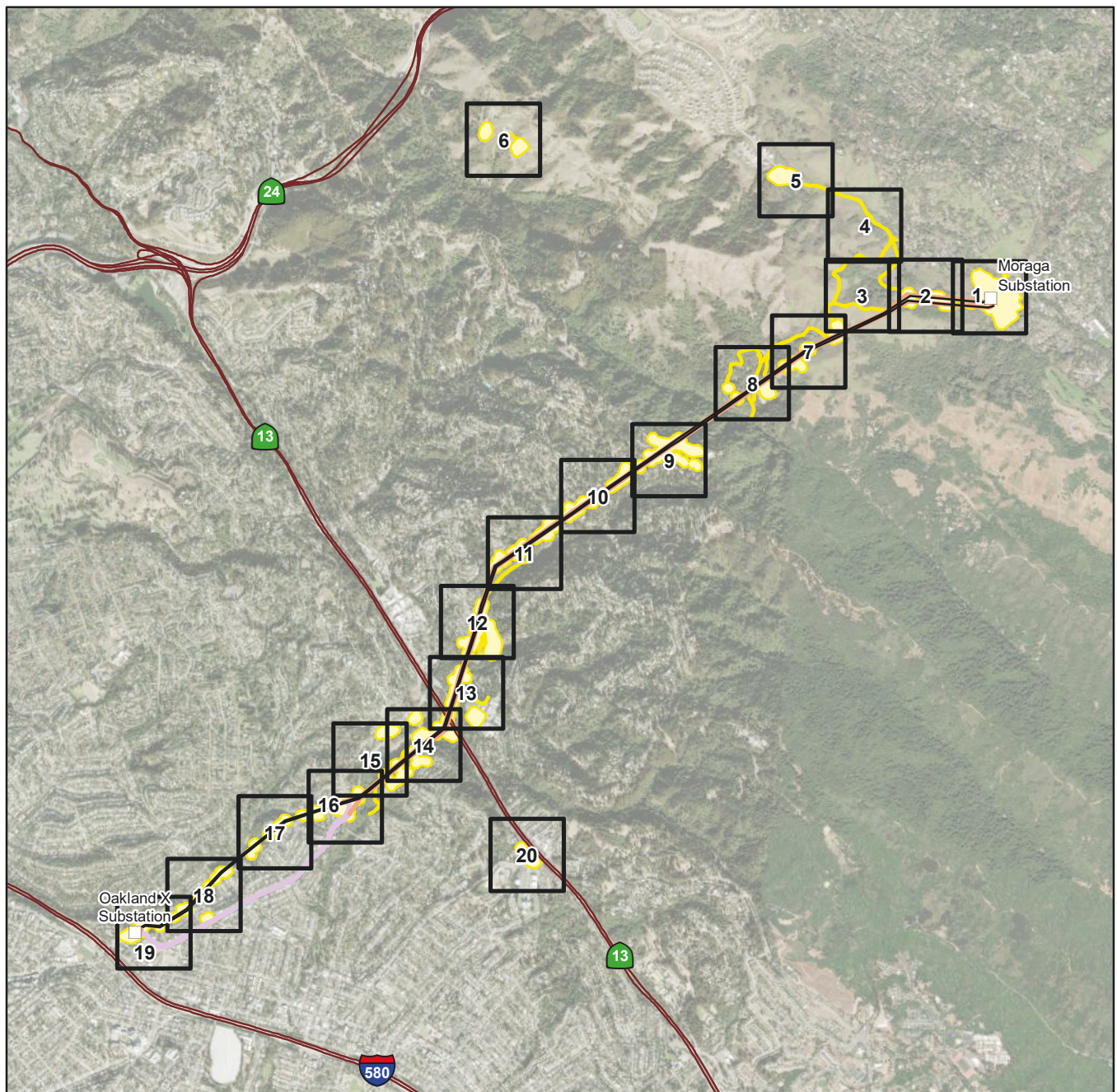


**Figure 1**  
**Project Location**  
 Moraga-Oakland X 115 kV Rebuild Project  
 Pacific Gas & Electric Company

*Preliminary and Subject to Change Based on CPUC Requirements, Final Engineering, and Other Factors*

**Jacobs**





Version: 7/25/2024

### Legend

- Detail Map Sheet
- Aquatic Resources Study Area (226.3 acres)
- Substation

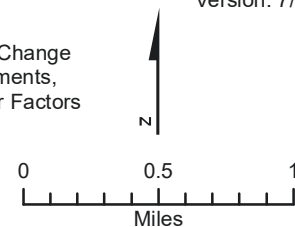
### Overhead Routes

- Existing
- Proposed

### Underground Routes

- Proposed

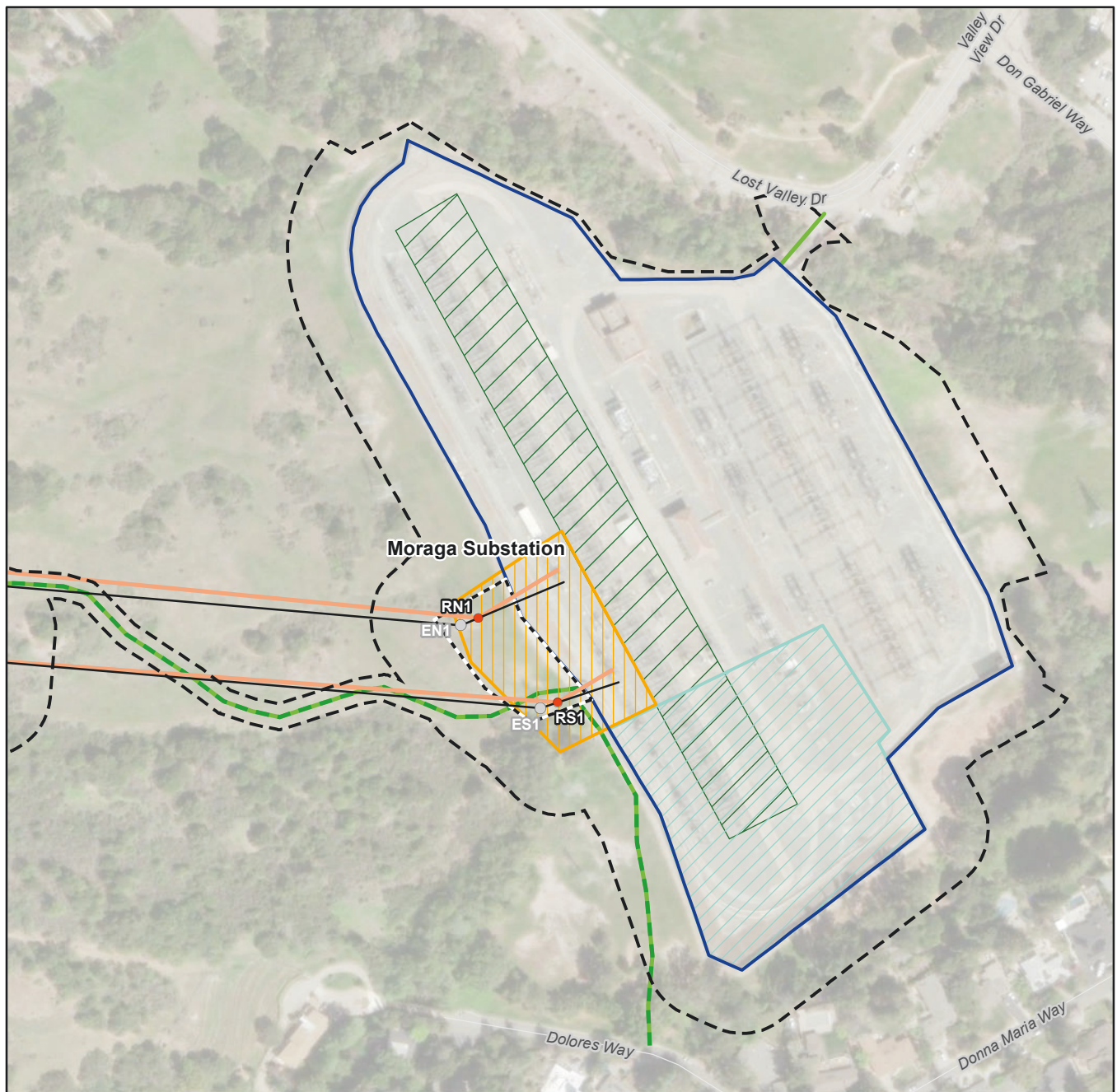
Preliminary and Subject to Change  
Based on CPUC Requirements,  
Final Engineering, and Other Factors



**Figure 2 Overview**  
**Project Elements and**  
**Aquatic Resources Study Area**  
Moraga-Oakland X 115 kV Rebuild Project  
Pacific Gas & Electric Company

**Jacobs**





## Legend

- Aquatic Resources
- Study Area (226.3 acres)

### Overhead Structures

- Existing
- Proposed

### Overhead Routes

- Existing
- Proposed
- Guard Pole

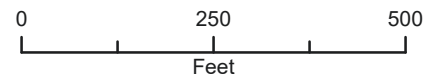
### Access

- Existing
- Improvement

### Temporary Work Areas

- ▨ Moraga Substation 115 kV Breaker Work Area
- ▨ Staging Area
- ▨ Substation Work Area
- ▨ Tension Pull Site
- ▨ Work Area

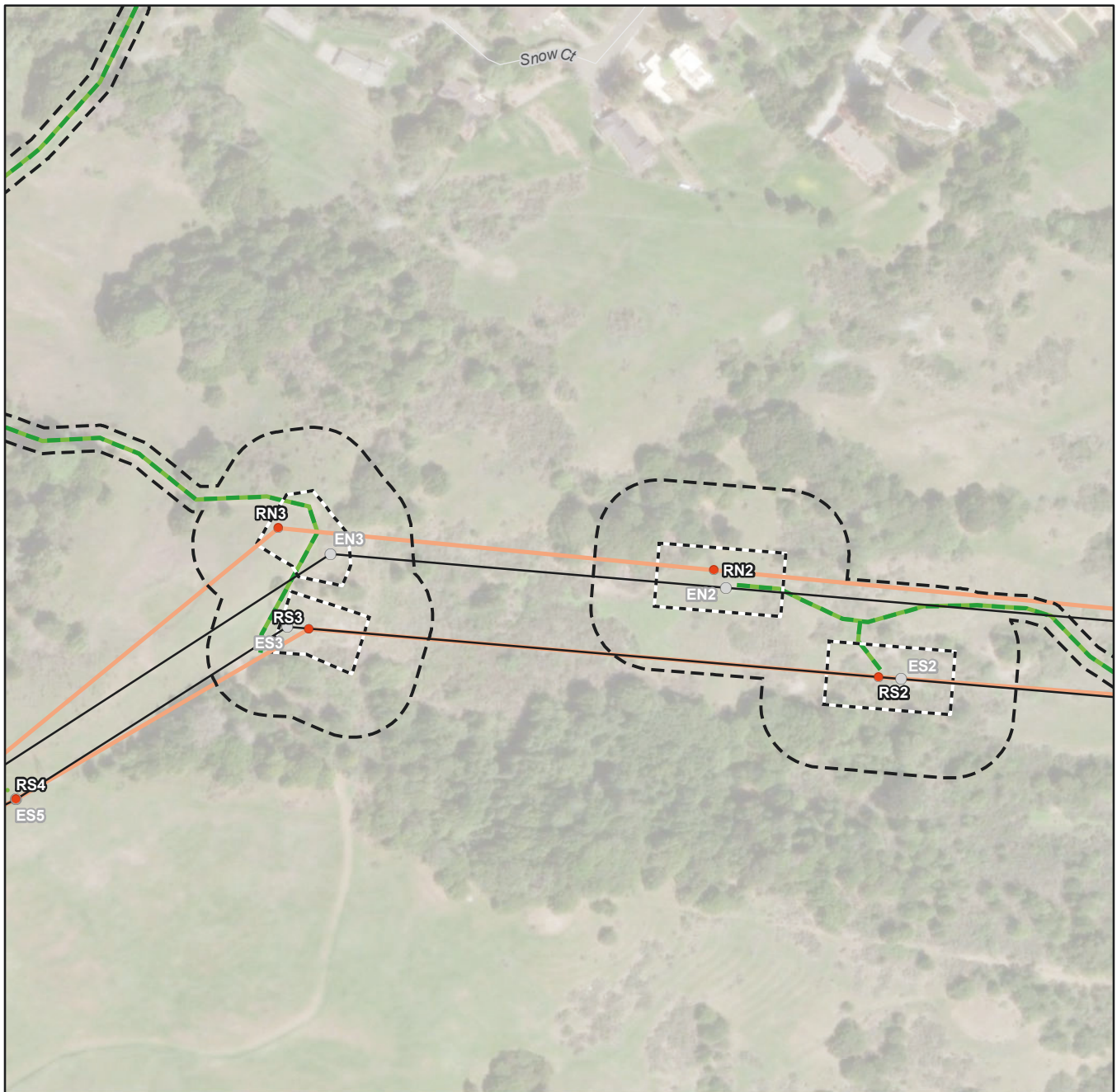
Preliminary and Subject to Change  
Based on CPUC Requirements,  
Final Engineering, and Other Factors



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**Figure 2 Page 1 of 20**  
**Project Elements and**  
**Aquatic Resources Study Area**  
Moraga-Oakland X 115 kV Rebuild Project  
Pacific Gas & Electric Company

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## Legend

- Aquatic Resources
- Study Area (226.3 acres)

### Overhead Structures

- Existing
- Proposed

### Overhead Routes

- Existing
- Proposed
- Guard Pole

### Access

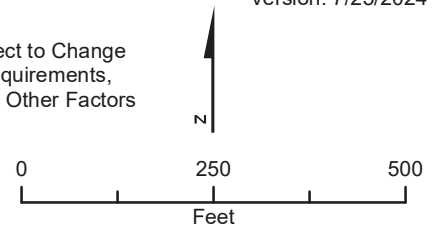
- Improvement
- ⋯ Walk-In

### Temporary Work Areas

- Work Area

Preliminary and Subject to Change  
Based on CPUC Requirements,  
Final Engineering, and Other Factors

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**Figure 2 Page 2 of 20**  
**Project Elements and**  
**Aquatic Resources Study Area**  
Moraga-Oakland X 115 kV Rebuild Project  
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## Legend

- Aquatic Resources
- Study Area (226.3 acres)

### Overhead Structures

- Existing
- Proposed

### Overhead Routes

- Existing
- Proposed
- Guard Pole

### Access

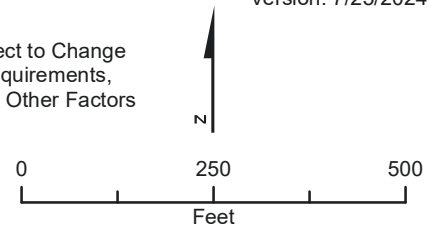
- Existing
- Improvement
- ... Walk-In

### Temporary Work Areas

- Landing Zone/ Staging Area

Preliminary and Subject to Change  
Based on CPUC Requirements,  
Final Engineering, and Other Factors

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**Figure 2 Page 3 of 20**  
**Project Elements and**  
**Aquatic Resources Study Area**  
Moraga-Oakland X 115 kV Rebuild Project  
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### Legend

- Aquatic Resources
- Study Area (226.3 acres)

### Overhead Structures

- Existing
- Proposed

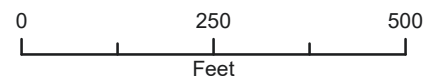
### Overhead Routes

- Existing
- Proposed
- Guard Pole

### Access

- Existing
- Improvement

Preliminary and Subject to Change  
Based on CPUC Requirements,  
Final Engineering, and Other Factors



**Figure 2 Page 4 of 20**  
**Project Elements and**  
**Aquatic Resources Study Area**  
Moraga-Oakland X 115 kV Rebuild Project  
Pacific Gas & Electric Company

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## Legend

- Aquatic Resources
- Study Area (226.3 acres)

### Overhead Structures

- Existing
- Proposed

### Overhead Routes

- Existing
- Proposed
- Guard Pole

### Access

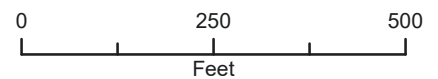
- Existing

### Temporary Work Areas

- Landing Zone/ Staging Area

Preliminary and Subject to Change  
Based on CPUC Requirements,  
Final Engineering, and Other Factors

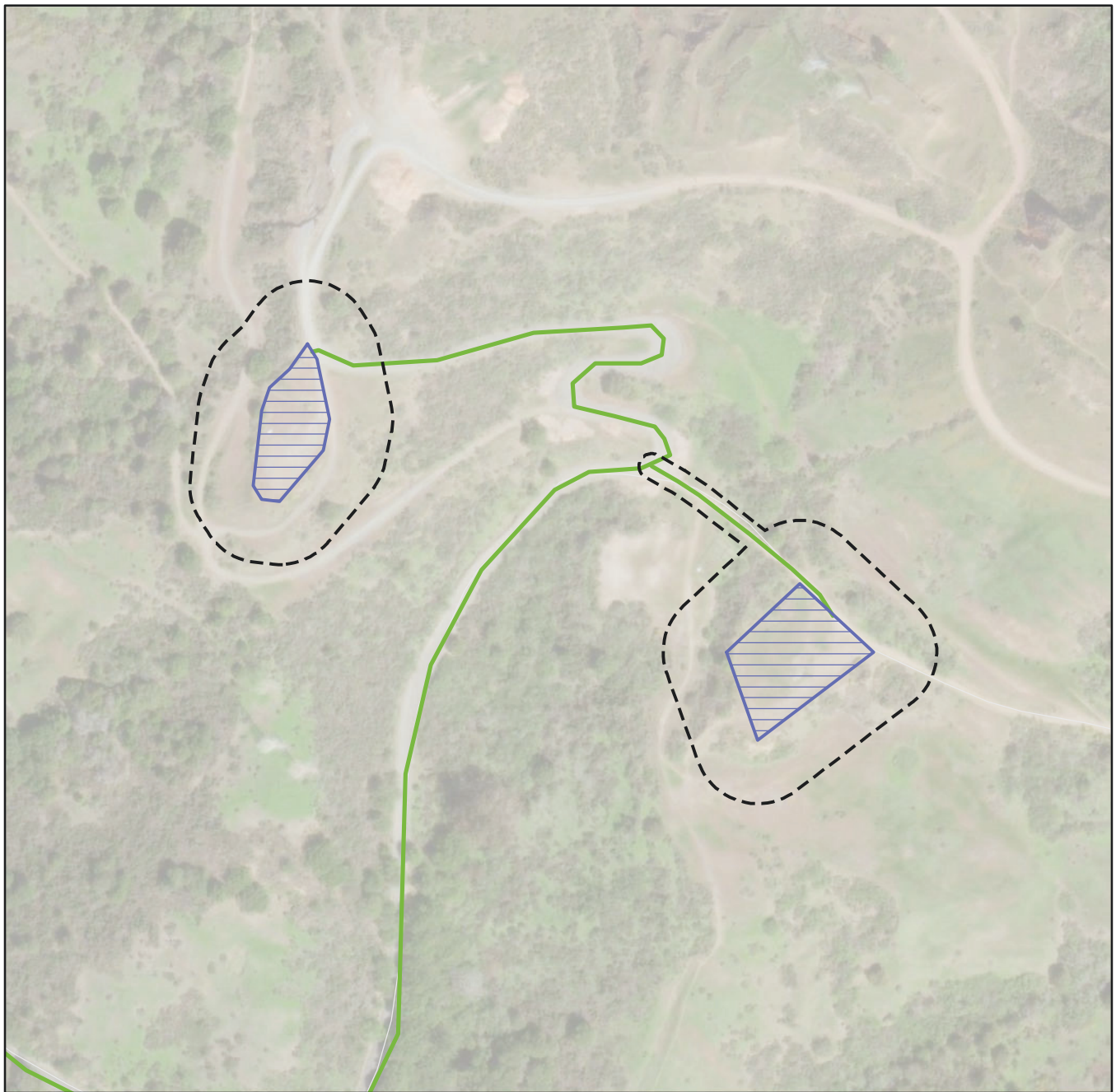
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**Figure 2 Page 5 of 20**  
**Project Elements and**  
**Aquatic Resources Study Area**  
Moraga-Oakland X 115 kV Rebuild Project  
Pacific Gas & Electric Company

**Jacobs**





### Legend

- Aquatic Resources
- Study Area (226.3 acres)

#### Overhead Structures

- Existing
- Proposed

#### Overhead Routes

- Existing
- Proposed
- Guard Pole

#### Access

- Existing

#### Temporary Work Areas

- Landing Zone/ Staging Area

Preliminary and Subject to Change  
Based on CPUC Requirements,  
Final Engineering, and Other Factors

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**Figure 2 Page 6 of 20**  
**Project Elements and**  
**Aquatic Resources Study Area**  
Moraga-Oakland X 115 kV Rebuild Project  
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## Legend

- Aquatic Resources
- Study Area (226.3 acres)

### Overhead Structures

- Existing
- Proposed

### Overhead Routes

- Existing
- Proposed
- Guard Pole

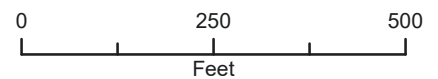
### Access

- Existing

### Temporary Work Areas

- Landing Zone/ Staging Area
- Tension Pull Site
- Work Area

Preliminary and Subject to Change  
Based on CPUC Requirements,  
Final Engineering, and Other Factors



**Figure 2 Page 7 of 20**  
**Project Elements and**  
**Aquatic Resources Study Area**  
Moraga-Oakland X 115 kV Rebuild Project  
Pacific Gas & Electric Company

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## Legend

- Aquatic Resources
- Study Area (226.3 acres)

### Overhead Structures

- Existing
- Proposed

### Overhead Routes

- Existing
- Proposed
- Guard Pole

### Access

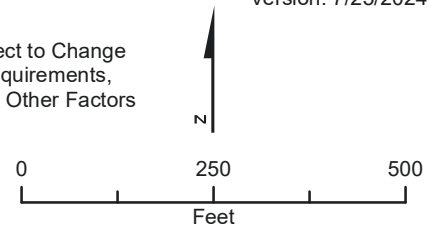
- Existing
- Improvement
- ⋯ Walk-In

### Temporary Work Areas

- Landing Zone/ Staging Area
- Staging Area
- Work Area

Preliminary and Subject to Change  
Based on CPUC Requirements,  
Final Engineering, and Other Factors

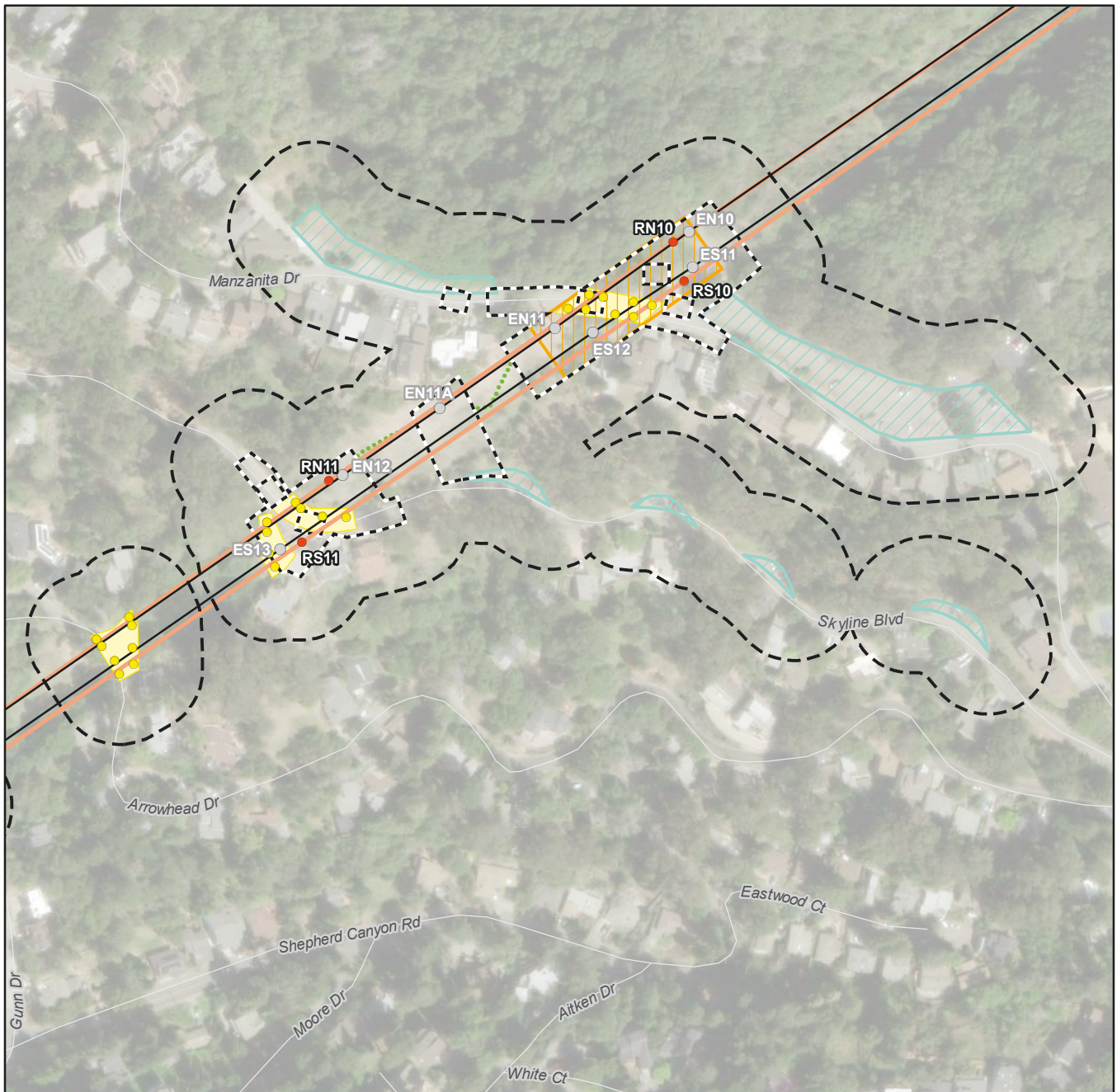
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**Project Elements and**  
**Aquatic Resources Study Area**  
Moraga-Oakland X 115 kV Rebuild Project  
Pacific Gas & Electric Company

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## Legend

- Aquatic Resources
- Study Area (226.3 acres)

### Overhead Structures

- Existing
- Proposed

### Overhead Routes

- Existing
- Proposed
- Guard Pole

### Access

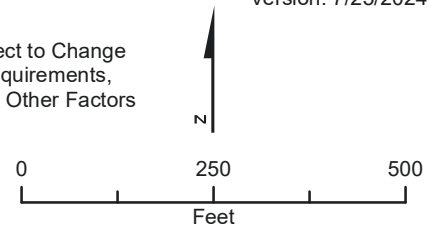
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### Temporary Work Areas

- Guard Poles
- Staging Area
- Tension Pull Site
- Work Area

Preliminary and Subject to Change  
Based on CPUC Requirements,  
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**Figure 2 Page 9 of 20**  
**Project Elements and**  
**Aquatic Resources Study Area**  
Moraga-Oakland X 115 kV Rebuild Project  
Pacific Gas & Electric Company

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## Legend

- Aquatic Resources
- Study Area (226.3 acres)

### Overhead Structures

- Existing
- Proposed

### Overhead Routes

- Existing
- Proposed
- Guard Pole

### Access

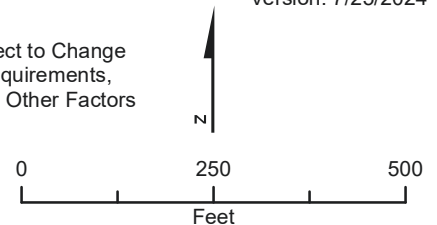
- Improvement

### Temporary Work Areas

- Fence Removal/Replacement
- Guard Poles
- Staging Area
- Work Area

Preliminary and Subject to Change  
Based on CPUC Requirements,  
Final Engineering, and Other Factors

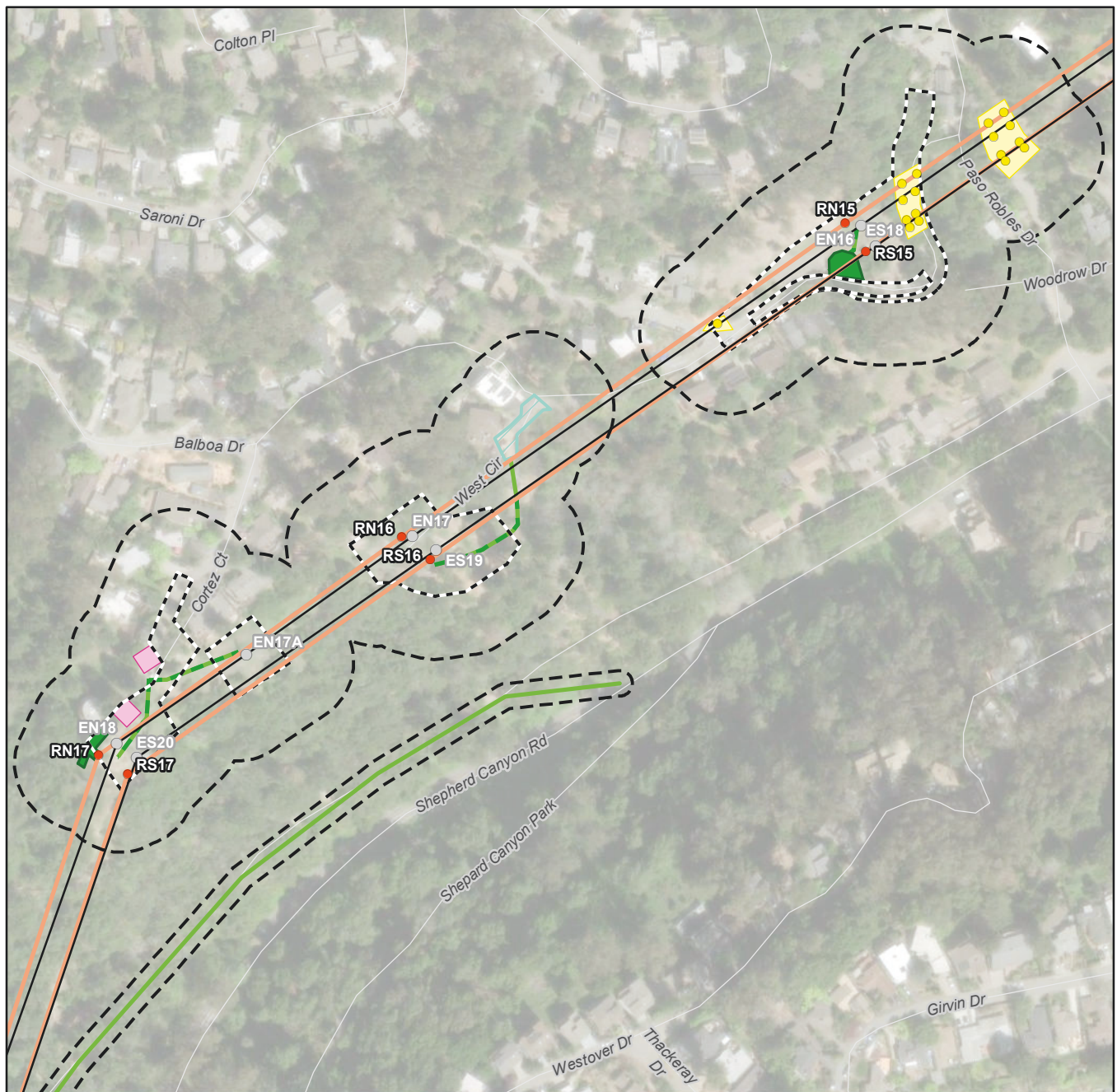
Version: 7/25/2024



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**Project Elements and**  
**Aquatic Resources Study Area**  
Moraga-Oakland X 115 kV Rebuild Project  
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## Legend

- Aquatic Resources
- Study Area (226.3 acres)

### Overhead Structures

- Existing
- Proposed

### Overhead Routes

- Existing
- Proposed
- Guard Pole

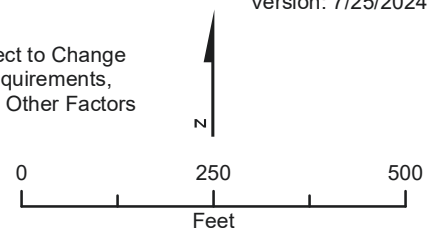
### Access

- Existing
- Improvement

### Temporary Work Areas

- Crane Pad
- Guard Poles
- Staging Area
- Work Area
- Veg Work/Tree Removal

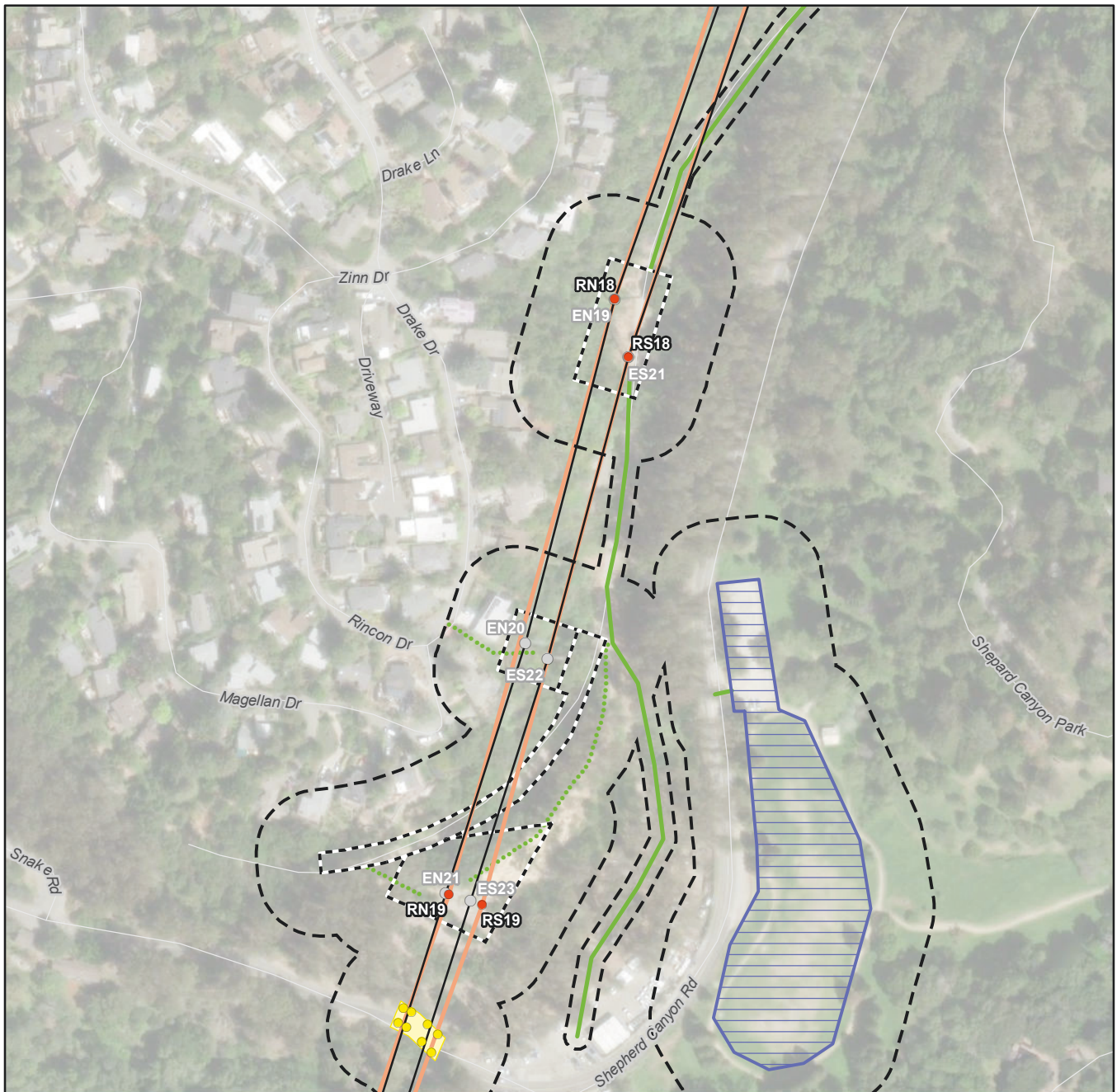
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Based on CPUC Requirements,  
Final Engineering, and Other Factors



**Figure 2 Page 11 of 20**  
**Project Elements and**  
**Aquatic Resources Study Area**  
Moraga-Oakland X 115 kV Rebuild Project  
Pacific Gas & Electric Company

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## Legend

- Aquatic Resources
- Study Area (226.3 acres)

### Overhead Structures

- Existing
- Proposed

### Overhead Routes

- Existing
- Proposed
- Guard Pole

### Access

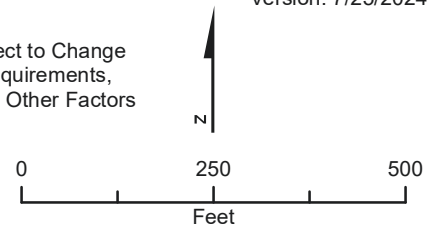
- Existing
- ⋯ Walk-In

### Temporary Work Areas

- Guard Poles
- Landing Zone/ Staging Area
- Work Area

Preliminary and Subject to Change  
Based on CPUC Requirements,  
Final Engineering, and Other Factors

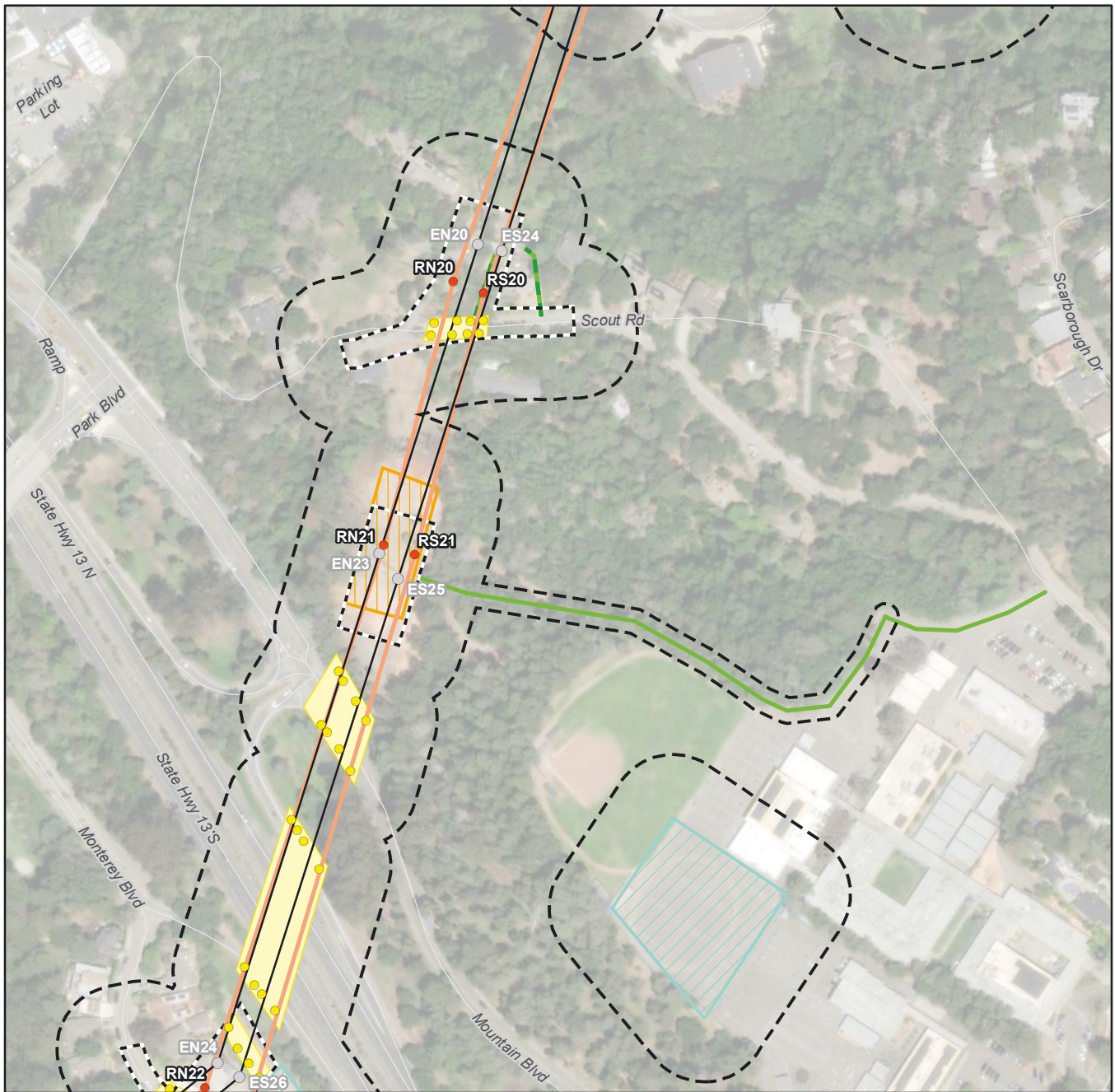
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**Figure 2 Page 12 of 20**  
**Project Elements and**  
**Aquatic Resources Study Area**  
Moraga-Oakland X 115 kV Rebuild Project  
Pacific Gas & Electric Company

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Version: 7/25/2024

## Legend

- Aquatic Resources
- Study Area (226.3 acres)

### Overhead Structures

- Existing
- Proposed

### Overhead Routes

- Existing
- Proposed
- Guard Pole

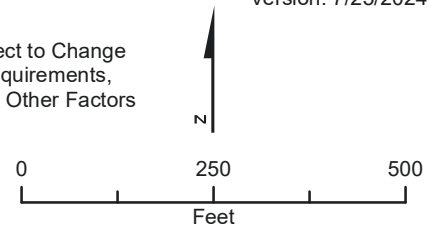
### Access

- Existing
- Improvement

### Temporary Work Areas

- Guard Poles
- Staging Area
- Tension Pull Site
- Work Area

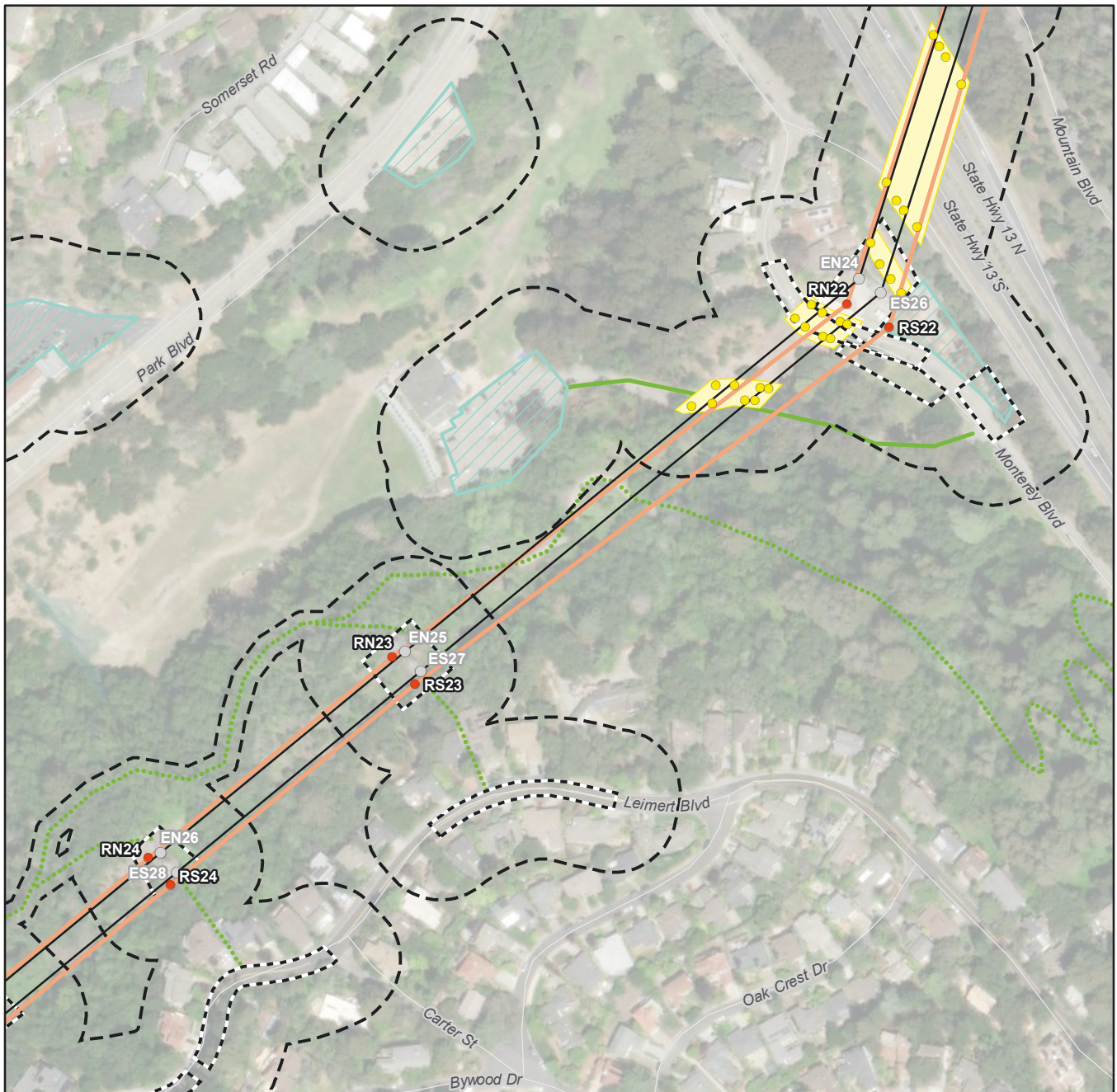
Preliminary and Subject to Change  
Based on CPUC Requirements,  
Final Engineering, and Other Factors



**Figure 2 Page 13 of 20**  
**Project Elements and**  
**Aquatic Resources Study Area**  
Moraga-Oakland X 115 kV Rebuild Project  
Pacific Gas & Electric Company

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## Legend

- Aquatic Resources
- Study Area (226.3 acres)

### Overhead Structures

- Existing
- Proposed

### Overhead Routes

- Existing
- Proposed
- Guard Pole

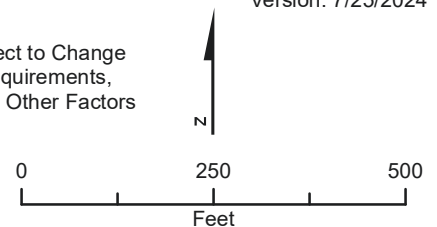
### Access

- Existing
- ⋯ Walk-In

### Temporary Work Areas

- Guard Poles
- Staging Area
- Work Area

Preliminary and Subject to Change  
Based on CPUC Requirements,  
Final Engineering, and Other Factors



**Figure 2 Page 14 of 20**  
**Project Elements and**  
**Aquatic Resources Study Area**  
Moraga-Oakland X 115 kV Rebuild Project  
Pacific Gas & Electric Company

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Version: 7/25/2024

## Legend

- Aquatic Resources
- Study Area (226.3 acres)

### Overhead Structures

- Existing
- Proposed

### Overhead Routes

- Existing
- Proposed
- Guard Pole

### Underground Routes

- Proposed

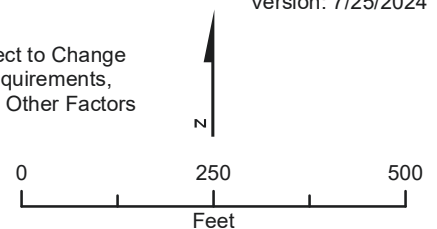
### Access

- Existing
- Improvement
- ⋯ Walk-In

### Temporary Work Areas

- Guard Poles
- Tension Pull Site
- Work Area
- 4 Lane Work Area Option
- EB Work Area Option
- Move Distribution Pole Option

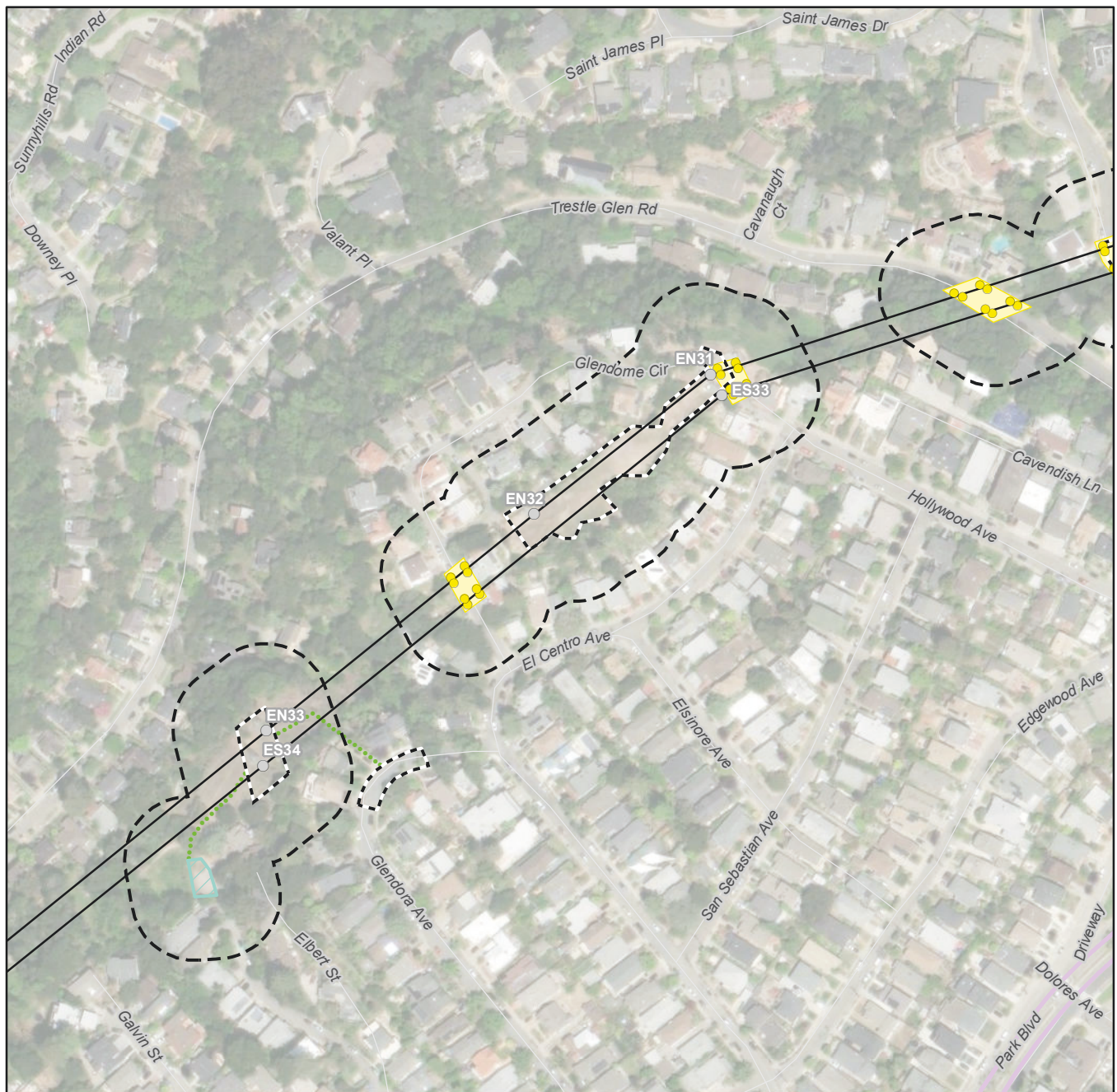
Preliminary and Subject to Change  
Based on CPUC Requirements,  
Final Engineering, and Other Factors



**Figure 2 Page 16 of 20**  
**Project Elements and**  
**Aquatic Resources Study Area**  
Moraga-Oakland X 115 kV Rebuild Project  
Pacific Gas & Electric Company

**Jacobs**





Version: 7/25/2024

## Legend

- Aquatic Resources
- Study Area (226.3 acres)

### Overhead Structures

- Existing
- Proposed

### Overhead Routes

- Existing
- Proposed
- Guard Pole

### Underground Routes

- Proposed

### Access

- ..... Walk-In

### Temporary Work Areas

- Guard Poles
- Staging Area
- Work Area

Preliminary and Subject to Change  
Based on CPUC Requirements,  
Final Engineering, and Other Factors



**Figure 2 Page 17 of 20**  
**Project Elements and**  
**Aquatic Resources Study Area**  
Moraga-Oakland X 115 kV Rebuild Project  
Pacific Gas & Electric Company

**Jacobs**





## Legend

- Aquatic Resources
- Study Area (226.3 acres)

### Overhead Structures

- Existing
- Proposed

### Overhead Routes

- Existing
- Proposed
- Guard Pole

### Underground Routes

- Proposed

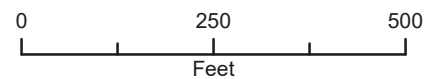
### Access

- Walk-In

### Temporary Work Areas

- Guard Poles
- Staging Area
- Work Area

Preliminary and Subject to Change  
Based on CPUC Requirements,  
Final Engineering, and Other Factors

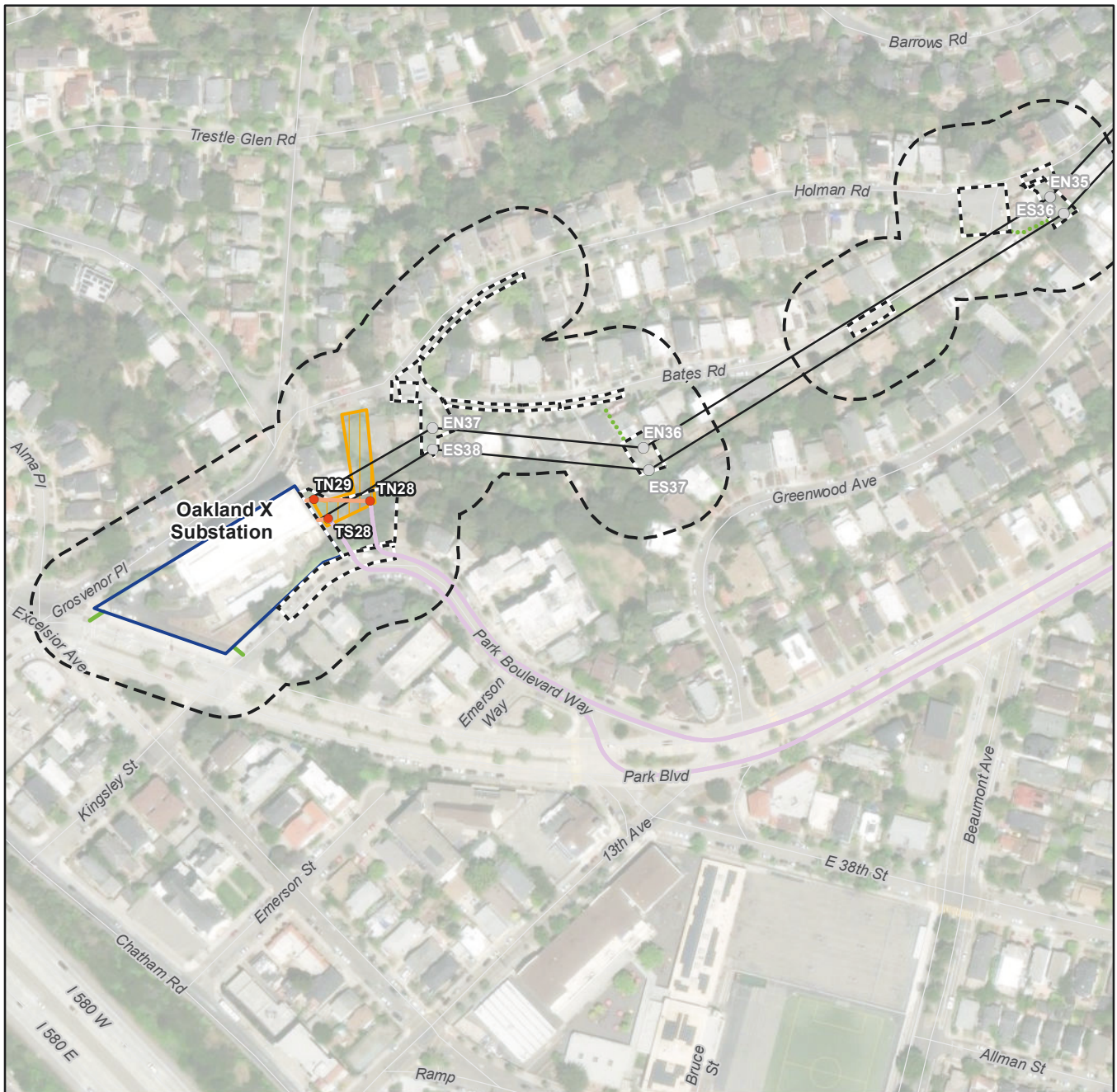


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**Figure 2 Page 18 of 20**  
**Project Elements and**  
**Aquatic Resources Study Area**  
Moraga-Oakland X 115 kV Rebuild Project  
Pacific Gas & Electric Company

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## Legend

- Aquatic Resources
- Study Area (226.3 acres)

### Overhead Structures

- Existing
- Proposed

### Overhead Routes

- Existing
- Proposed
- Guard Pole

### Underground Routes

- Proposed

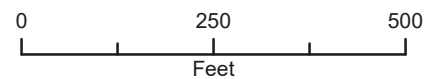
### Access

- Existing
- ⋯ Walk-In

### Temporary Work Areas

- Substation Work Area
- Tension Pull Site
- Work Area

Preliminary and Subject to Change  
Based on CPUC Requirements,  
Final Engineering, and Other Factors



**Figure 2 Page 19 of 20**  
**Project Elements and**  
**Aquatic Resources Study Area**  
Moraga-Oakland X 115 kV Rebuild Project  
Pacific Gas & Electric Company

**Jacobs**





Version: 7/25/2024

## Legend

- Aquatic Resources
- Study Area (226.3 acres)

### Overhead Structures

- Existing
- Proposed

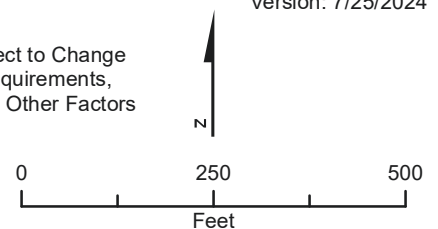
### Overhead Routes

- Existing
- Proposed
- Guard Pole

### Temporary Work Areas

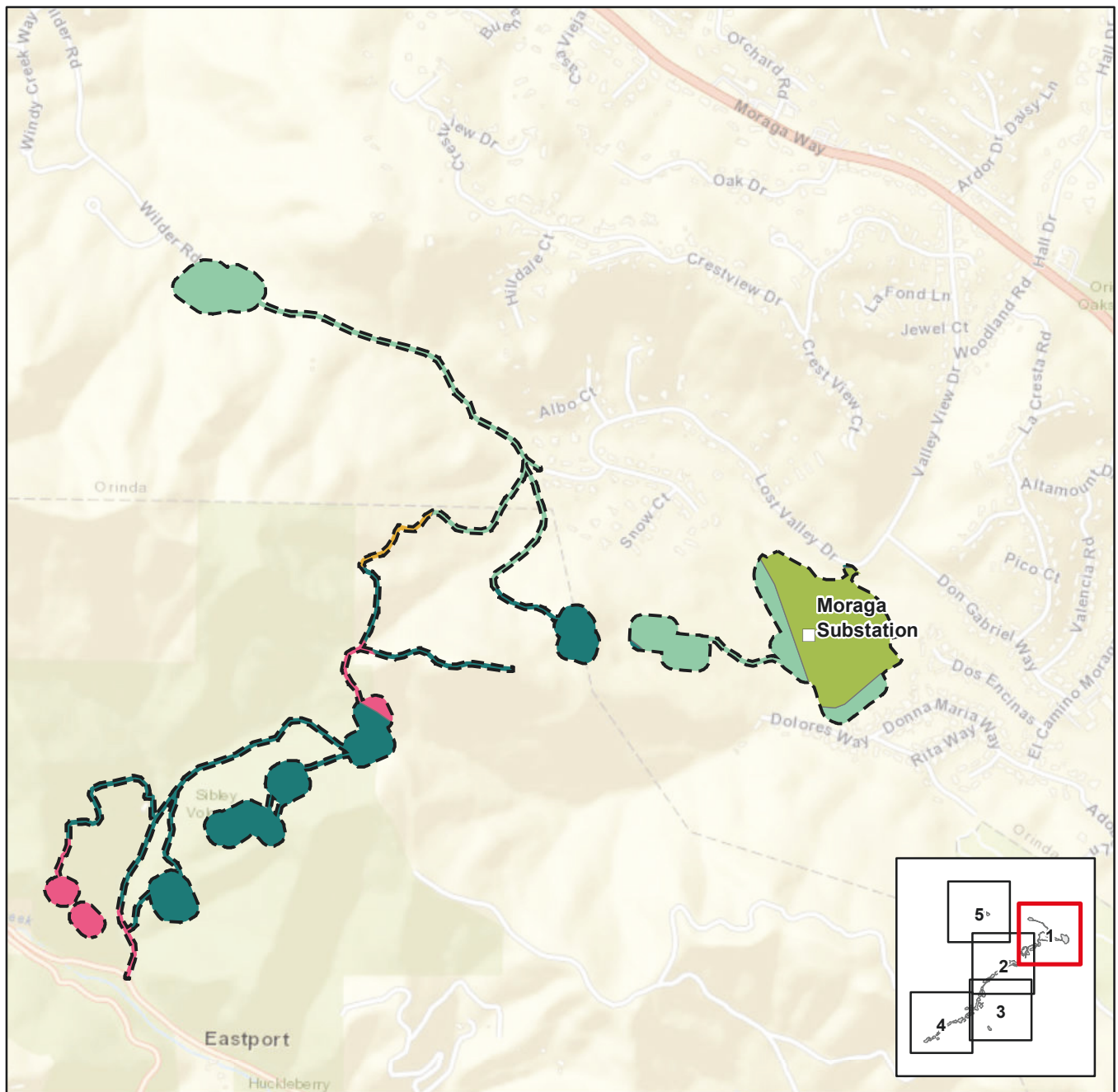
- Staging Area

Preliminary and Subject to Change  
Based on CPUC Requirements,  
Final Engineering, and Other Factors



**Figure 2 Page 20 of 20**  
**Project Elements and**  
**Aquatic Resources Study Area**  
Moraga-Oakland X 115 kV Rebuild Project  
Pacific Gas & Electric Company

**Jacobs**



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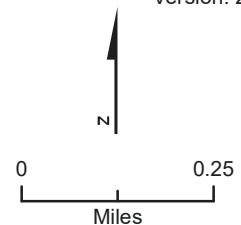
## Legend

Aquatic Resources Study Area (226.3 acres)

### Soils

- 126: Maymen loam, 30 to 75 percent slopes
- 127: Maymen-Los Gatos complex, 30 to 75 percent slopes, low precipitation, MLRA 15
- 149: Urban land-Danville complex
- 152: Urban land-Tierra complex, 15 to 30 percent slopes
- 158: Xerorthents-Los Osos complex, 30 to 50 percent slopes
- 159: Xerorthents-Millsholm complex, 30 to 50 percent slopes

- CkB: Cropley clay, 2 to 5 percent slopes
- DdE: Diablo clay, 15 to 30 percent slopes, MLRA 15
- LcF: Lodo clay loam, 30 to 50 percent slopes, very rocky, MLRA 15
- LhF: Los Osos clay loam, 30 to 50 percent slopes
- MeG: Millsholm loam, 20 to 60 percent slopes, moist, MLRA 15
- MeGcc: Millsholm loam, 20 to 60 percent slopes, moist, MLRA 15
- Qa: Quarry

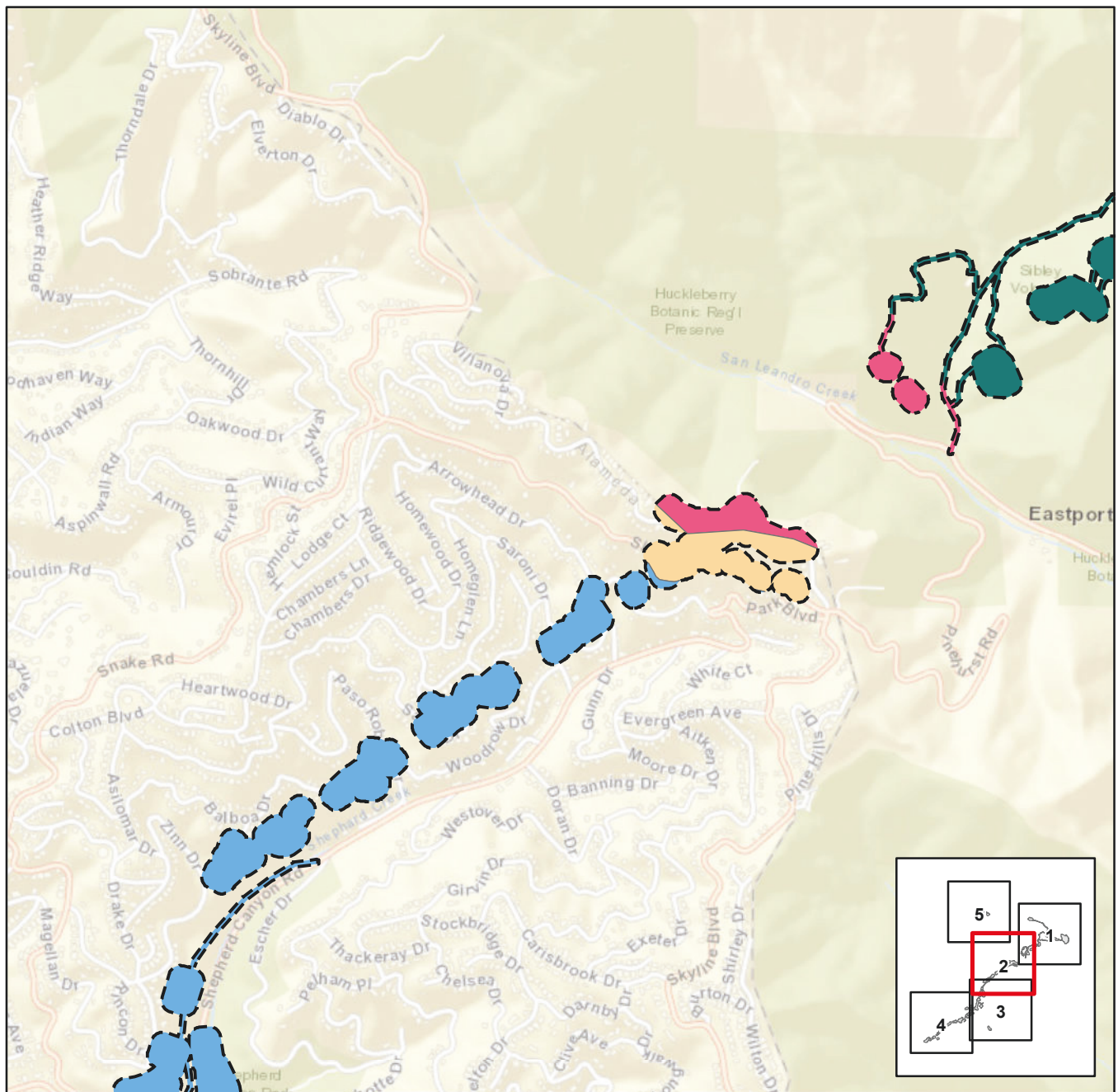


**Figure 3. Page 1 of 5**  
**NRCS Soil Series within the**  
**Aquatic Resources Study Area**  
 Moraga-Oakland X 115 kV Rebuild Project  
 Pacific Gas & Electric Company

*Preliminary and Subject to Change Based on CPUC Requirements, Final Engineering, and Other Factors*

**Jacobs**





Version: 2/1/2024

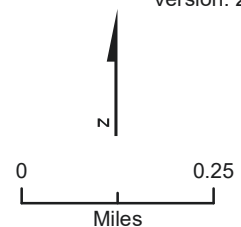
## Legend

Aquatic Resources Study Area (226.3 acres)

### Soils

- 126: Maymen loam, 30 to 75 percent slopes
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- Qa: Quarry

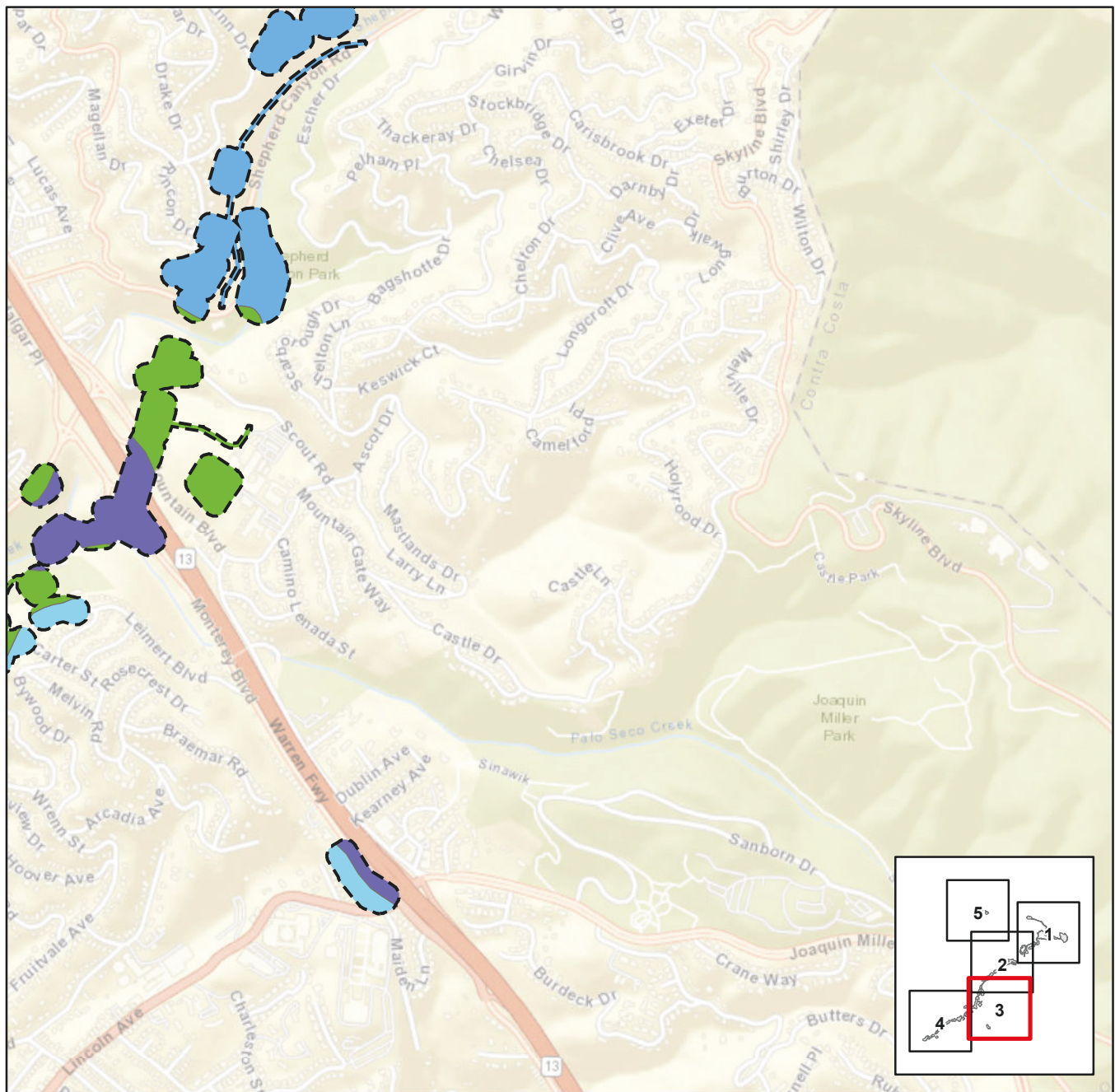


**Figure 3. Page 2 of 5**  
**NRCS Soil Series within the**  
**Aquatic Resources Study Area**  
 Moraga-Oakland X 115 kV Rebuild Project  
 Pacific Gas & Electric Company

*Preliminary and Subject to Change Based on CPUC Requirements, Final Engineering, and Other Factors*

**Jacobs**





Version: 2/1/2024

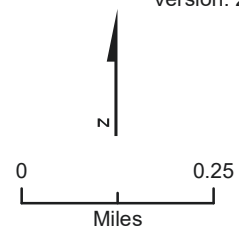
## Legend

Aquatic Resources Study Area (226.3 acres)

### Soils

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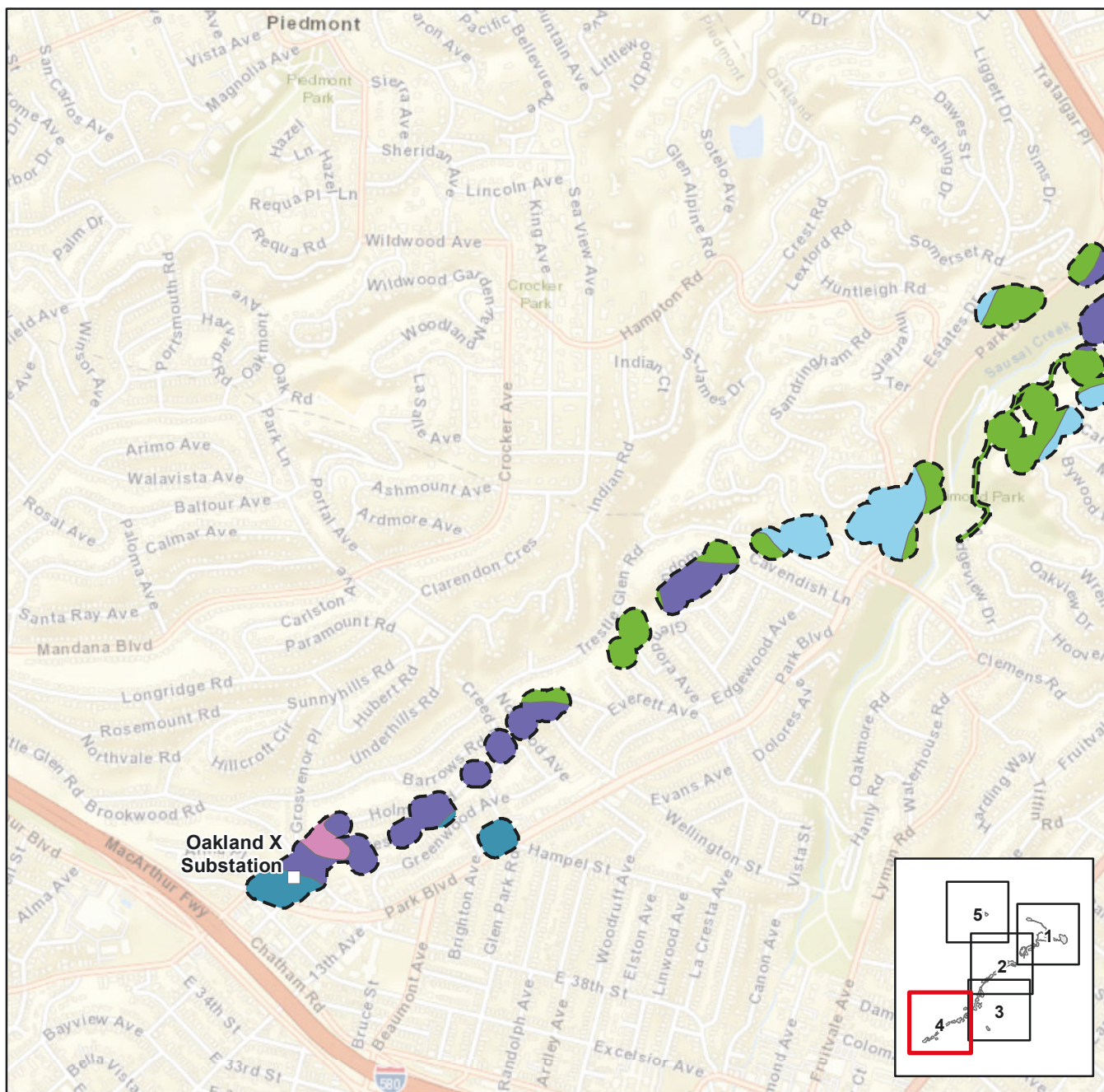
- CkB: Cropley clay, 2 to 5 percent slopes
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- MeGcc: Millsholm loam, 20 to 60 percent slopes, moist, MLRA 15
- Qa: Quarry



**Figure 3. Page 3 of 5**  
**NRCS Soil Series within the**  
**Aquatic Resources Study Area**  
 Moraga-Oakland X 115 kV Rebuild Project  
 Pacific Gas & Electric Company

*Preliminary and Subject to Change Based on CPUC Requirements, Final Engineering, and Other Factors*

**Jacobs**



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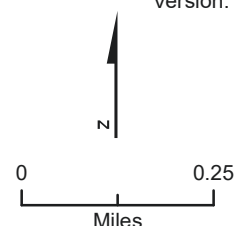
## Legend

Aquatic Resources Study Area (226.3 acres)

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- Qa: Quarry

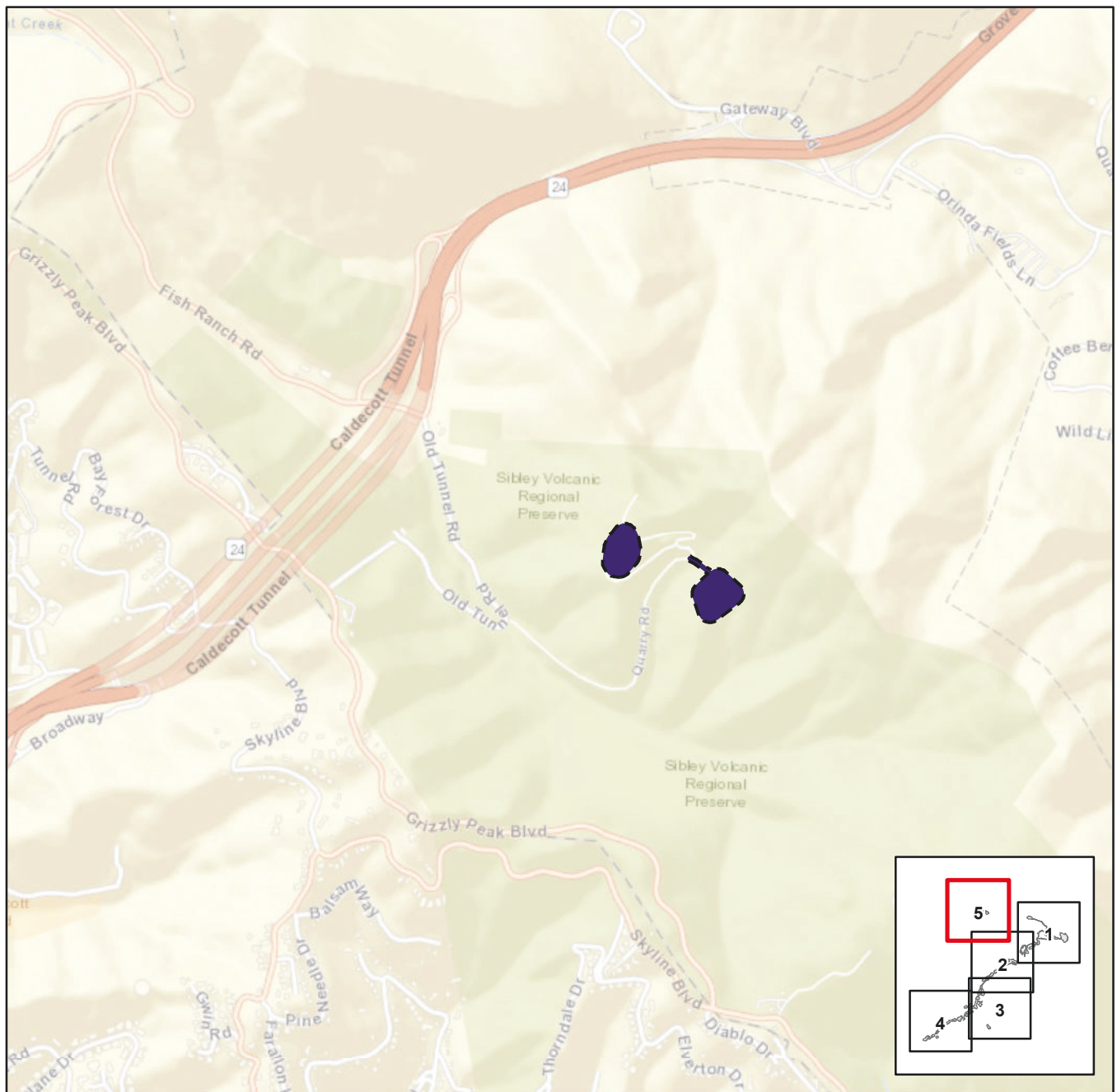


**Figure 3. Page 4 of 5**  
**NRCS Soil Series within the**  
**Aquatic Resources Study Area**  
 Moraga-Oakland X 115 kV Rebuild Project  
 Pacific Gas & Electric Company

*Preliminary and Subject to Change Based on CPUC Requirements, Final Engineering, and Other Factors*

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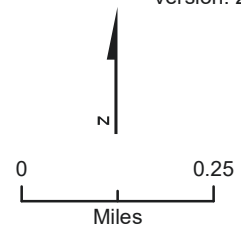
## Legend

Aquatic Resources Study Area (226.3 acres)

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- MeG: Millsholm loam, 20 to 60 percent slopes, moist, MLRA 15
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- Qa: Quarry

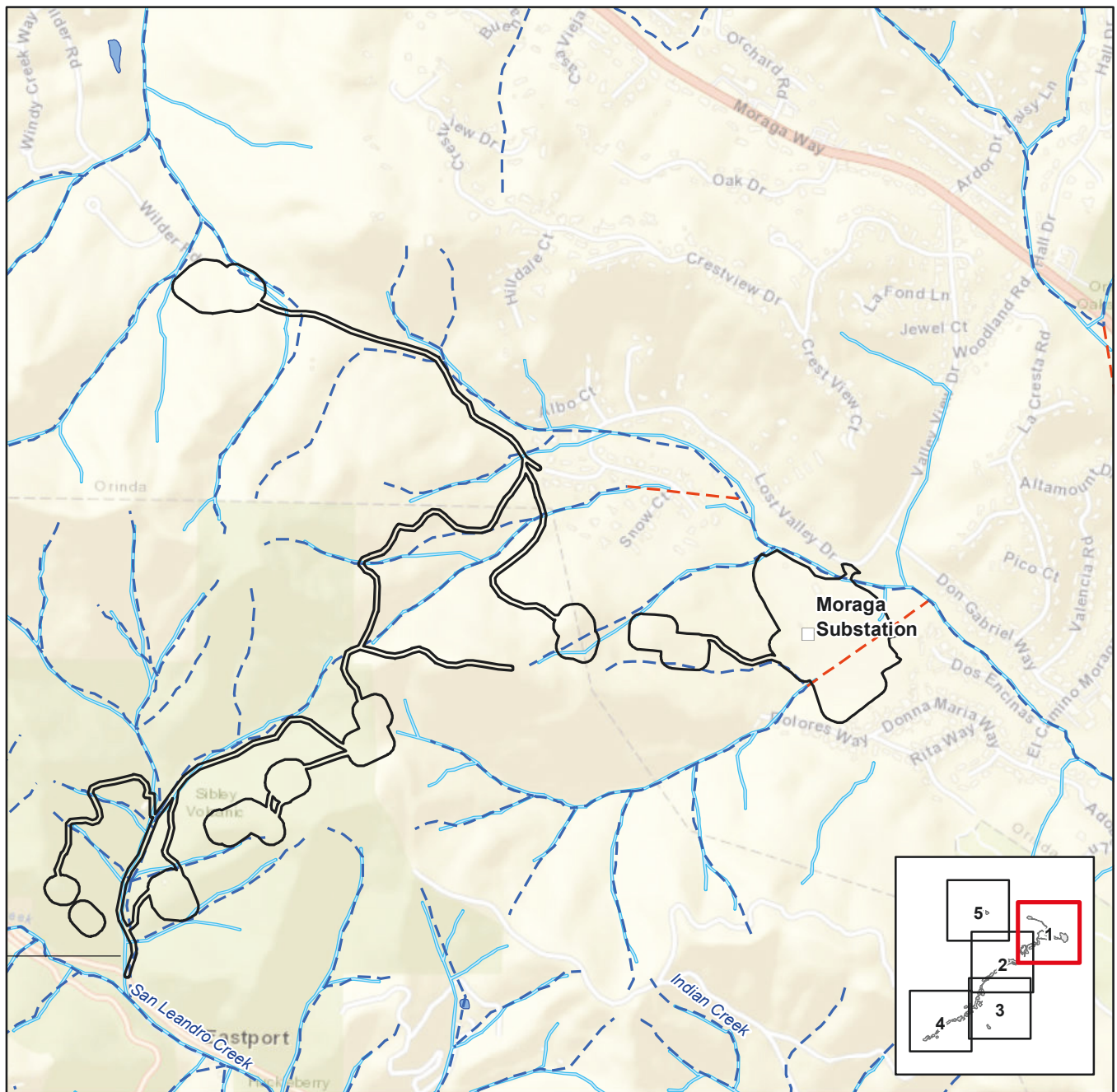


**Figure 3. Page 5 of 5**  
**NRCS Soil Series within the**  
**Aquatic Resources Study Area**  
 Moraga-Oakland X 115 kV Rebuild Project  
 Pacific Gas & Electric Company

*Preliminary and Subject to Change Based on CPUC Requirements, Final Engineering, and Other Factors*

**Jacobs**





### Legend

Aquatic Resources Study Area (226.3 acres)

### National Hydrography Dataset

Culvert

Pipeline

Stream

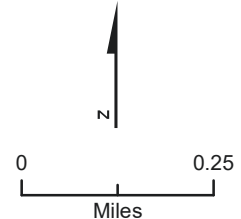
### National Wetlands Inventory

Freshwater Emergent Wetland

Freshwater Pond

Riverine

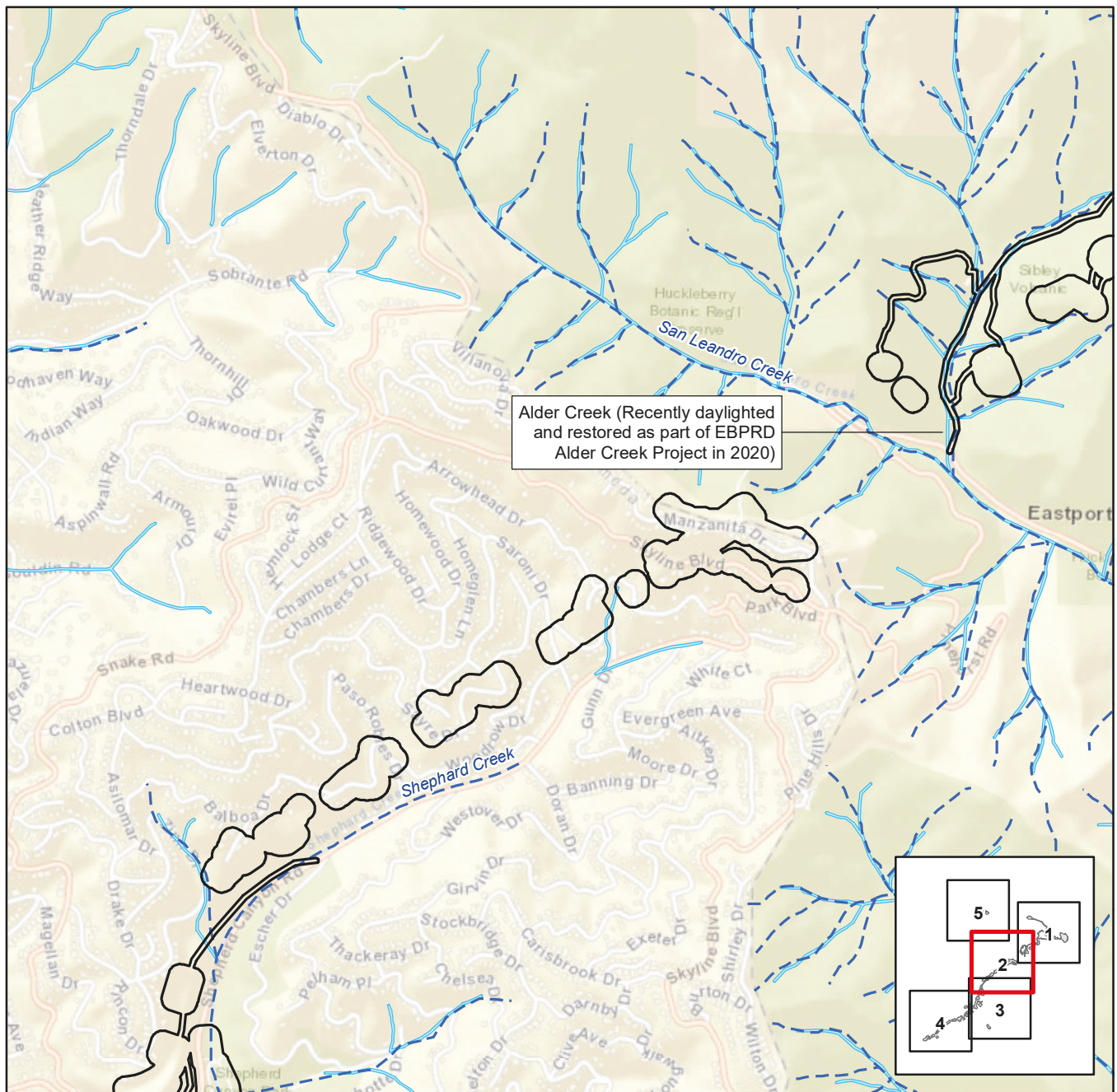
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**Figure 4. Page 1 of 5**  
**National Hydrography Dataset and**  
**National Wetlands Inventory**  
 Moraga-Oakland X 115 kV Rebuild Project  
 Pacific Gas & Electric Company

*Preliminary and Subject to Change Based on CPUC Requirements, Final Engineering, and Other Factors*

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Version: 2/1/2024

### Legend

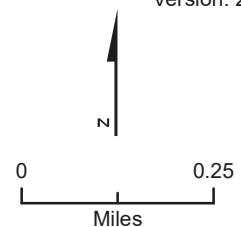
Aquatic Resources Study Area (226.3 acres)

#### National Hydrography Dataset

- Culvert
- Pipeline
- Stream

#### National Wetlands Inventory

- Freshwater Emergent Wetland
- Freshwater Pond
- Riverine

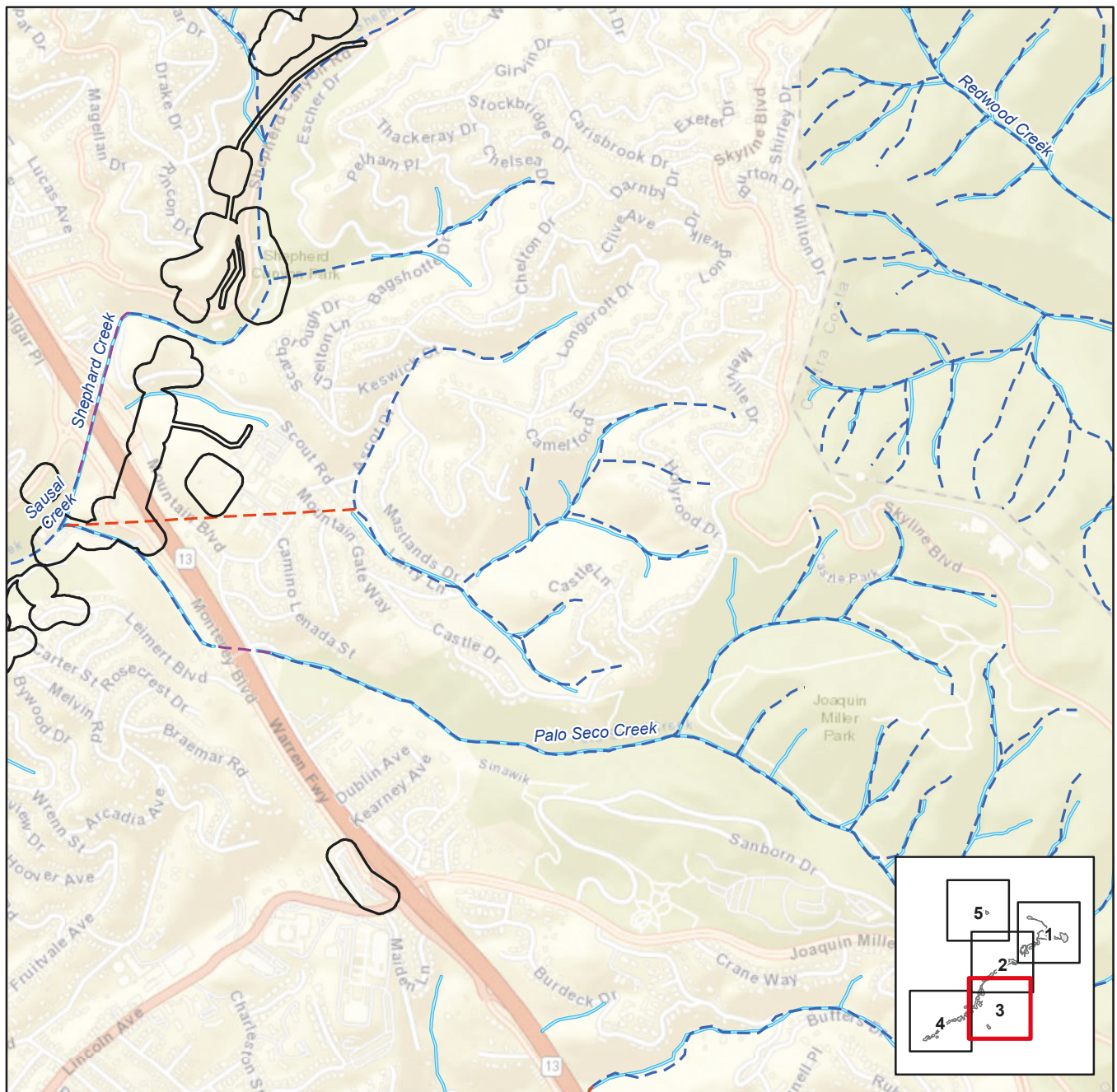


**Figure 4. Page 2 of 5**  
**National Hydrography Dataset and**  
**National Wetlands Inventory**  
 Moraga-Oakland X 115 kV Rebuild Project  
 Pacific Gas & Electric Company

*Preliminary and Subject to Change Based on CPUC Requirements, Final Engineering, and Other Factors*

**Jacobs**





Version: 2/1/2024

### Legend

Aquatic Resources Study Area (226.3 acres)

#### National Hydrography Dataset

Culvert

Pipeline

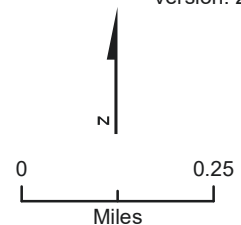
Stream

#### National Wetlands Inventory

Freshwater Emergent Wetland

Freshwater Pond

Riverine

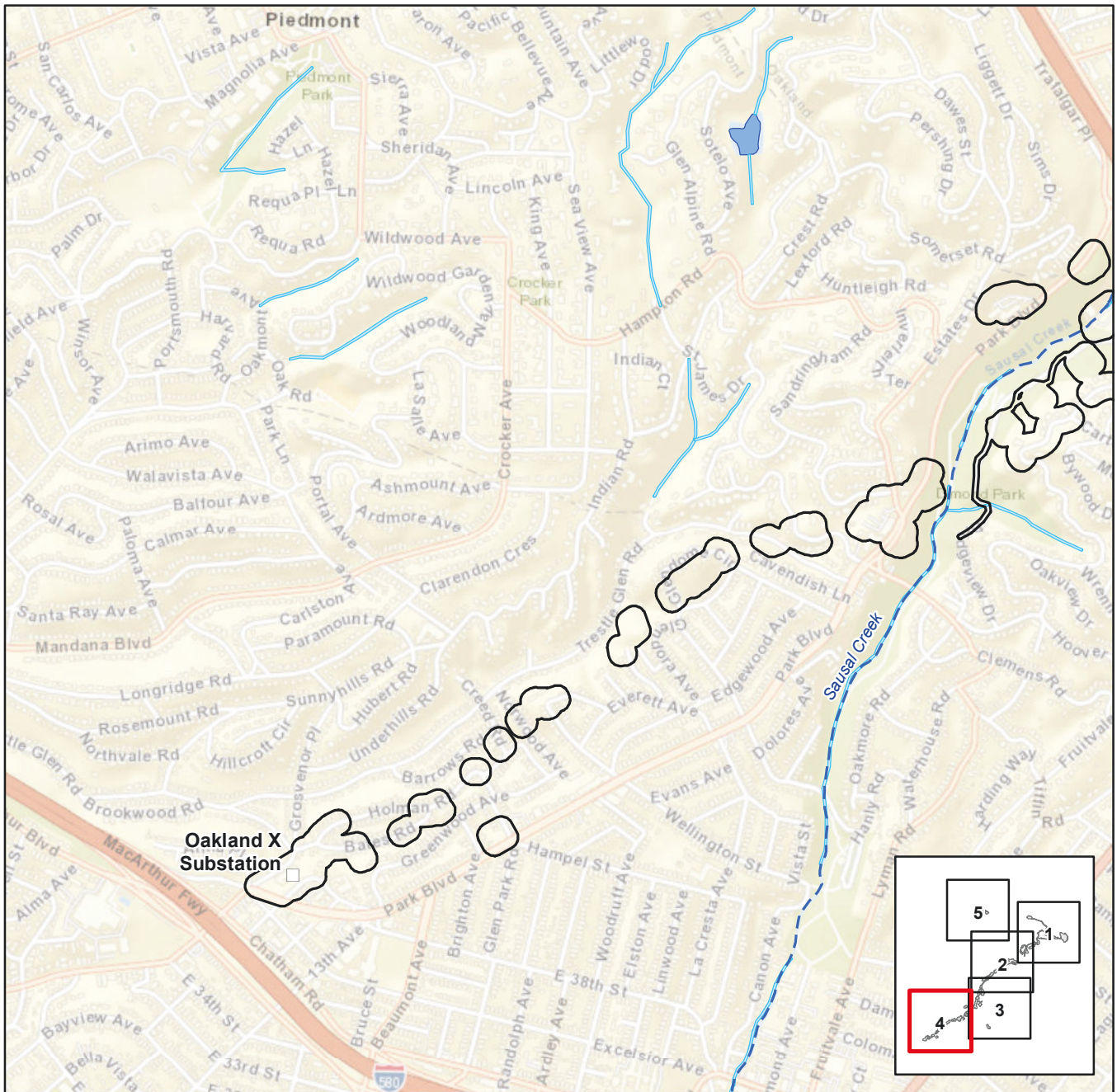


**Figure 4. Page 3 of 5**  
**National Hydrography Dataset and**  
**National Wetlands Inventory**  
 Moraga-Oakland X 115 kV Rebuild Project  
 Pacific Gas & Electric Company

*Preliminary and Subject to Change Based on CPUC Requirements, Final Engineering, and Other Factors*

**Jacobs**





Version: 2/1/2024

### Legend

Aquatic Resources Study Area (226.3 acres)

#### National Hydrography Dataset

— Culvert

— Pipeline

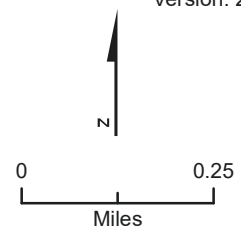
— Stream

#### National Wetlands Inventory

Freshwater Emergent Wetland

Freshwater Pond

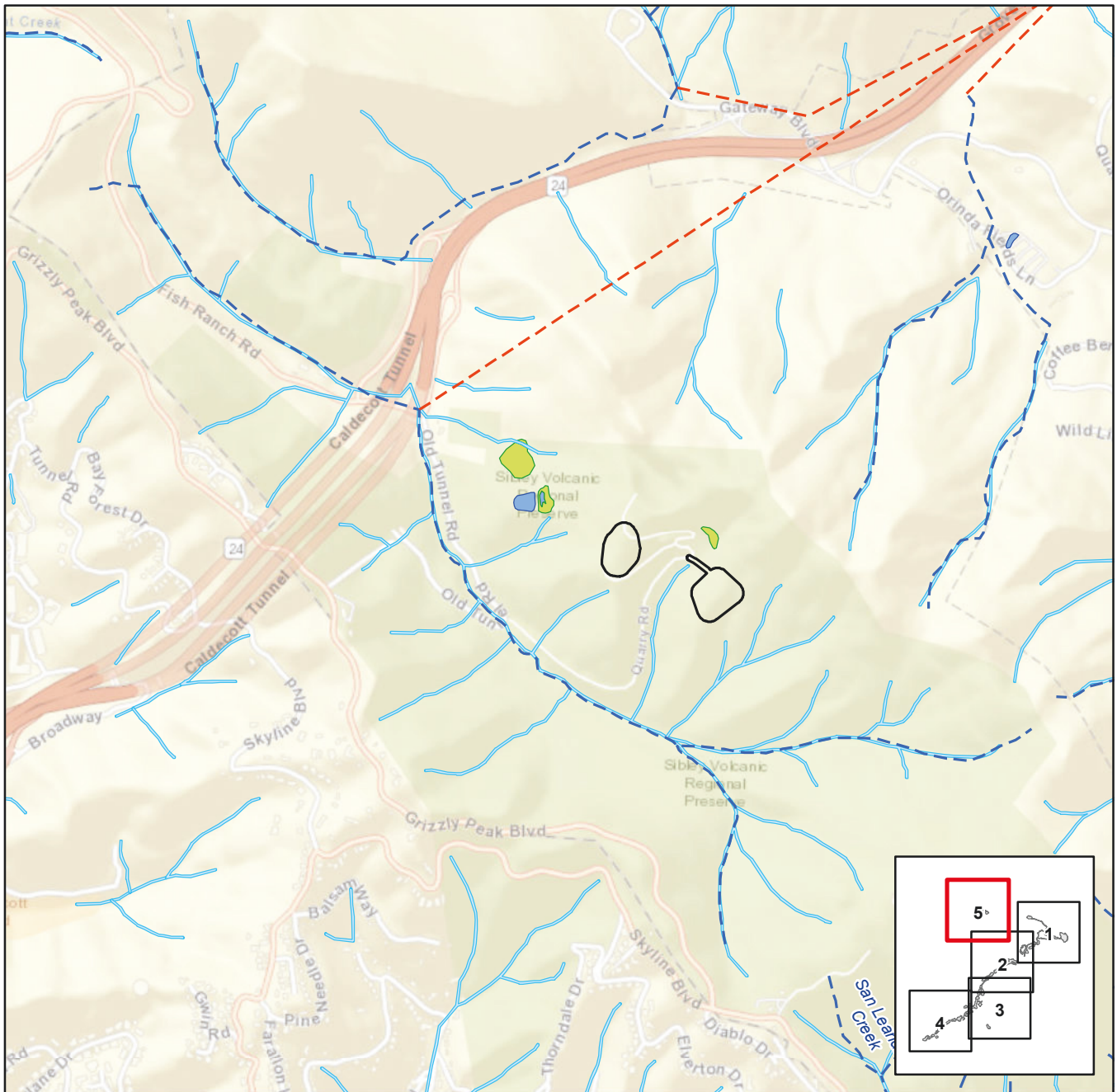
Riverine



**Figure 4. Page 4 of 5**  
**National Hydrography Dataset and**  
**National Wetlands Inventory**  
 Moraga-Oakland X 115 kV Rebuild Project  
 Pacific Gas & Electric Company

*Preliminary and Subject to Change Based on CPUC Requirements, Final Engineering, and Other Factors*

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Version: 2/1/2024

### Legend

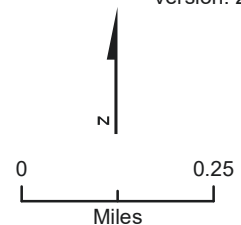
Aquatic Resources Study Area (226.3 acres)

#### National Hydrography Dataset

- Culvert
- Pipeline
- Stream

#### National Wetlands Inventory

- Freshwater Emergent Wetland
- Freshwater Pond
- Riverine

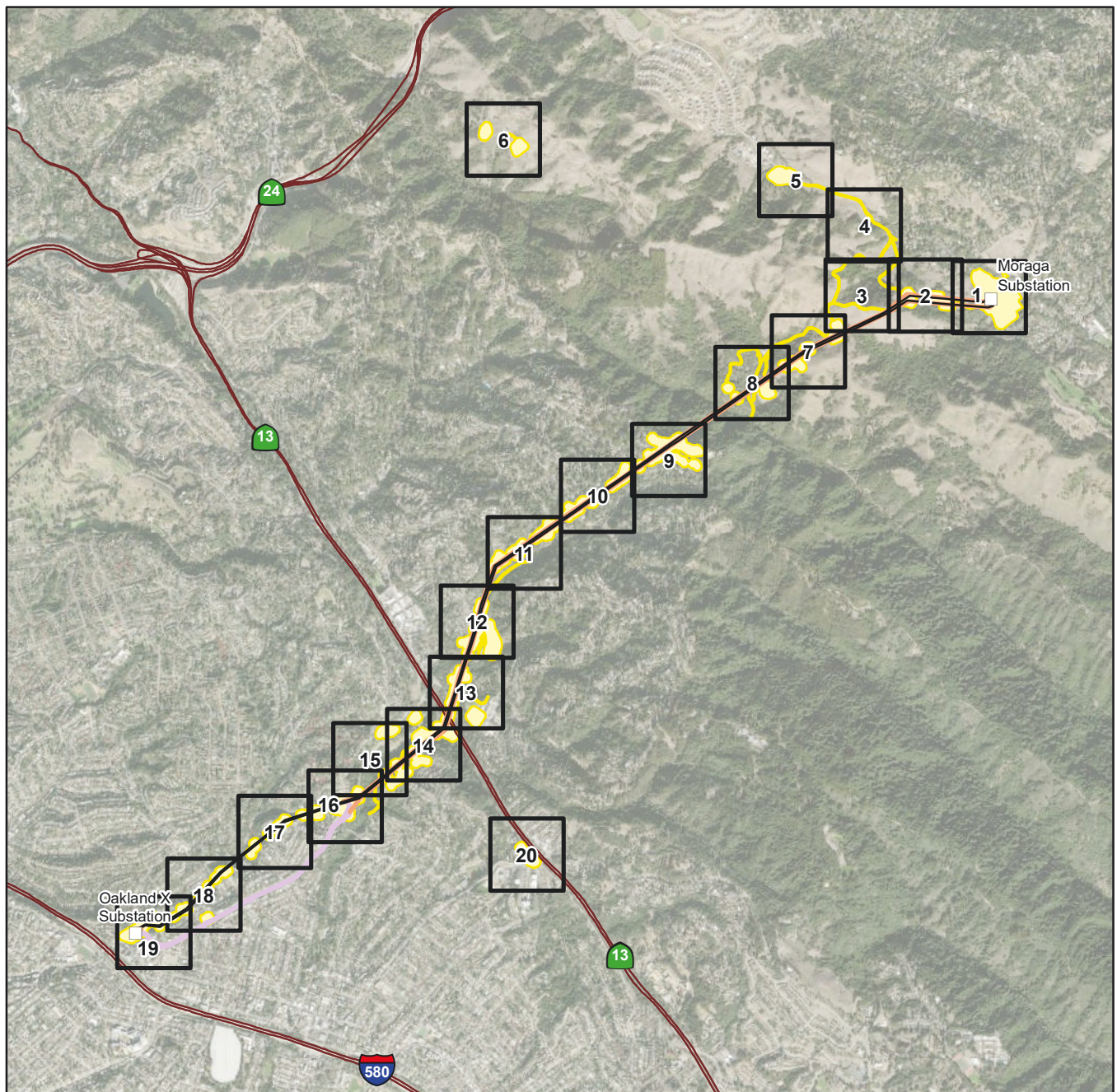


**Figure 4. Page 5 of 5**  
**National Hydrography Dataset and**  
**National Wetlands Inventory**  
 Moraga-Oakland X 115 kV Rebuild Project  
 Pacific Gas & Electric Company

*Preliminary and Subject to Change Based on CPUC Requirements, Final Engineering, and Other Factors*

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Version: 2/1/2024

### Legend

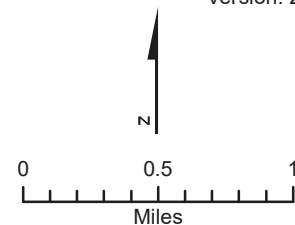
- Detail Map Sheet
- Aquatic Resources
- Study Area (226.3 acres)
- Substation

### Overhead Routes

- Existing
- Proposed

### Underground Routes

- Proposed



**Figure 5 Overview**  
**Aquatic Resources Delineation Map**  
 Moraga-Oakland X 115 kV Rebuild Project  
 Pacific Gas & Electric Company

*Preliminary and Subject to Change Based on CPUC Requirements, Final Engineering, and Other Factors*

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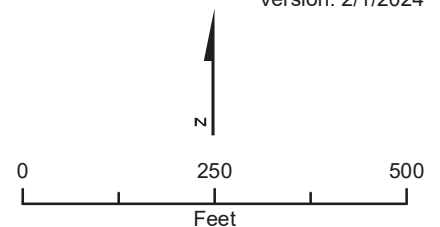
Version: 2/1/2024

### Legend

- Aquatic Resources Study Area (226.3 ac)
- Photo Location with View Direction
- Sample Point
- OHWM Transect
- Constructed Wetland/Stormwater BMP

### Aquatic Resources

- Other Waters (0.387 ac; 2,159 lf)
- Wetlands (0.133 ac)
- ⋯ Culverted Waters (1,514 lf)
- ➔ Flow Direction



**Figure 5 Page 1 of 20**  
**Aquatic Resources Delineation Map**  
 Moraga-Oakland X 115 kV Rebuild Project  
 Pacific Gas & Electric Company

### Notes:

ac = acres Preliminary and Subject to Change Based on CPUC Requirements, Final Engineering, and Other Factors  
 lf = linear feet

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**Jacobs**



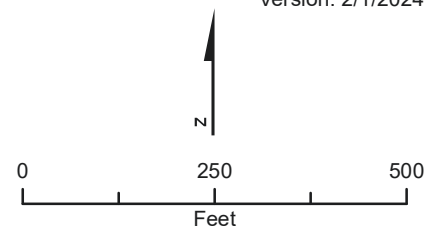
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### Legend

- Aquatic Resources Study Area (226.3 ac)
- Photo Location with View Direction
- Sample Point
- OHWM Transect
- Constructed Wetland/Stormwater BMP

### Aquatic Resources

- Other Waters (0.387 ac; 2,159 lf)
- Wetlands (0.133 ac)
- ..... Culverted Waters (1,514 lf)
- Flow Direction



**Figure 5 Page 2 of 20**  
**Aquatic Resources Delineation Map**  
 Moraga-Oakland X 115 kV Rebuild Project  
 Pacific Gas & Electric Company

### Notes:

ac = acres    *Preliminary and Subject to Change Based on CPUC Requirements, Final Engineering, and Other Factors*  
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**Jacobs**





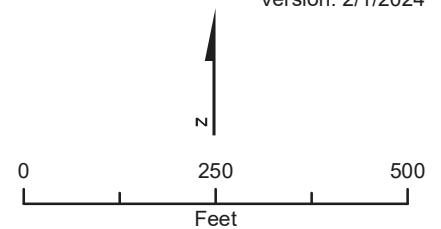
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### Legend

- Aquatic Resources Study Area (226.3 ac)
- Photo Location with View Direction
- Sample Point
- OHWM Transect
- Constructed Wetland/Stormwater BMP

### Aquatic Resources

- Other Waters (0.387 ac; 2,159 lf)
- Wetlands (0.133 ac)
- ⋯ Culverted Waters (1,514 lf)
- ➔ Flow Direction



**Figure 5 Page 3 of 20**  
**Aquatic Resources Delineation Map**  
 Moraga-Oakland X 115 kV Rebuild Project  
 Pacific Gas & Electric Company

### Notes:

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 lf = linear feet

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**Jacobs**





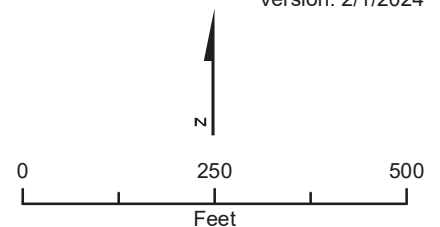
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### Legend

- Aquatic Resources Study Area (226.3 ac)
- Photo Location with View Direction
- Sample Point
- OHWM Transect
- Constructed Wetland/Stormwater BMP

### Aquatic Resources

- Other Waters (0.387 ac; 2,159 lf)
- Wetlands (0.133 ac)
- ⋯ Culverted Waters (1,514 lf)
- ➔ Flow Direction



**Figure 5 Page 4 of 20**  
**Aquatic Resources Delineation Map**  
 Moraga-Oakland X 115 kV Rebuild Project  
 Pacific Gas & Electric Company

### Notes:

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**Jacobs**



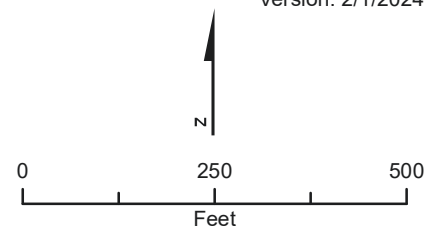
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### Legend

- Aquatic Resources Study Area (226.3 ac)
- Photo Location with View Direction
- Sample Point
- OHWM Transect
- Constructed Wetland/Stormwater BMP

### Aquatic Resources

- Other Waters (0.387 ac; 2,159 lf)
- Wetlands (0.133 ac)
- ⋯ Culverted Waters (1,514 lf)
- ➔ Flow Direction



**Figure 5 Page 5 of 20**  
**Aquatic Resources Delineation Map**  
 Moraga-Oakland X 115 kV Rebuild Project  
 Pacific Gas & Electric Company

### Notes:

ac = acres    *Preliminary and Subject to Change Based on CPUC Requirements, Final Engineering, and Other Factors*  
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**Jacobs**





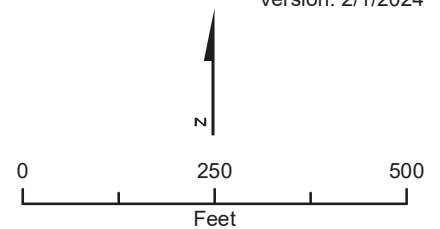
Version: 2/1/2024

## Legend

- Aquatic Resources Study Area (226.3 ac)
- Photo Location with View Direction
- Sample Point
- OHWM Transect
- Constructed Wetland/Stormwater BMP

## Aquatic Resources

- Other Waters (0.387 ac; 2,159 lf)
- Wetlands (0.133 ac)
- ..... Culverted Waters (1,514 lf)
- Flow Direction



**Figure 5 Page 6 of 20**  
**Aquatic Resources Delineation Map**  
 Moraga-Oakland X 115 kV Rebuild Project  
 Pacific Gas & Electric Company

## Notes:

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**Jacobs**





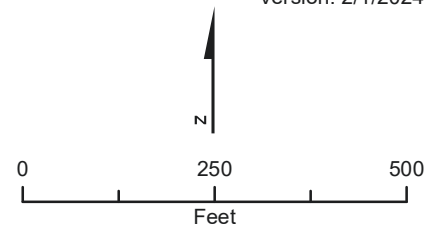
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### Legend

- Aquatic Resources Study Area (226.3 ac)
- Photo Location with View Direction
- Sample Point
- OHWM Transect
- Constructed Wetland/Stormwater BMP

### Aquatic Resources

- Other Waters (0.387 ac; 2,159 lf)
- Wetlands (0.133 ac)
- ⋯ Culverted Waters (1,514 lf)
- ➔ Flow Direction



**Figure 5 Page 7 of 20**  
**Aquatic Resources Delineation Map**  
 Moraga-Oakland X 115 kV Rebuild Project  
 Pacific Gas & Electric Company

### Notes:

ac = acres Preliminary and Subject to Change Based on CPUC Requirements, Final Engineering, and Other Factors  
 lf = linear feet

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**Jacobs**



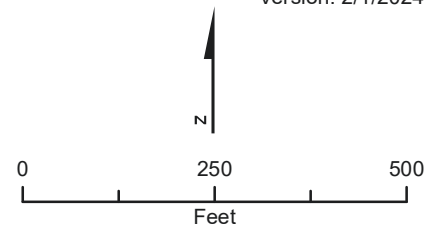
Version: 2/1/2024

### Legend

- Aquatic Resources Study Area (226.3 ac)
- Photo Location with View Direction
- Sample Point
- OHWM Transect
- Constructed Wetland/Stormwater BMP

### Aquatic Resources

- Other Waters (0.387 ac; 2,159 lf)
- Wetlands (0.133 ac)
- ..... Culverted Waters (1,514 lf)
- ➔ Flow Direction



**Figure 5 Page 8 of 20**  
**Aquatic Resources Delineation Map**  
 Moraga-Oakland X 115 kV Rebuild Project  
 Pacific Gas & Electric Company

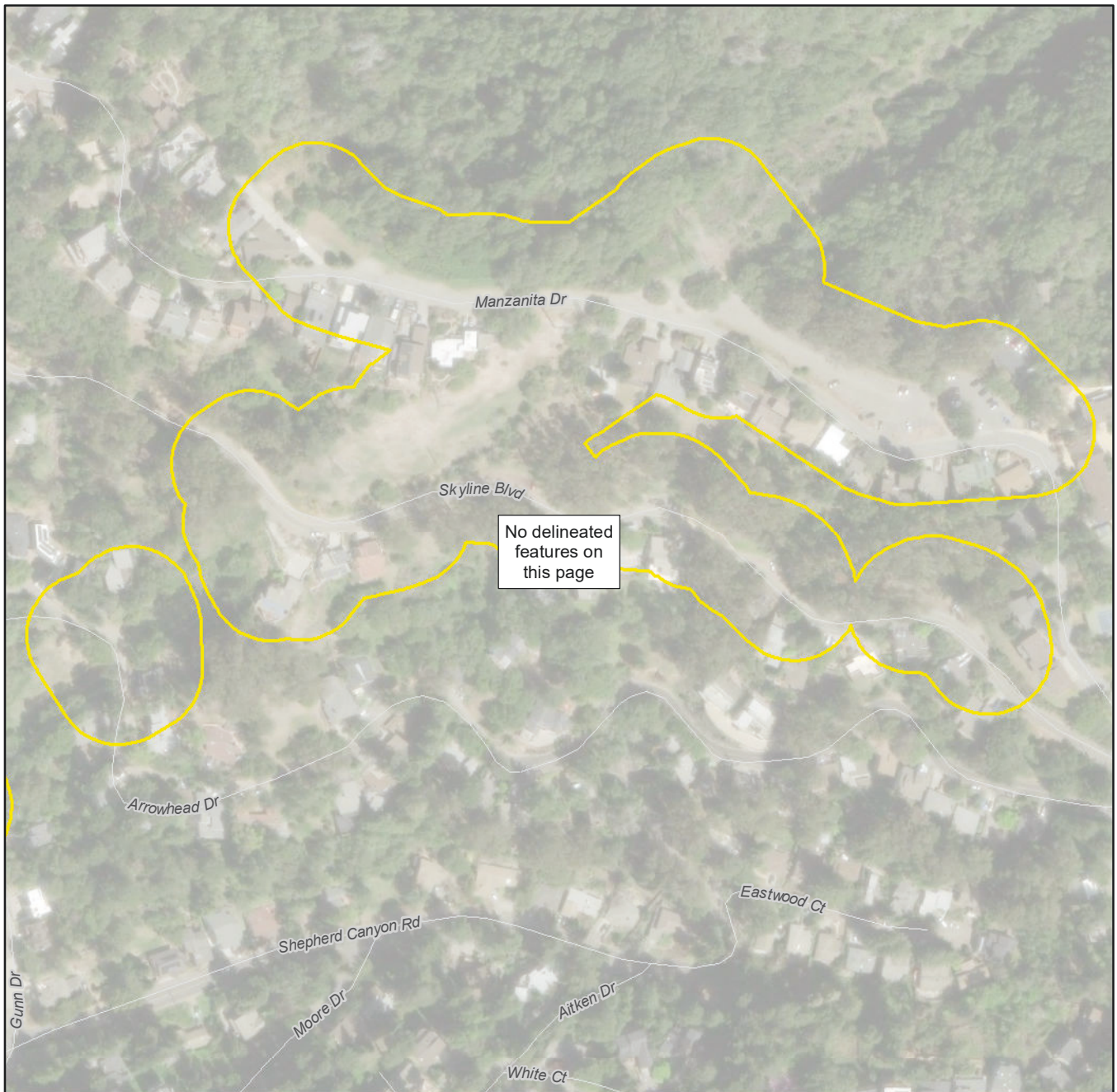
### Notes:

ac = acres Preliminary and Subject to Change Based on CPUC Requirements, Final Engineering, and Other Factors  
 lf = linear feet

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**Jacobs**





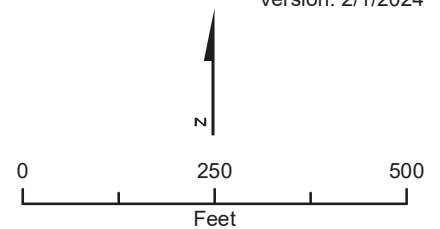
Version: 2/1/2024

## Legend

- Aquatic Resources Study Area (226.3 ac)
- Photo Location with View Direction
- Sample Point
- OHWM Transect
- Constructed Wetland/Stormwater BMP

## Aquatic Resources

- Other Waters (0.387 ac; 2,159 lf)
- Wetlands (0.133 ac)
- ⋯ Culverted Waters (1,514 lf)
- Flow Direction



**Figure 5 Page 9 of 20**  
**Aquatic Resources Delineation Map**  
 Moraga-Oakland X 115 kV Rebuild Project  
 Pacific Gas & Electric Company

## Notes:

ac = acres Preliminary and Subject to Change Based on CPUC Requirements, Final Engineering, and Other Factors  
 lf = linear feet

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**Jacobs**





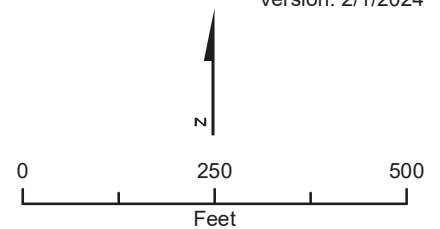
Version: 2/1/2024

## Legend

- Aquatic Resources Study Area (226.3 ac)
- Photo Location with View Direction
- Sample Point
- OHWM Transect
- Constructed Wetland/Stormwater BMP

## Aquatic Resources

- Other Waters (0.387 ac; 2,159 lf)
- Wetlands (0.133 ac)
- ⋯ Culverted Waters (1,514 lf)
- ➔ Flow Direction



**Figure 5 Page 10 of 20**  
**Aquatic Resources Delineation Map**  
 Moraga-Oakland X 115 kV Rebuild Project  
 Pacific Gas & Electric Company

## Notes:

ac = acres Preliminary and Subject to Change Based on CPUC Requirements, Final Engineering, and Other Factors  
 lf = linear feet

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**Jacobs**





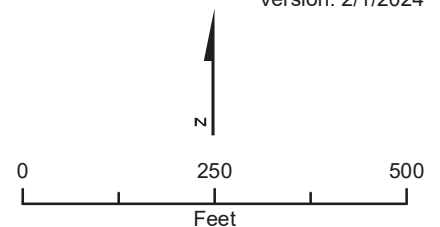
Version: 2/1/2024

## Legend

- Aquatic Resources Study Area (226.3 ac)
- Photo Location with View Direction
- Sample Point
- OHWM Transect
- Constructed Wetland/Stormwater BMP

## Aquatic Resources

- Other Waters (0.387 ac; 2,159 lf)
- Wetlands (0.133 ac)
- ⋯ Culverted Waters (1,514 lf)
- Flow Direction



**Figure 5 Page 11 of 20**  
**Aquatic Resources Delineation Map**  
 Moraga-Oakland X 115 kV Rebuild Project  
 Pacific Gas & Electric Company

## Notes:

ac = acres Preliminary and Subject to Change Based on CPUC Requirements, Final Engineering, and Other Factors  
 lf = linear feet

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**Jacobs**

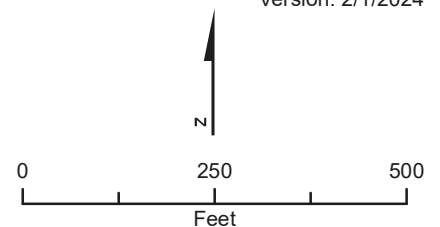




Version: 2/1/2024

### Legend

- |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li><span style="border: 2px solid yellow; display: inline-block; width: 20px; height: 10px; margin-right: 5px;"></span> Aquatic Resources Study Area (226.3 ac)</li> <li><span style="color: red; font-size: 1.2em;">●</span> Photo Location with View Direction</li> <li><span style="color: red; font-size: 1.2em;">○</span> Sample Point</li> <li><span style="border-bottom: 2px solid red; display: inline-block; width: 20px; margin-right: 5px;"></span> OHWM Transect</li> <li><span style="background-color: orange; border: 1px solid black; display: inline-block; width: 20px; height: 10px; margin-right: 5px;"></span> Constructed Wetland/Stormwater BMP</li> </ul> | <p><b>Aquatic Resources</b></p> <ul style="list-style-type: none"> <li><span style="background-color: lightblue; border: 1px solid black; display: inline-block; width: 20px; height: 10px; margin-right: 5px;"></span> Other Waters (0.387 ac; 2,159 lf)</li> <li><span style="background-color: lightgreen; border: 1px solid black; display: inline-block; width: 20px; height: 10px; margin-right: 5px;"></span> Wetlands (0.133 ac)</li> <li><span style="color: red; font-size: 0.8em;">.....</span> Culverted Waters (1,514 lf)</li> <li><span style="color: blue; font-size: 1.2em;">➔</span> Flow Direction</li> </ul> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



**Figure 5 Page 12 of 20**  
**Aquatic Resources Delineation Map**  
 Moraga-Oakland X 115 kV Rebuild Project  
 Pacific Gas & Electric Company

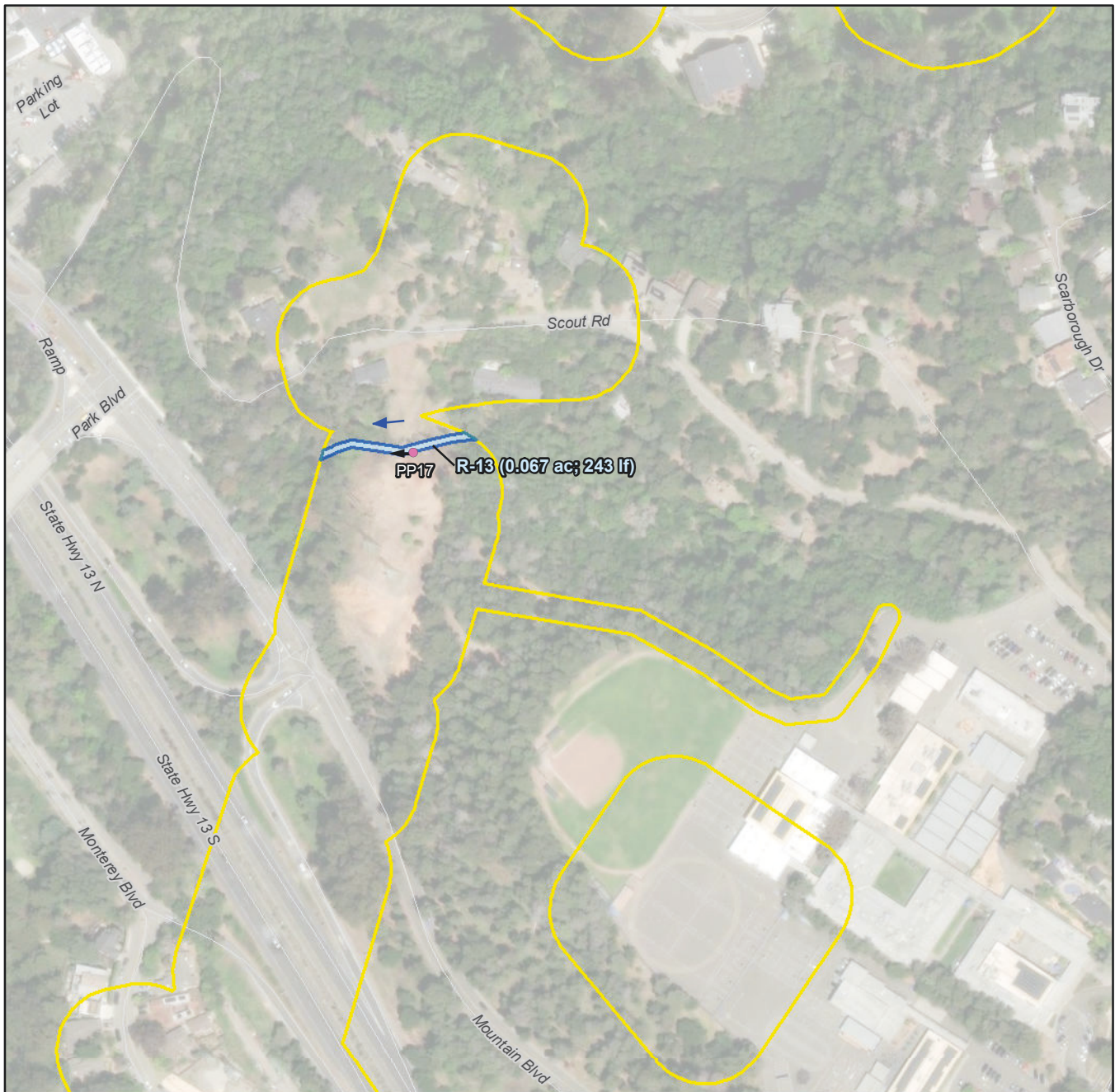
### Notes:

ac = acres Preliminary and Subject to Change Based on CPUC Requirements, Final Engineering, and Other Factors  
 lf = linear feet

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**Jacobs**





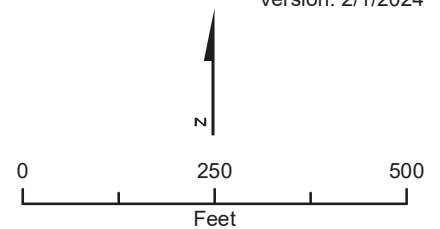
Version: 2/1/2024

### Legend

- Aquatic Resources Study Area (226.3 ac)
- Photo Location with View Direction
- Sample Point
- OHWM Transect
- Constructed Wetland/Stormwater BMP

### Aquatic Resources

- Other Waters (0.387 ac; 2,159 lf)
- Wetlands (0.133 ac)
- ⋯ Culverted Waters (1,514 lf)
- ➔ Flow Direction



**Figure 5 Page 13 of 20**  
**Aquatic Resources Delineation Map**  
 Moraga-Oakland X 115 kV Rebuild Project  
 Pacific Gas & Electric Company

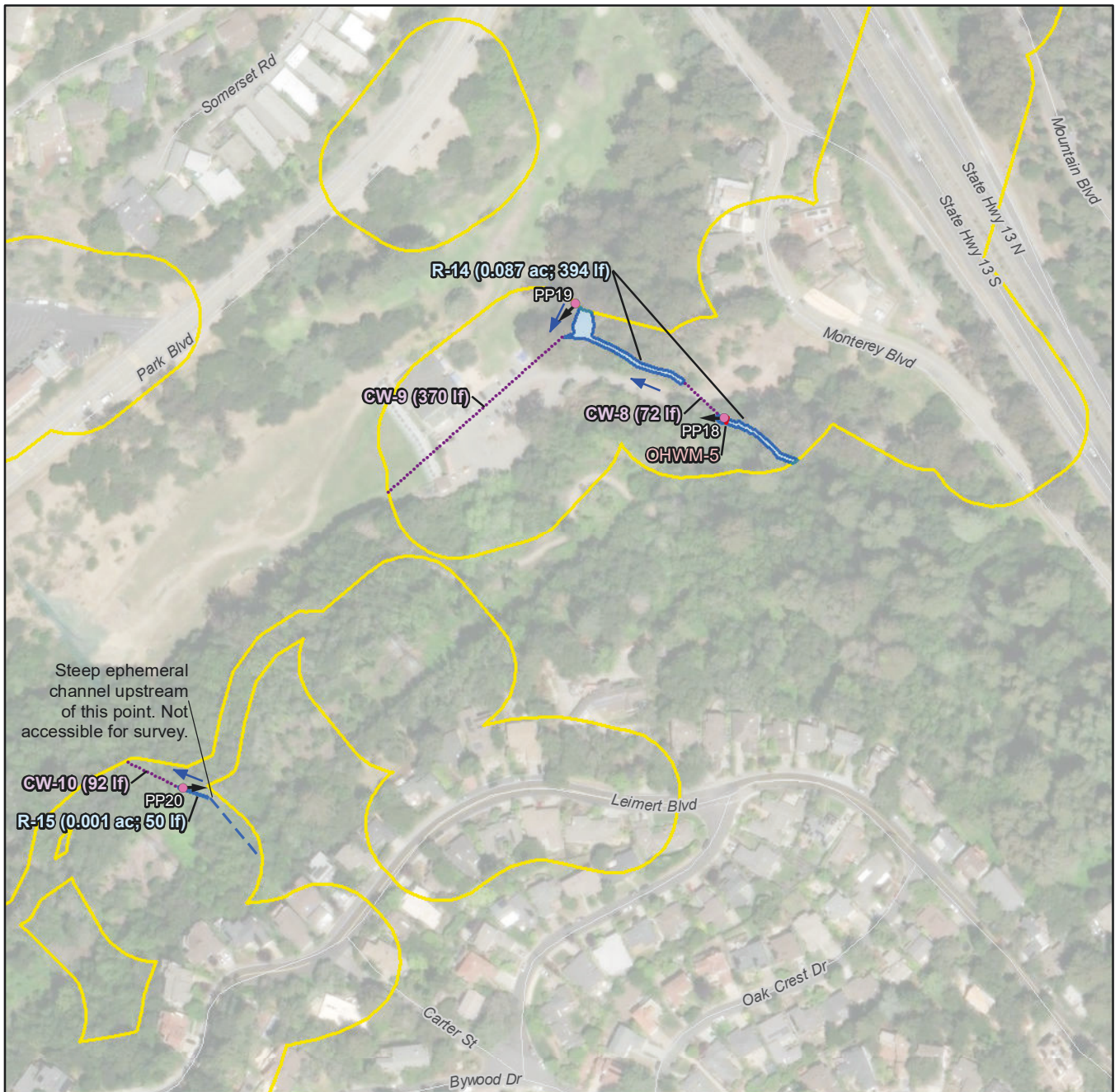
### Notes:

ac = acres Preliminary and Subject to Change Based on CPUC Requirements, Final Engineering, and Other Factors  
 lf = linear feet

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**Jacobs**





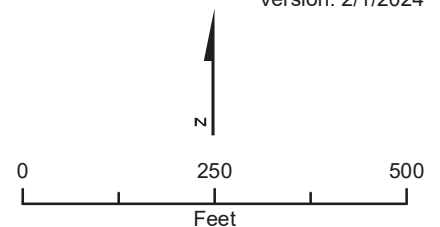
Version: 2/1/2024

### Legend

- Aquatic Resources Study Area (226.3 ac)
- Photo Location with View Direction
- Sample Point
- OHWM Transect
- Constructed Wetland/Stormwater BMP

### Aquatic Resources

- Other Waters (0.387 ac; 2,159 lf)
- Wetlands (0.133 ac)
- ⋯ Culverted Waters (1,514 lf)
- ➔ Flow Direction



**Figure 5 Page 14 of 20**  
**Aquatic Resources Delineation Map**  
 Moraga-Oakland X 115 kV Rebuild Project  
 Pacific Gas & Electric Company

### Notes:

ac = acres Preliminary and Subject to Change Based on CPUC Requirements, Final Engineering, and Other Factors  
 lf = linear feet

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**Jacobs**





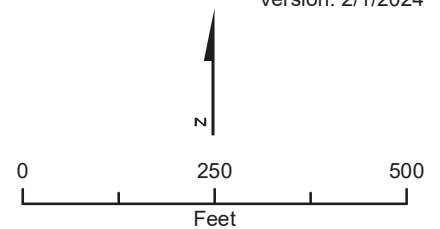
Version: 2/1/2024

## Legend

- Aquatic Resources Study Area (226.3 ac)
- Photo Location with View Direction
- Sample Point
- OHWM Transect
- Constructed Wetland/Stormwater BMP

## Aquatic Resources

- Other Waters (0.387 ac; 2,159 lf)
- Wetlands (0.133 ac)
- ⋯ Culverted Waters (1,514 lf)
- Flow Direction



**Figure 5 Page 15 of 20**  
**Aquatic Resources Delineation Map**  
 Moraga-Oakland X 115 kV Rebuild Project  
 Pacific Gas & Electric Company

## Notes:

ac = acres Preliminary and Subject to Change Based on CPUC Requirements, Final Engineering, and Other Factors  
 lf = linear feet

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**Jacobs**





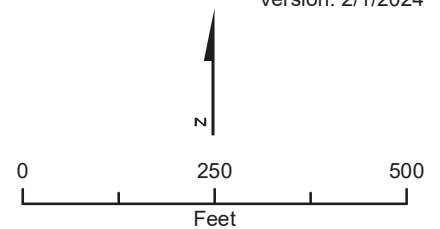
Version: 2/1/2024

## Legend

- Aquatic Resources Study Area (226.3 ac)
- Photo Location with View Direction
- Sample Point
- OHWM Transect
- Constructed Wetland/Stormwater BMP

## Aquatic Resources

- Other Waters (0.387 ac; 2,159 lf)
- Wetlands (0.133 ac)
- ⋯ Culverted Waters (1,514 lf)
- ➔ Flow Direction



**Figure 5 Page 16 of 20**  
**Aquatic Resources Delineation Map**  
 Moraga-Oakland X 115 kV Rebuild Project  
 Pacific Gas & Electric Company

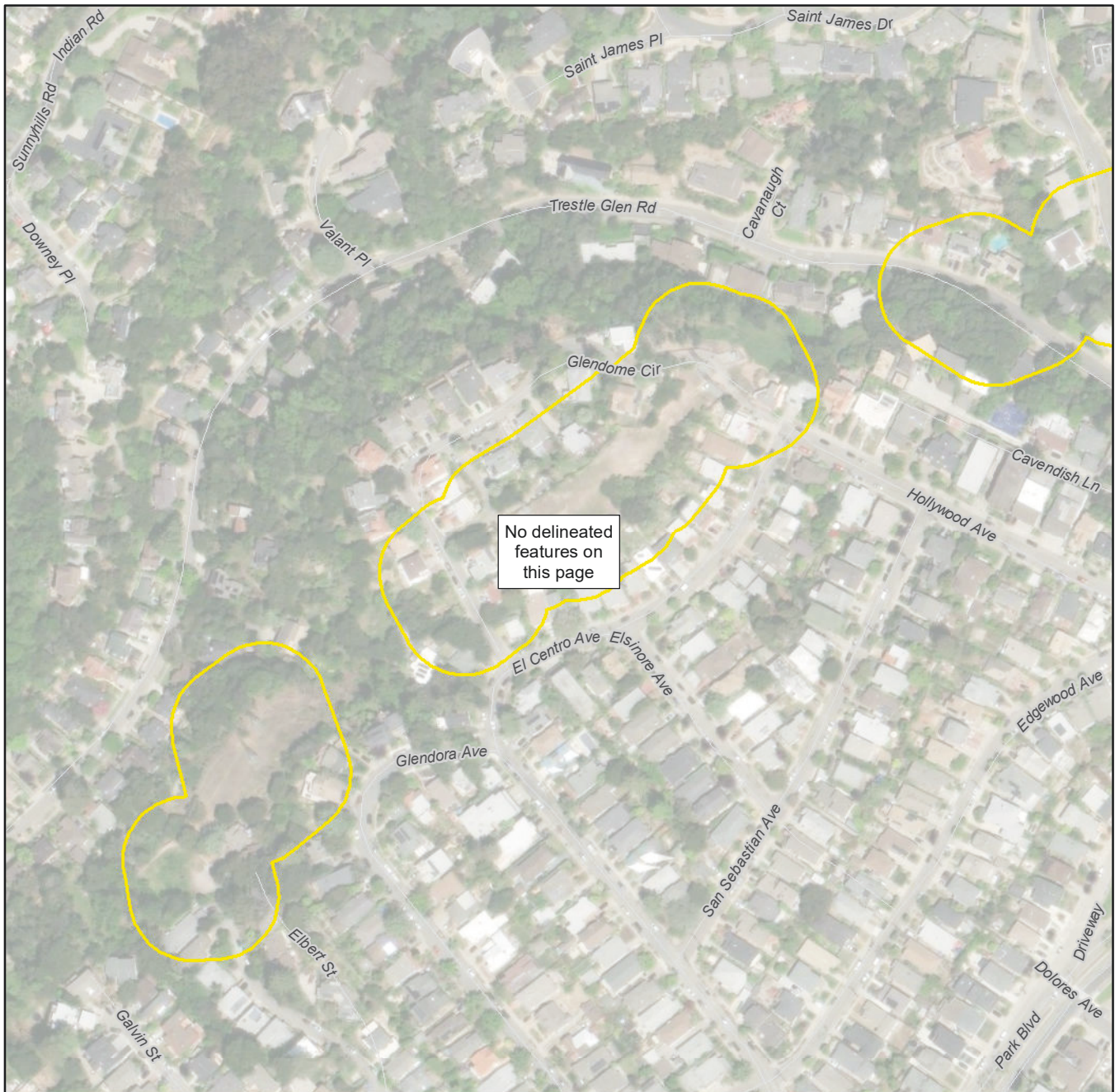
## Notes:

ac = acres Preliminary and Subject to Change Based on CPUC Requirements, Final Engineering, and Other Factors  
 lf = linear feet

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**Jacobs**





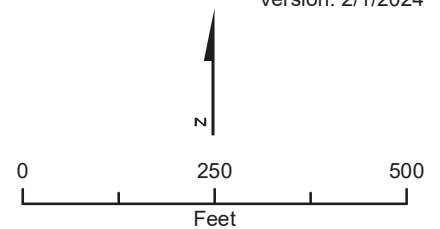
Version: 2/1/2024

## Legend

- Aquatic Resources Study Area (226.3 ac)
- Photo Location with View Direction
- Sample Point
- OHWM Transect
- Constructed Wetland/Stormwater BMP

## Aquatic Resources

- Other Waters (0.387 ac; 2,159 lf)
- Wetlands (0.133 ac)
- ⋯ Culverted Waters (1,514 lf)
- Flow Direction



**Figure 5 Page 17 of 20**  
**Aquatic Resources Delineation Map**  
 Moraga-Oakland X 115 kV Rebuild Project  
 Pacific Gas & Electric Company

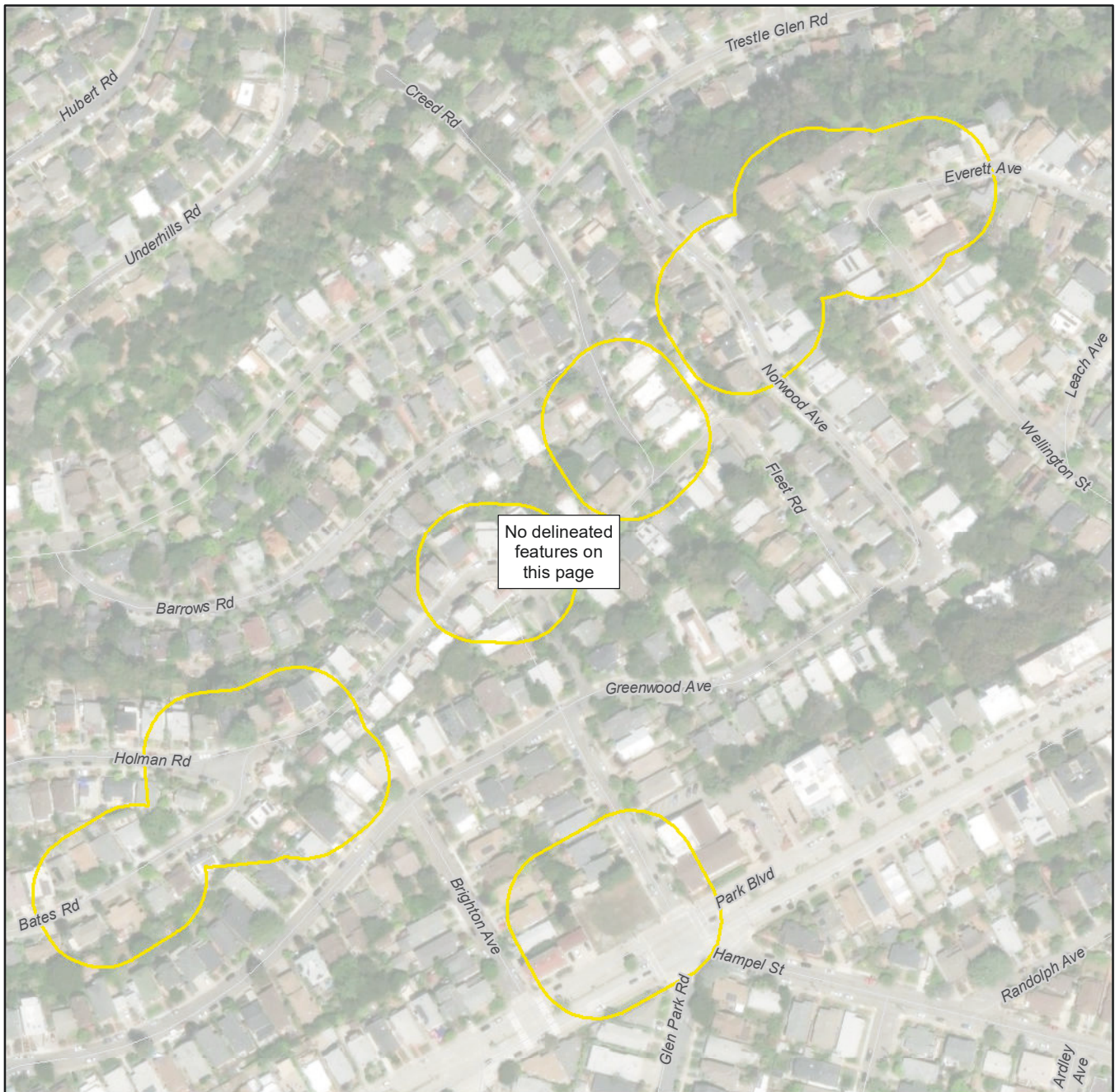
## Notes:

ac = acres Preliminary and Subject to Change Based on CPUC Requirements, Final Engineering, and Other Factors  
 lf = linear feet

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**Jacobs**





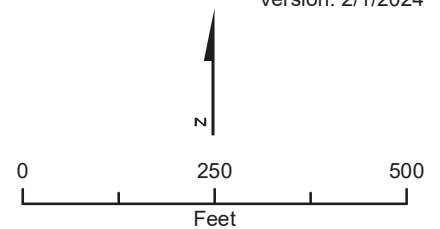
Version: 2/1/2024

### Legend

- Aquatic Resources Study Area (226.3 ac)
- Photo Location with View Direction
- Sample Point
- OHWM Transect
- Constructed Wetland/Stormwater BMP

### Aquatic Resources

- Other Waters (0.387 ac; 2,159 lf)
- Wetlands (0.133 ac)
- ⋯ Culverted Waters (1,514 lf)
- Flow Direction



**Figure 5 Page 18 of 20**  
**Aquatic Resources Delineation Map**  
 Moraga-Oakland X 115 kV Rebuild Project  
 Pacific Gas & Electric Company

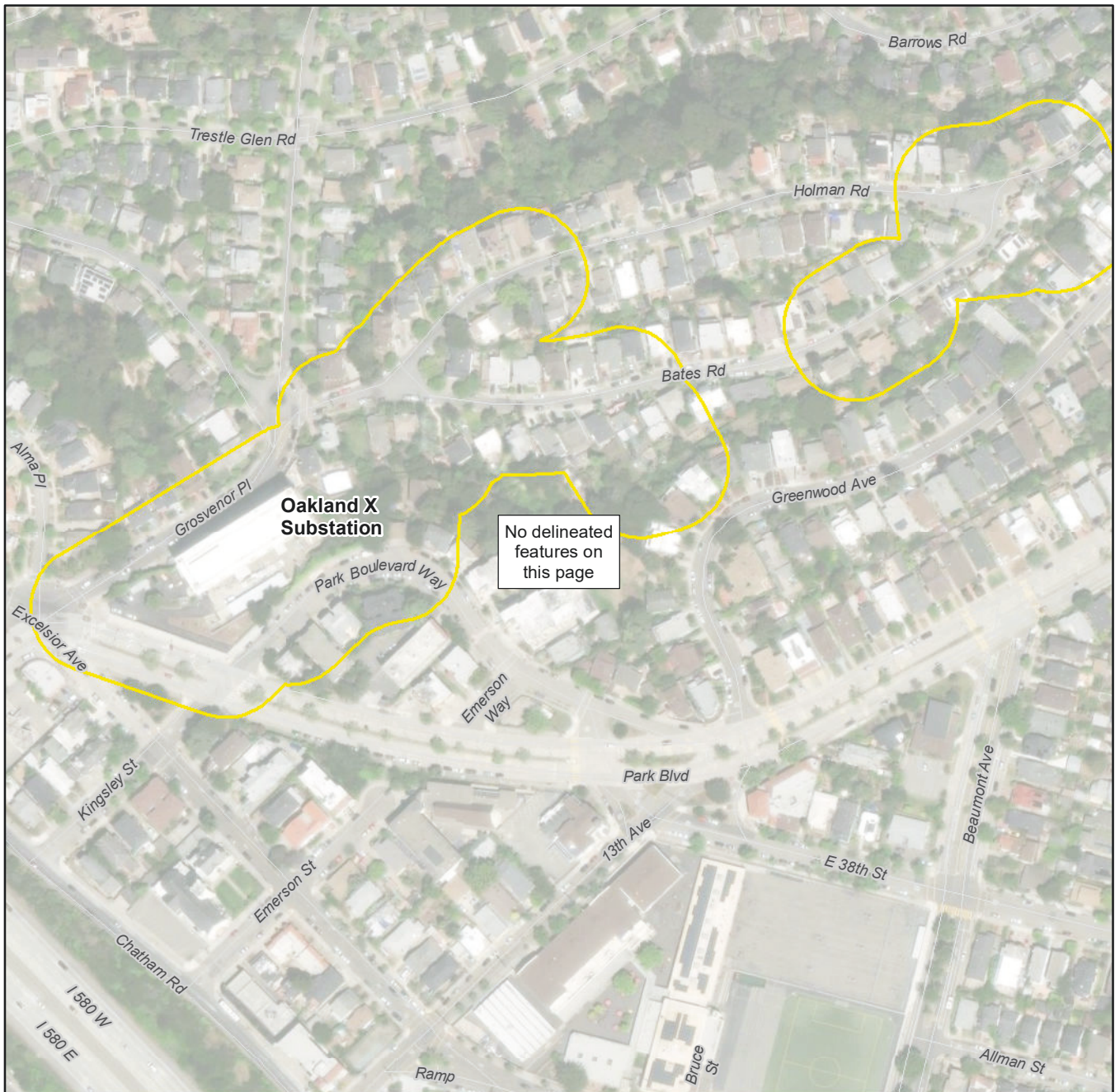
### Notes:

ac = acres Preliminary and Subject to Change Based on CPUC Requirements, Final Engineering, and Other Factors  
 lf = linear feet

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**Jacobs**





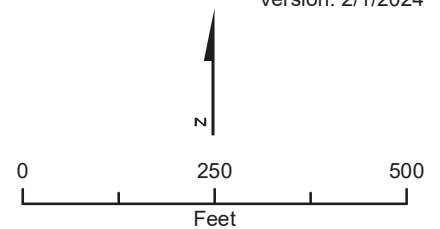
Version: 2/1/2024

## Legend

- Aquatic Resources Study Area (226.3 ac)
- Photo Location with View Direction
- Sample Point
- OHWM Transect
- Constructed Wetland/Stormwater BMP

## Aquatic Resources

- Other Waters (0.387 ac; 2,159 lf)
- Wetlands (0.133 ac)
- ⋯ Culverted Waters (1,514 lf)
- ➔ Flow Direction



**Figure 5 Page 19 of 20**  
**Aquatic Resources Delineation Map**  
 Moraga-Oakland X 115 kV Rebuild Project  
 Pacific Gas & Electric Company

## Notes:

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 lf = linear feet

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**Jacobs**





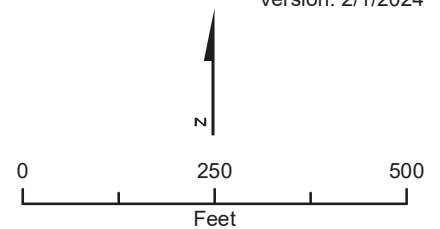
Version: 2/1/2024

## Legend

- Aquatic Resources Study Area (226.3 ac)
- Photo Location with View Direction
- Sample Point
- OHWM Transect
- Constructed Wetland/Stormwater BMP

## Aquatic Resources

- Other Waters (0.387 ac; 2,159 lf)
- Wetlands (0.133 ac)
- ⋯ Culverted Waters (1,514 lf)
- ➔ Flow Direction



**Figure 5 Page 20 of 20**  
**Aquatic Resources Delineation Map**  
 Moraga-Oakland X 115 kV Rebuild Project  
 Pacific Gas & Electric Company

## Notes:

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 lf = linear feet

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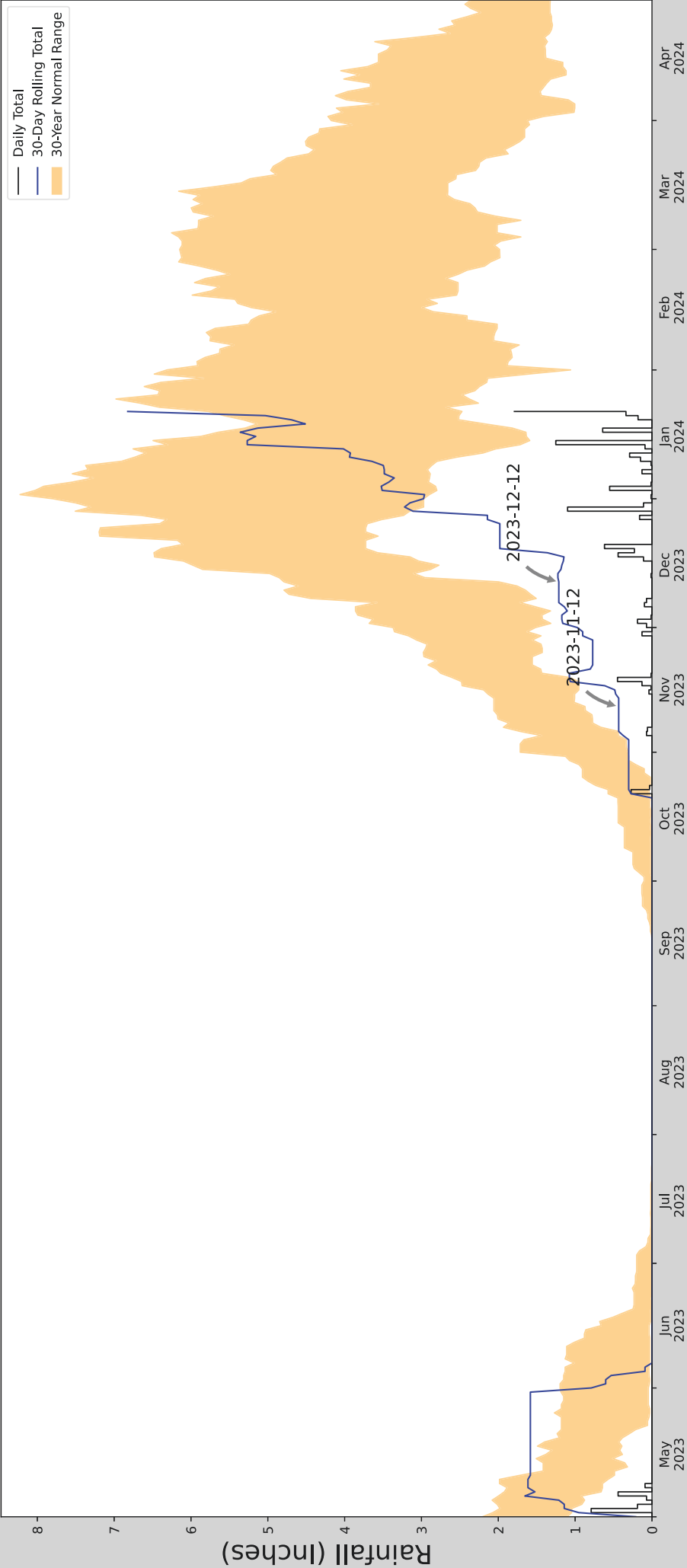
**Jacobs**



## **Appendix A**

### **Antecedent Precipitation Tool Results**

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



|                                  |                        |
|----------------------------------|------------------------|
| Coordinates                      | 37.839862, -122.184449 |
| Observation Date                 | 2023-12-12             |
| Elevation (ft)                   | 912.082                |
| Drought Index (PDSI)             | Incipient wetness      |
| WebWIMP H <sub>2</sub> O Balance | Wet Season             |

| 30 Days Ending | 30 <sup>th</sup> %ile (in) | 70 <sup>th</sup> %ile (in) | Observed (in) | Wetness Condition | Condition Value | Month Weight | Product               |
|----------------|----------------------------|----------------------------|---------------|-------------------|-----------------|--------------|-----------------------|
| 2023-12-12     | 1.998032                   | 4.789764                   | 1.212598      | Dry               | 1               | 3            | 3                     |
| 2023-11-12     | 0.872441                   | 2.057087                   | 0.433071      | Dry               | 1               | 2            | 2                     |
| 2023-10-13     | 0.011811                   | 0.359449                   | 0.0           | Dry               | 1               | 1            | 1                     |
| Result         |                            |                            |               |                   |                 |              | Drier than Normal - 6 |



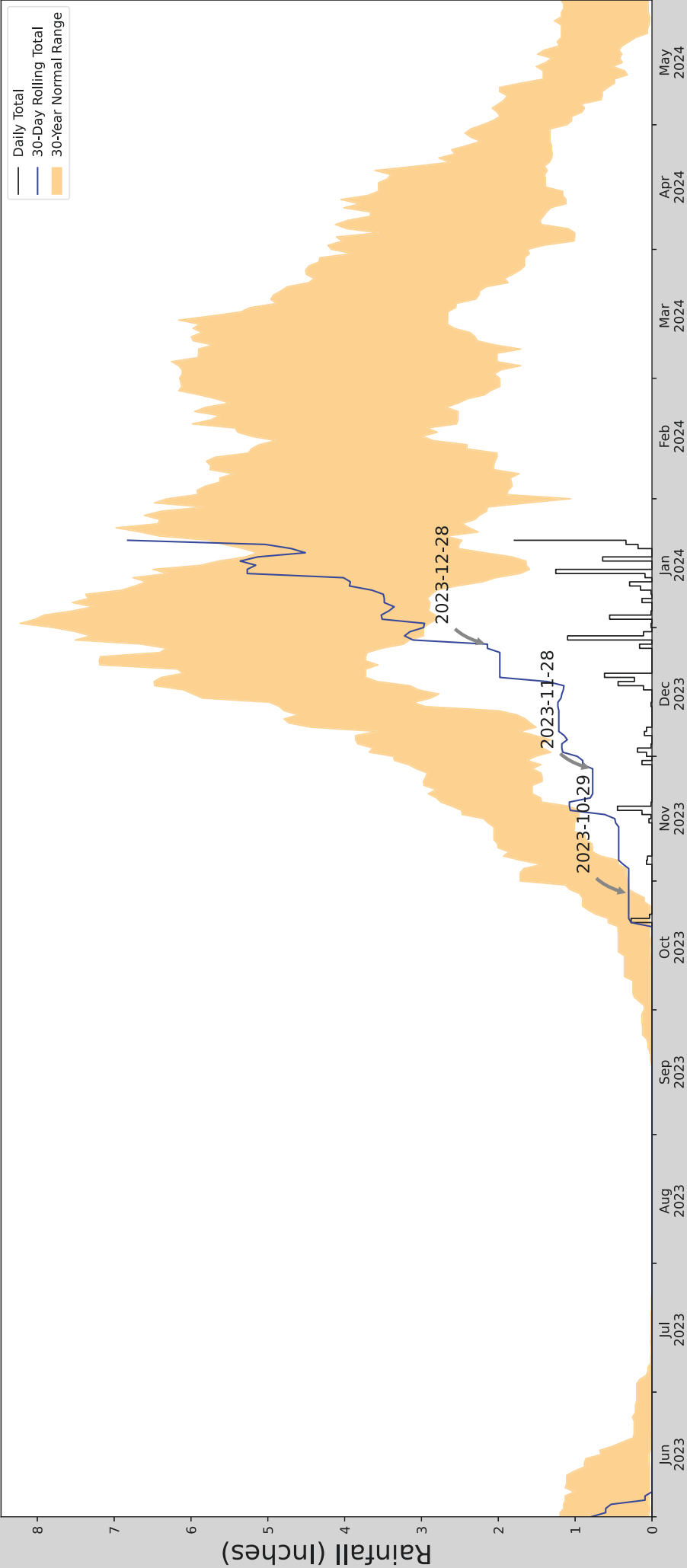
Figures and tables made by the  
Antecedent Precipitation Tool  
Version 2.0

Developed by:  
U.S. Army Corps of Engineers and  
U.S. Army Engineer Research and  
Development Center

| Weather Station Name      | Coordinates        | Elevation (ft) | Distance (mi) | Elevation Δ | Weighted Δ | Days Normal | Days Antecedent |
|---------------------------|--------------------|----------------|---------------|-------------|------------|-------------|-----------------|
| UPPER SAN LEANDRO FILTERS | 37.7719, -122.1675 | 394.029        | 4.786         | 518.053     | 4.633      | 11075       | 90              |
| OAKLAND 1.2 ENE           | 37.7778, -122.2032 | 116.142        | 1.992         | 277.887     | 1.45       | 30          | 0               |
| PIEDMONT 1.0 SE           | 37.8123, -122.216  | 372.047        | 3.848         | 21.982      | 1.816      | 1           | 0               |
| OAKLAND INTL AP           | 37.7178, -122.2331 | 4.921          | 5.179         | 389.108     | 4.346      | 212         | 0               |
| OAKLAND MUSEUM            | 37.7983, -122.2642 | 29.856         | 5.587         | 364.173     | 4.549      | 34          | 0               |



Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



|                                  |                        |
|----------------------------------|------------------------|
| Coordinates                      | 37.839862, -122.184449 |
| Observation Date                 | 2023-12-28             |
| Elevation (ft)                   | 912.082                |
| Drought Index (PDSI)             | Incipient wetness      |
| WebWIMP H <sub>2</sub> O Balance | Wet Season             |

| 30 Days Ending | 30 <sup>th</sup> %ile (in) | 70 <sup>th</sup> %ile (in) | Observed (in) | Wetness Condition | Condition Value | Month Weight | Product               |
|----------------|----------------------------|----------------------------|---------------|-------------------|-----------------|--------------|-----------------------|
| 2023-12-28     | 3.232284                   | 6.64567                    | 2.141732      | Dry               | 1               | 3            | 3                     |
| 2023-11-28     | 1.55748                    | 3.06378                    | 0.771654      | Dry               | 1               | 2            | 2                     |
| 2023-10-29     | 0.211024                   | 0.947244                   | 0.30315       | Normal            | 2               | 1            | 2                     |
| Result         |                            |                            |               |                   |                 |              | Drier than Normal - 7 |

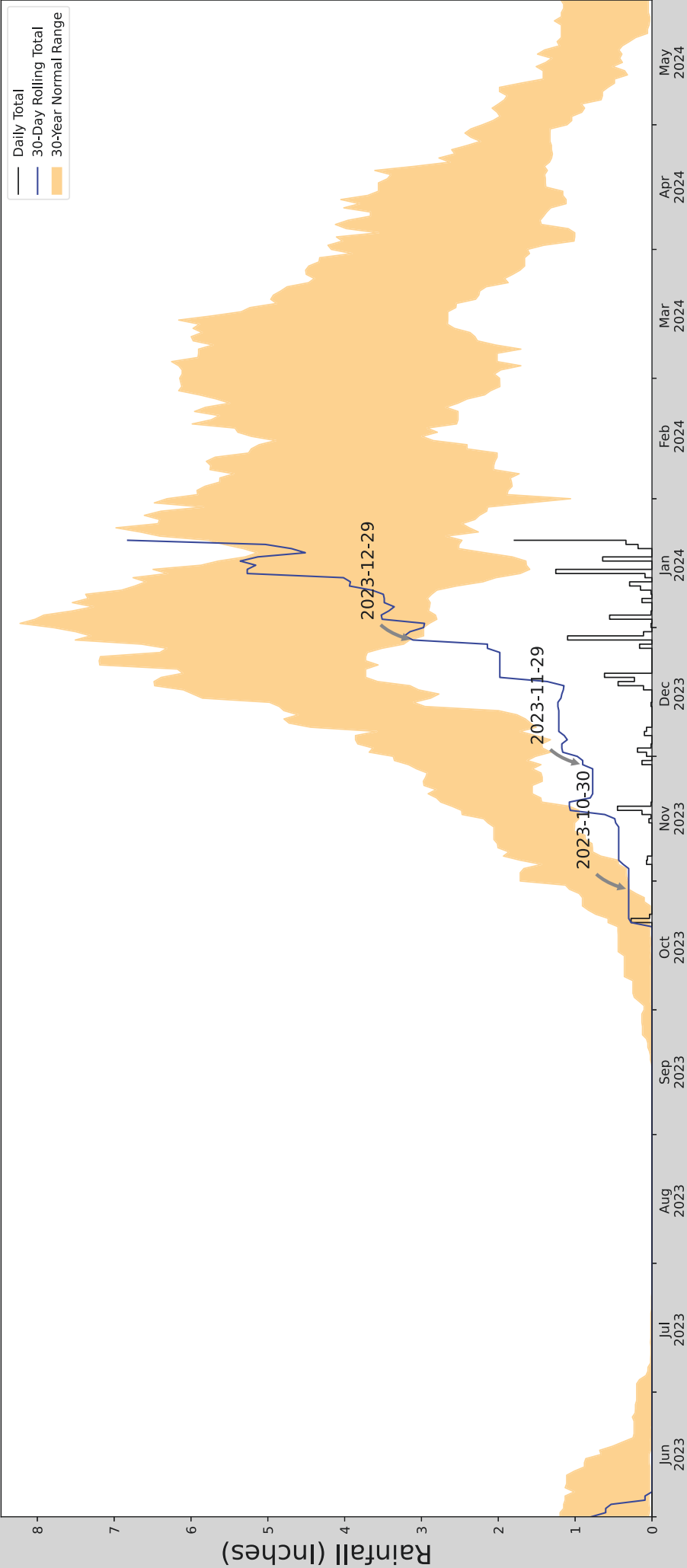


Figures and tables made by the  
Antecedent Precipitation Tool  
Version 2.0

Developed by:  
U.S. Army Corps of Engineers and  
U.S. Army Engineer Research and  
Development Center

| Weather Station Name      | Coordinates        | Elevation (ft) | Distance (mi) | Elevation Δ | Weighted Δ | Days Normal | Days Antecedent |
|---------------------------|--------------------|----------------|---------------|-------------|------------|-------------|-----------------|
| UPPER SAN LEANDRO FILTERS | 37.7719, -122.1675 | 394.029        | 4.786         | 518.053     | 4.633      | 11075       | 90              |
| OAKLAND 1.2 ENE           | 37.7778, -122.2032 | 116.142        | 1.992         | 277.887     | 1.45       | 30          | 0               |
| PIEDMONT 1.0 SE           | 37.8123, -122.216  | 372.047        | 3.848         | 21.982      | 1.816      | 1           | 0               |
| OAKLAND INTL AP           | 37.7178, -122.2331 | 4.921          | 5.179         | 389.108     | 4.346      | 212         | 0               |
| OAKLAND MUSEUM            | 37.7983, -122.2642 | 29.856         | 5.587         | 364.173     | 4.549      | 34          | 0               |

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



| 30 Days Ending | 30 <sup>th</sup> %ile (in) | 70 <sup>th</sup> %ile (in) | Observed (in) | Wetness Condition | Condition Value | Month Weight | Product               |
|----------------|----------------------------|----------------------------|---------------|-------------------|-----------------|--------------|-----------------------|
| 2023-12-29     | 3.155118                   | 7.505906                   | 3.110236      | Dry               | 1               | 3            | 3                     |
| 2023-11-29     | 1.444882                   | 3.16811                    | 0.901575      | Dry               | 1               | 2            | 2                     |
| 2023-10-30     | 0.302362                   | 1.073228                   | 0.30315       | Normal            | 2               | 1            | 2                     |
| Result         |                            |                            |               |                   |                 |              | Drier than Normal - 7 |

|                                  |                        |
|----------------------------------|------------------------|
| Coordinates                      | 37.839862, -122.184449 |
| Observation Date                 | 2023-12-29             |
| Elevation (ft)                   | 912.082                |
| Drought Index (PDSI)             | Incipient wetness      |
| WebWIMP H <sub>2</sub> O Balance | Wet Season             |

| Weather Station Name      | Coordinates        | Elevation (ft) | Distance (mi) | Elevation Δ | Weighted Δ | Days Normal | Days Antecedent |
|---------------------------|--------------------|----------------|---------------|-------------|------------|-------------|-----------------|
| UPPER SAN LEANDRO FILTERS | 37.7719, -122.1675 | 394.029        | 4.786         | 518.053     | 4.633      | 11075       | 90              |
| OAKLAND 1.2 ENE           | 37.7778, -122.2032 | 116.142        | 1.992         | 277.887     | 1.45       | 30          | 0               |
| PIEDMONT 1.0 SE           | 37.8123, -122.216  | 372.047        | 3.848         | 21.982      | 1.816      | 1           | 0               |
| OAKLAND INTL AP           | 37.7178, -122.2331 | 4.921          | 5.179         | 389.108     | 4.346      | 212         | 0               |
| OAKLAND MUSEUM            | 37.7983, -122.2642 | 29.856         | 5.587         | 364.173     | 4.549      | 34          | 0               |

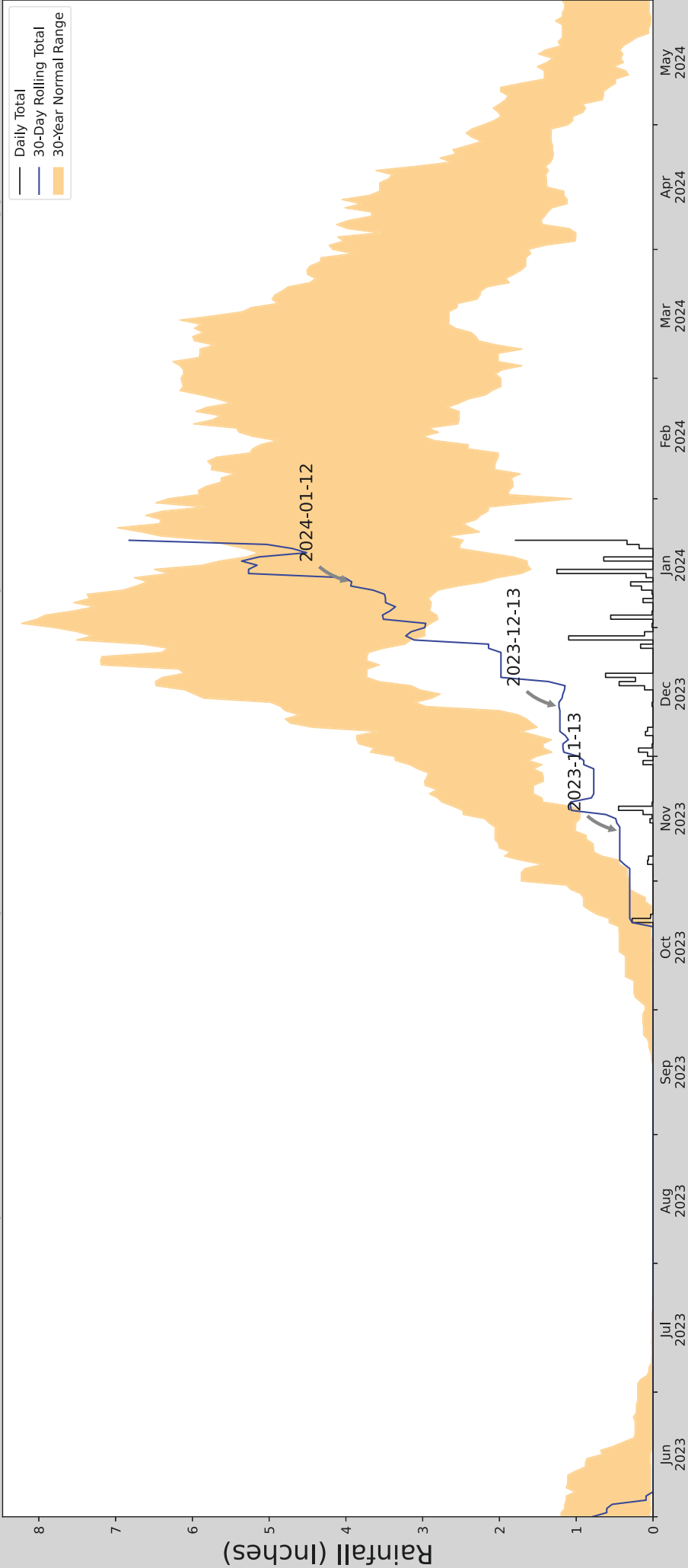


Figures and tables made by the  
Antecedent Precipitation Tool  
Version 2.0

Developed by:  
U.S. Army Corps of Engineers and  
U.S. Army Engineer Research and  
Development Center



Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



| 30 Days Ending | 30 <sup>th</sup> %ile (in) | 70 <sup>th</sup> %ile (in) | Observed (in) | Wetness Condition | Condition Value | Month Weight | Product               |
|----------------|----------------------------|----------------------------|---------------|-------------------|-----------------|--------------|-----------------------|
| 2024-01-12     | 2.200787                   | 6.587402                   | 3.925197      | Normal            | 2               | 3            | 6                     |
| 2023-12-13     | 2.955906                   | 4.850788                   | 1.224409      | Dry               | 1               | 2            | 2                     |
| 2023-11-13     | 1.01378                    | 2.057087                   | 0.433071      | Dry               | 1               | 1            | 1                     |
| Result         |                            |                            |               |                   |                 |              | Drier than Normal - 9 |

|                                  |                        |
|----------------------------------|------------------------|
| Coordinates                      | 37.839862, -122.184449 |
| Observation Date                 | 2024-01-12             |
| Elevation (ft)                   | 912.082                |
| Drought Index (PDSI)             | Not available          |
| WebWIMP H <sub>2</sub> O Balance | Wet Season             |

| Weather Station Name      | Coordinates        | Elevation (ft) | Distance (mi) | Elevation Δ | Weighted Δ | Days Normal | Days Antecedent |
|---------------------------|--------------------|----------------|---------------|-------------|------------|-------------|-----------------|
| UPPER SAN LEANDRO FILTERS | 37.7719, -122.1675 | 394.029        | 4.786         | 518.053     | 4.633      | 11075       | 78              |
| OAKLAND 1.2 ENE           | 37.7778, -122.2032 | 116.142        | 1.992         | 277.887     | 1.45       | 30          | 12              |
| PIEDMONT 1.0 SE           | 37.8123, -122.216  | 372.047        | 3.848         | 21.982      | 1.816      | 1           | 0               |
| OAKLAND INTL AP           | 37.7178, -122.2331 | 4.921          | 5.179         | 389.108     | 4.346      | 212         | 0               |
| OAKLAND MUSEUM            | 37.7983, -122.2642 | 29.856         | 5.587         | 364.173     | 4.549      | 34          | 0               |



Figures and tables made by the  
Antecedent Precipitation Tool  
Version 2.0

Developed by:  
U.S. Army Corps of Engineers and  
U.S. Army Engineer Research and  
Development Center

## **Appendix B**

### **Field Datasheets**



# WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Moraga-Oakland X 115 kV Rebuild Project City/County: Orinda/Contra Costa County Sampling Date: 12/12/23  
 Applicant/Owner: PG&E State: CA Sampling Point: SP-1  
 Investigator(s): Kevin Fisher, Pim Laulikitnont-Lee Section, Township, Range: T1S, 3W  
 Landform (hillslope, terrace, etc.): Swale Local relief (concave, convex, none): Concave Slope (%): 5  
 Subregion (LRR): C Lat: 37.847159 Long: -122.162800 Datum: WGS 84  
 Soil Map Unit Name: Diablo clay, 15 to 30 percent slopes NWI classification: \_\_\_\_\_

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 <input checked="" type="checkbox"/> No _____  | Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/> |
| Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/>             |                                                                                        |
| Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>       |                                                                                        |
| Remarks:<br>Sampling point established in a steep swale dominated by hydrophytes. |                                                                                        |

## VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: _____)                                   | Absolute % Cover | Dominant Species? | Indicator Status | <b>Dominance Test worksheet:</b><br>Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)<br><br>Total Number of Dominant Species Across All Strata: <u>2</u> (B)<br><br>Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)                                                                       |
|-------------------------------------------------------------------|------------------|-------------------|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. _____                                                          | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                       |
| 2. _____                                                          | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                       |
| 3. _____                                                          | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                       |
| 4. _____                                                          | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                       |
| _____ = Total Cover                                               |                  |                   |                  | <b>Prevalence Index worksheet:</b><br>Total % Cover of: _____ Multiply by: _____<br>OBL species _____ x 1 = _____<br>FACW species _____ x 2 = _____<br>FAC species _____ x 3 = _____<br>FACU species _____ x 4 = _____<br>UPL species _____ x 5 = _____<br>Column Totals: _____ (A) _____ (B)<br><br>Prevalence Index = B/A _____     |
| <b>Sapling/Shrub Stratum</b> (Plot size: _____)                   |                  |                   |                  |                                                                                                                                                                                                                                                                                                                                       |
| 1. _____                                                          | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                       |
| 2. _____                                                          | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                       |
| 3. _____                                                          | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                       |
| 4. _____                                                          | _____            | _____             | _____            | <b>Hydrophytic Vegetation Indicators:</b><br><input checked="" type="checkbox"/> Dominance Test is >50%<br>_____ Prevalence Index is ≤3.0 <sup>1</sup><br>_____ Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)<br>_____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) |
| _____ = Total Cover                                               |                  |                   |                  |                                                                                                                                                                                                                                                                                                                                       |
| <b>Herb Stratum</b> (Plot size: <u>5 ft</u> )                     |                  |                   |                  |                                                                                                                                                                                                                                                                                                                                       |
| 1. <u>Juncus patens</u>                                           | <u>50</u>        | <u>Y</u>          | <u>FACW</u>      |                                                                                                                                                                                                                                                                                                                                       |
| 2. <u>Conium maculatum</u>                                        | <u>30</u>        | <u>Y</u>          | <u>FACW</u>      |                                                                                                                                                                                                                                                                                                                                       |
| 3. <u>Polypogon monspeliensis</u>                                 | <u>10</u>        | <u>N</u>          | <u>FACW</u>      | <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.                                                                                                                                                                                                                        |
| 4. <u>Helminthotheca echioides</u>                                | <u>10</u>        | <u>N</u>          | <u>FAC</u>       |                                                                                                                                                                                                                                                                                                                                       |
| 5. _____                                                          | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                       |
| 6. _____                                                          | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                       |
| 7. _____                                                          | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                       |
| 8. _____                                                          | _____            | _____             | _____            | <b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No _____                                                                                                                                                                                                                                               |
| _____ = Total Cover                                               |                  |                   |                  |                                                                                                                                                                                                                                                                                                                                       |
| <b>Woody Vine Stratum</b> (Plot size: _____)                      |                  |                   |                  |                                                                                                                                                                                                                                                                                                                                       |
| 1. _____                                                          | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                       |
| 2. _____                                                          | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                       |
| _____ = Total Cover                                               |                  |                   |                  |                                                                                                                                                                                                                                                                                                                                       |
| % Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____ |                  |                   |                  |                                                                                                                                                                                                                                                                                                                                       |
| Remarks:                                                          |                  |                   |                  |                                                                                                                                                                                                                                                                                                                                       |

## SOIL

Sampling Point: SP-1

[illegible]

## HYDROLOGY

| Wetland Hydrology Indicators:                                                                                                                                                                                                                                                                                                                                                            |                                                                        |                                                                                                       |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| Primary Indicators (minimum of one required; check all that apply)                                                                                                                                                                                                                                                                                                                       |                                                                        | Secondary Indicators (2 or more required)                                                             |
| <input type="checkbox"/> Surface Water (A1)                                                                                                                                                                                                                                                                                                                                              | <input type="checkbox"/> Salt Crust (B11)                              | <input type="checkbox"/> Water Marks (B1) ( <b>Riverine</b> )                                         |
| <input type="checkbox"/> High Water Table (A2)                                                                                                                                                                                                                                                                                                                                           | <input type="checkbox"/> Biotic Crust (B12)                            | <input type="checkbox"/> Sediment Deposits (B2) <b>Riverine</b>                                       |
| <input type="checkbox"/> Saturation (A3)                                                                                                                                                                                                                                                                                                                                                 | <input type="checkbox"/> Aquatic Invertebrates (B13)                   | <input type="checkbox"/> Drift Deposits (B3) ( <b>Riverine</b> )                                      |
| <input type="checkbox"/> Water Marks (B1) ( <b>Nonriverine</b> )                                                                                                                                                                                                                                                                                                                         | <input type="checkbox"/> Hydrogen Sulfide Odor (C1)                    | <input type="checkbox"/> Drainage Patterns (B10)                                                      |
| <input type="checkbox"/> Sediment Deposits (B2) <b>Nonriverine</b>                                                                                                                                                                                                                                                                                                                       | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) | <input type="checkbox"/> Dry-Season Water Table (C2)                                                  |
| <input type="checkbox"/> Drift Deposits (B3) ( <b>Nonriverine</b> )                                                                                                                                                                                                                                                                                                                      | <input type="checkbox"/> Presence of Reduced Iron (C4)                 | <input type="checkbox"/> Crayfish Burrows (C8)                                                        |
| <input type="checkbox"/> Surface Soil Cracks (B6)                                                                                                                                                                                                                                                                                                                                        | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)    | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)                                    |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)                                                                                                                                                                                                                                                                                                                       | <input type="checkbox"/> Thin Muck Surface (C7)                        | <input type="checkbox"/> Shallow Aquitard (D3)                                                        |
| <input type="checkbox"/> Water-Stained Leaves (B9)                                                                                                                                                                                                                                                                                                                                       | <input type="checkbox"/> Other (Explain in Remarks)                    | <input type="checkbox"/> FAC-Neutral Test (D5)                                                        |
| <b>Field Observations:</b><br>Surface Water Present?    Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____<br>Water Table Present?    Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____<br>Saturation Present?    Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____<br>(includes capillary fringe) |                                                                        | <b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:                                                                                                                                                                                                                                                                               |                                                                        |                                                                                                       |
| Remarks:                                                                                                                                                                                                                                                                                                                                                                                 |                                                                        |                                                                                                       |



# WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Moraga-Oakland X 115 kV Rebuild Project City/County: Orinda/Contra Costa County Sampling Date: 12/12/23  
 Applicant/Owner: PG&E State: CA Sampling Point: SP-2  
 Investigator(s): Kevin Fisher, Pim Laulikitnont-Lee Section, Township, Range: T1S, 3W  
 Landform (hillslope, terrace, etc.): Swale Local relief (concave, convex, none): Concave Slope (%): 3  
 Subregion (LRR): C Lat: 37.8474180 Long: -122.1628288 Datum: WGS 84  
 Soil Map Unit Name: Diablo clay, 15 to 30 percent slopes NWI classification: \_\_\_\_\_

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 <input checked="" type="checkbox"/> No _____  | Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/> |
| Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/>             |                                                                                        |
| Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>       |                                                                                        |
| Remarks:<br>Sampling point established in a steep swale dominated by hydrophytes. |                                                                                        |

## VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: _____)                 | Absolute % Cover              | Dominant Species? | Indicator Status | <b>Dominance Test worksheet:</b><br>Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)<br><br>Total Number of Dominant Species Across All Strata: <u>2</u> (B)<br><br>Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)                                                                                                                                                                                                                                                                                                  |
|-------------------------------------------------|-------------------------------|-------------------|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. _____                                        | _____                         | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 2. _____                                        | _____                         | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 3. _____                                        | _____                         | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 4. _____                                        | _____                         | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| _____ = Total Cover                             |                               |                   |                  | <b>Prevalence Index worksheet:</b><br>Total % Cover of: _____ Multiply by: _____<br>OBL species _____ x 1 = _____<br>FACW species _____ x 2 = _____<br>FAC species _____ x 3 = _____<br>FACU species _____ x 4 = _____<br>UPL species _____ x 5 = _____<br>Column Totals: _____ (A) _____ (B)<br><br>Prevalence Index = B/A _____                                                                                                                                                                                                                                |
| <b>Sapling/Shrub Stratum</b> (Plot size: _____) | _____                         | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 1. _____                                        | _____                         | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 2. _____                                        | _____                         | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 3. _____                                        | _____                         | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 4. _____                                        | _____                         | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 5. _____                                        | _____                         | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| _____ = Total Cover                             |                               |                   |                  | <b>Hydrophytic Vegetation Indicators:</b><br><input checked="" type="checkbox"/> Dominance Test is >50%<br>_____ Prevalence Index is ≤3.0 <sup>1</sup><br>_____ Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)<br>_____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain _____)<br><br><sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.<br><br><b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No _____ |
| <b>Herb Stratum</b> (Plot size: <u>5 ft</u> )   | _____                         | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 1. <u>Juncus patens</u>                         | <u>50</u>                     | <u>Y</u>          | <u>FACW</u>      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 2. <u>Leymus triticoides</u>                    | <u>50</u>                     | <u>Y</u>          | <u>FAC</u>       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 3. _____                                        | _____                         | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 4. _____                                        | _____                         | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 5. _____                                        | _____                         | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 6. _____                                        | _____                         | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 7. _____                                        | _____                         | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 8. _____                                        | _____                         | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| _____ = Total Cover                             |                               |                   |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Woody Vine Stratum</b> (Plot size: _____)    | _____                         | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 1. _____                                        | _____                         | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 2. _____                                        | _____                         | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| _____ = Total Cover                             |                               |                   |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| % Bare Ground in Herb Stratum _____             | % Cover of Biotic Crust _____ |                   |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Remarks:                                        |                               |                   |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

**SOIL**Sampling Point: SP-2**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth<br>(inches) | Matrix        |     | Redox Features |   |                   |                  | Texture    | Remarks |
|-------------------|---------------|-----|----------------|---|-------------------|------------------|------------|---------|
|                   | Color (moist) | %   | Color (moist)  | % | Type <sup>1</sup> | Loc <sup>2</sup> |            |         |
| 0-12              | 5Y 3/1        | 100 |                |   |                   |                  | silty clay |         |
|                   |               |     |                |   |                   |                  |            |         |
|                   |               |     |                |   |                   |                  |            |         |
|                   |               |     |                |   |                   |                  |            |         |
|                   |               |     |                |   |                   |                  |            |         |
|                   |               |     |                |   |                   |                  |            |         |
|                   |               |     |                |   |                   |                  |            |         |
|                   |               |     |                |   |                   |                  |            |         |

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- |                                                              |                                                     |
|--------------------------------------------------------------|-----------------------------------------------------|
| <input type="checkbox"/> Histosol (A1)                       | <input type="checkbox"/> Sandy Redox (S5)           |
| <input type="checkbox"/> Histic Epipedon (A2)                | <input type="checkbox"/> Stripped Matrix (S6)       |
| <input type="checkbox"/> Black Histic (A3)                   | <input type="checkbox"/> Loamy Mucky Mineral (F1)   |
| <input type="checkbox"/> Hydrogen Sulfide (A4)               | <input type="checkbox"/> Loamy Gleyed Matrix (F2)   |
| <input type="checkbox"/> Stratified Layers (A5) <b>LRR C</b> | <input type="checkbox"/> Depleted Matrix (F3)       |
| <input type="checkbox"/> 1 cm Muck (A9) <b>(LRR D)</b>       | <input type="checkbox"/> Redox Dark Surface (F6)    |
| <input type="checkbox"/> Depleted Below Dark Surface (A11)   | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Thick Dark Surface (A12)            | <input type="checkbox"/> Redox Depressions (F8)     |
| <input type="checkbox"/> Sandy Mucky Mineral (S1)            | <input type="checkbox"/> Vernal Pools (F9)          |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4)            |                                                     |

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

- ☐ 1 cm Muck (A9) **(LRR C)**
- ☐ 2 cm Muck (A10) **LRR B**
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

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

**Restrictive Layer (if present):**

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

**Hydric Soil Present?** Yes \_\_\_\_\_ No ☒

Remarks:

**HYDROLOGY****Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- |                                                                    |                                                                        |
|--------------------------------------------------------------------|------------------------------------------------------------------------|
| <input type="checkbox"/> Surface Water (A1)                        | <input type="checkbox"/> Salt Crust (B11)                              |
| <input type="checkbox"/> High Water Table (A2)                     | <input type="checkbox"/> Biotic Crust (B12)                            |
| <input type="checkbox"/> Saturation (A3)                           | <input type="checkbox"/> Aquatic Invertebrates (B13)                   |
| <input type="checkbox"/> Water Marks (B1) <b>(Nonriverine)</b>     | <input type="checkbox"/> Hydrogen Sulfide Odor (C1)                    |
| <input type="checkbox"/> Sediment Deposits (B2) <b>Nonriverine</b> | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) |
| <input type="checkbox"/> Drift Deposits (B3) <b>(Nonriverine)</b>  | <input type="checkbox"/> Presence of Reduced Iron (C4)                 |
| <input type="checkbox"/> Surface Soil Cracks (B6)                  | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)    |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Thin Muck Surface (C7)                        |
| <input type="checkbox"/> Water-Stained Leaves (B9)                 | <input type="checkbox"/> Other (Explain in Remarks)                    |

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) **(Riverine)**
- ☐ Sediment Deposits (B2) **Riverine**
- ☐ Drift Deposits (B3) **(Riverine)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**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:



# WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Moraga-Oakland X 115 kV Rebuild Project City/County: Orinda/Contra Costa County Sampling Date: 12/12/23  
 Applicant/Owner: PG&E State: CA Sampling Point: SP-3a  
 Investigator(s): Kevin Fisher, Pim Laulikitnont-Lee Section, Township, Range: T1S, 3W  
 Landform (hillslope, terrace, etc.): Cut-fill slope Local relief (concave, convex, none): Convex Slope (%): 2  
 Subregion (LRR): C Lat: 37.8521816 Long: -122.1705107 Datum: WGS 84  
 Soil Map Unit Name: Diablo clay, 15 to 30 percent slopes NWI classification: \_\_\_\_\_

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 <input checked="" type="checkbox"/> No _____ | Is the Sampled Area<br>within a Wetland? | Yes <input checked="" type="checkbox"/> No _____ |
| Hydric Soil Present?                                                                             | Yes <input checked="" type="checkbox"/> No _____ |                                          |                                                  |
| Wetland Hydrology Present?                                                                       | Yes <input checked="" type="checkbox"/> No _____ |                                          |                                                  |
| Remarks:<br><br>Seep wetland adjacent to access road. Soils significantly disturbed by roadfill. |                                                  |                                          |                                                  |

## VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: _____)                                       | Absolute<br>% Cover | Dominant<br>Species? | Indicator<br>Status | Dominance Test worksheet:                                                                                                   |                                   |
|-----------------------------------------------------------------------|---------------------|----------------------|---------------------|-----------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| 1. _____                                                              | _____               | _____                | _____               | Number of Dominant Species That Are OBL, FACW, or FAC:                                                                      | <u>1</u> (A)                      |
| 2. _____                                                              | _____               | _____                | _____               | Total Number of Dominant Species Across All Strata:                                                                         | <u>1</u> (B)                      |
| 3. _____                                                              | _____               | _____                | _____               | Percent of Dominant Species That Are OBL, FACW, or FAC:                                                                     | <u>100</u> (A/B)                  |
| 4. _____                                                              | _____               | _____                | _____               |                                                                                                                             |                                   |
| _____ = Total Cover                                                   |                     |                      |                     |                                                                                                                             |                                   |
| Sapling/Shrub Stratum (Plot size: _____)                              |                     |                      |                     | Prevalence Index worksheet:                                                                                                 |                                   |
| 1. _____                                                              | _____               | _____                | _____               | Total % Cover of:                                                                                                           | Multiply by:                      |
| 2. _____                                                              | _____               | _____                | _____               | OBL species _____                                                                                                           | x 1 = _____                       |
| 3. _____                                                              | _____               | _____                | _____               | FACW species _____                                                                                                          | x 2 = _____                       |
| 4. _____                                                              | _____               | _____                | _____               | FAC species _____                                                                                                           | x 3 = _____                       |
| 5. _____                                                              | _____               | _____                | _____               | FACU species _____                                                                                                          | x 4 = _____                       |
| _____ = Total Cover                                                   |                     |                      |                     | UPL species _____                                                                                                           | x 5 = _____                       |
| Herb Stratum (Plot size: <u>5 ft</u> )                                |                     |                      |                     | Column Totals:                                                                                                              | <u>_____</u> (A) <u>_____</u> (B) |
| 1. <u>Cyperus eragrostis</u>                                          | <u>80</u>           | <u>Y</u>             | <u>FACW</u>         | Prevalence Index = B/A <u>_____</u>                                                                                         |                                   |
| 2. <u>Polypogon monspeliensis</u>                                     | <u>5</u>            | <u>N</u>             | <u>FACW</u>         | Hydrophytic Vegetation Indicators:                                                                                          |                                   |
| 3. <u>Poa sp.*</u>                                                    | <u>5</u>            | <u>N</u>             | <u>FAC</u>          | <input checked="" type="checkbox"/> Dominance Test is >50%                                                                  |                                   |
| 4. _____                                                              | _____               | _____                | _____               | <input type="checkbox"/> Prevalence Index is ≤3.0 <sup>1</sup>                                                              |                                   |
| 5. _____                                                              | _____               | _____                | _____               | <input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) |                                   |
| 6. _____                                                              | _____               | _____                | _____               | <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain                                           |                                   |
| 7. _____                                                              | _____               | _____                | _____               |                                                                                                                             |                                   |
| 8. _____                                                              | _____               | _____                | _____               |                                                                                                                             |                                   |
| _____ = Total Cover                                                   |                     |                      |                     | <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.              |                                   |
| Woody Vine Stratum (Plot size: _____)                                 |                     |                      |                     | Hydrophytic Vegetation Present?                                                                                             |                                   |
| 1. _____                                                              | _____               | _____                | _____               | Yes <input checked="" type="checkbox"/> No _____                                                                            |                                   |
| 2. _____                                                              | _____               | _____                | _____               |                                                                                                                             |                                   |
| _____ = Total Cover                                                   |                     |                      |                     |                                                                                                                             |                                   |
| % Bare Ground in Herb Stratum <u>10</u> % Cover of Biotic Crust _____ |                     |                      |                     |                                                                                                                             |                                   |
| Remarks:<br><br>Poa sp. assumed to be FAC.                            |                     |                      |                     |                                                                                                                             |                                   |

# SOIL

Sampling Point: SP-3a

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth<br>(inches) | Matrix        |     | Redox Features |    |                   |                  | Texture | Remarks  |
|-------------------|---------------|-----|----------------|----|-------------------|------------------|---------|----------|
|                   | Color (moist) | %   | Color (moist)  | %  | Type <sup>1</sup> | Loc <sup>2</sup> |         |          |
| 0-4               | 10YR 4/1      | 90  | 7.5YR 4/4      | 10 | D                 | M                | loam    | gravelly |
| 4-8               | 10YR 3/1      | 100 |                |    |                   |                  | loam    | gravelly |
| 8-12              | 5Y 3/1        | 100 |                |    |                   |                  | loam    | gravelly |
|                   |               |     |                |    |                   |                  |         |          |
|                   |               |     |                |    |                   |                  |         |          |
|                   |               |     |                |    |                   |                  |         |          |
|                   |               |     |                |    |                   |                  |         |          |
|                   |               |     |                |    |                   |                  |         |          |

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

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- |                                                              |                                                          |
|--------------------------------------------------------------|----------------------------------------------------------|
| <input type="checkbox"/> Histosol (A1)                       | <input type="checkbox"/> Sandy Redox (S5)                |
| <input type="checkbox"/> Histic Epipedon (A2)                | <input type="checkbox"/> Stripped Matrix (S6)            |
| <input type="checkbox"/> Black Histic (A3)                   | <input type="checkbox"/> Loamy Mucky Mineral (F1)        |
| <input type="checkbox"/> Hydrogen Sulfide (A4)               | <input type="checkbox"/> Loamy Gleyed Matrix (F2)        |
| <input type="checkbox"/> Stratified Layers (A5) <b>LRR C</b> | <input checked="" type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> 1 cm Muck (A9) <b>(LRR D)</b>       | <input type="checkbox"/> Redox Dark Surface (F6)         |
| <input type="checkbox"/> Depleted Below Dark Surface (A11)   | <input type="checkbox"/> Depleted Dark Surface (F7)      |
| <input type="checkbox"/> Thick Dark Surface (A12)            | <input type="checkbox"/> Redox Depressions (F8)          |
| <input type="checkbox"/> Sandy Mucky Mineral (S1)            | <input type="checkbox"/> Vernal Pools (F9)               |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4)            |                                                          |

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

- ☐ 1 cm Muck (A9) **(LRR C)**  
☐ 2 cm Muck (A10) **LRR B**  
☐ Reduced Vertic (F18)  
☐ Red Parent Material (TF2)  
☐ Other (Explain in Remarks)

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

**Restrictive Layer (if present):**

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

**Hydric Soil Present?** Yes ☒ No ☐

Remarks:

Fill materials mixed in soil profile.

# HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- |                                                                    |                                                                                   |
|--------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| <input type="checkbox"/> Surface Water (A1)                        | <input type="checkbox"/> Salt Crust (B11)                                         |
| <input type="checkbox"/> High Water Table (A2)                     | <input type="checkbox"/> Biotic Crust (B12)                                       |
| <input checked="" type="checkbox"/> Saturation (A3)                | <input type="checkbox"/> Aquatic Invertebrates (B13)                              |
| <input type="checkbox"/> Water Marks (B1) <b>(Nonriverine)</b>     | <input type="checkbox"/> Hydrogen Sulfide Odor (C1)                               |
| <input type="checkbox"/> Sediment Deposits (B2) <b>Nonriverine</b> | <input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) |
| <input type="checkbox"/> Drift Deposits (B3) <b>(Nonriverine)</b>  | <input type="checkbox"/> Presence of Reduced Iron (C4)                            |
| <input type="checkbox"/> Surface Soil Cracks (B6)                  | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)               |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Thin Muck Surface (C7)                                   |
| <input type="checkbox"/> Water-Stained Leaves (B9)                 | <input type="checkbox"/> Other (Explain in Remarks)                               |

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) **(Riverine)**  
☐ Sediment Deposits (B2) **Riverine**  
☐ Drift Deposits (B3) **(Riverine)**  
☐ Drainage Patterns (B10)  
☐ Dry-Season Water Table (C2)  
☐ Crayfish Burrows (C8)  
☐ Saturation Visible on Aerial Imagery (C9)  
☐ Shallow Aquitard (D3)  
☐ FAC-Neutral Test (D5)

**Field Observations:**

- Surface Water Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_  
 Water Table Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_  
 Saturation Present? Yes ☒ No ☐ Depth (inches): 6  
 (includes capillary fringe)

**Wetland Hydrology Present?** Yes ☒ No ☐

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

Remarks:



# WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Moraga-Oakland X 115 kV Rebuild Project City/County: Orinda/Contra Costa County Sampling Date: 12/12/23  
 Applicant/Owner: PG&E State: CA Sampling Point: SP-3b  
 Investigator(s): Kevin Fisher, Pim Laulikitnont-Lee Section, Township, Range: T1S, 3W  
 Landform (hillslope, terrace, etc.): Cut-fill slope Local relief (concave, convex, none): Convex Slope (%): 2  
 Subregion (LRR): C Lat: 37.852197 Long: -122.170548 Datum: WGS 84  
 Soil Map Unit Name: Diablo clay, 15 to 30 percent slopes NWI classification: \_\_\_\_\_

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 <input checked="" type="checkbox"/> No _____                                                    | Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/> |
| Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/>                                                               |                                                                                        |
| Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>                                                         |                                                                                        |
| Remarks:<br>Sampling point established as upland point to SP-3a adjacent to access road. Soils significantly disturbed by roadfill. |                                                                                        |

## VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: _____)                       | Absolute % Cover              | Dominant Species? | Indicator Status | <b>Dominance Test worksheet:</b><br>Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)<br><br>Total Number of Dominant Species Across All Strata: <u>4</u> (B)<br><br>Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75</u> (A/B)                                                                        |
|-------------------------------------------------------|-------------------------------|-------------------|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. _____                                              | _____                         | _____             | _____            |                                                                                                                                                                                                                                                                                                                                       |
| 2. _____                                              | _____                         | _____             | _____            |                                                                                                                                                                                                                                                                                                                                       |
| 3. _____                                              | _____                         | _____             | _____            |                                                                                                                                                                                                                                                                                                                                       |
| 4. _____                                              | _____                         | _____             | _____            |                                                                                                                                                                                                                                                                                                                                       |
| _____ = Total Cover                                   |                               |                   |                  | <b>Prevalence Index worksheet:</b><br>Total % Cover of: _____ Multiply by: _____<br>OBL species _____ x 1 = _____<br>FACW species _____ x 2 = _____<br>FAC species _____ x 3 = _____<br>FACU species _____ x 4 = _____<br>UPL species _____ x 5 = _____<br>Column Totals: _____ (A) _____ (B)<br><br>Prevalence Index = B/A _____     |
| <b>Sapling/Shrub Stratum</b> (Plot size: <u>1 m</u> ) |                               |                   |                  |                                                                                                                                                                                                                                                                                                                                       |
| 1. <u>Baccharis pilularis</u>                         | <u>70</u>                     | <u>Y</u>          | <u>NL</u>        |                                                                                                                                                                                                                                                                                                                                       |
| 2. <u>Salix lasiolepis</u>                            | <u>10</u>                     | <u>N</u>          | <u>FACW</u>      |                                                                                                                                                                                                                                                                                                                                       |
| 3. _____                                              | _____                         | _____             | _____            |                                                                                                                                                                                                                                                                                                                                       |
| 4. _____                                              | _____                         | _____             | _____            | <b>Hydrophytic Vegetation Indicators:</b><br><input checked="" type="checkbox"/> Dominance Test is >50%<br>_____ Prevalence Index is ≤3.0 <sup>1</sup><br>_____ Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)<br>_____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) |
| 5. _____                                              | _____                         | _____             | _____            |                                                                                                                                                                                                                                                                                                                                       |
| _____ = Total Cover                                   |                               |                   |                  |                                                                                                                                                                                                                                                                                                                                       |
| <b>Herb Stratum</b> (Plot size: <u>5 ft</u> )         |                               |                   |                  |                                                                                                                                                                                                                                                                                                                                       |
| 1. <u>Helminthotheca echioides</u>                    | <u>10</u>                     | <u>Y</u>          | <u>FAC</u>       |                                                                                                                                                                                                                                                                                                                                       |
| 2. <u>Lotus corniculatus</u>                          | <u>5</u>                      | <u>Y</u>          | <u>FAC</u>       | <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.                                                                                                                                                                                                                        |
| 3. <u>Unknown grass*</u>                              | <u>5</u>                      | <u>Y</u>          | <u>FAC</u>       |                                                                                                                                                                                                                                                                                                                                       |
| 4. _____                                              | _____                         | _____             | _____            |                                                                                                                                                                                                                                                                                                                                       |
| 5. _____                                              | _____                         | _____             | _____            |                                                                                                                                                                                                                                                                                                                                       |
| 6. _____                                              | _____                         | _____             | _____            |                                                                                                                                                                                                                                                                                                                                       |
| 7. _____                                              | _____                         | _____             | _____            | <b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No _____                                                                                                                                                                                                                                               |
| 8. _____                                              | _____                         | _____             | _____            |                                                                                                                                                                                                                                                                                                                                       |
| _____ = Total Cover                                   |                               |                   |                  |                                                                                                                                                                                                                                                                                                                                       |
| <b>Woody Vine Stratum</b> (Plot size: _____)          |                               |                   |                  |                                                                                                                                                                                                                                                                                                                                       |
| 1. _____                                              | _____                         | _____             | _____            |                                                                                                                                                                                                                                                                                                                                       |
| 2. _____                                              | _____                         | _____             | _____            | <b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No _____                                                                                                                                                                                                                                               |
| _____ = Total Cover                                   |                               |                   |                  |                                                                                                                                                                                                                                                                                                                                       |
| % Bare Ground in Herb Stratum <u>80</u>               | % Cover of Biotic Crust _____ |                   |                  |                                                                                                                                                                                                                                                                                                                                       |
| Remarks:                                              |                               |                   |                  |                                                                                                                                                                                                                                                                                                                                       |
| *Unknown grass assumed to be FAC.                     |                               |                   |                  |                                                                                                                                                                                                                                                                                                                                       |

## SOIL

Sampling Point: SP-3b

[illegible]

## HYDROLOGY

| Wetland Hydrology Indicators:                                                                                                                                                                                                                                                                                                                                                               |                                                                        |                                                                                                       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| Primary Indicators (minimum of one required; check all that apply)                                                                                                                                                                                                                                                                                                                          |                                                                        | Secondary Indicators (2 or more required)                                                             |
| <input type="checkbox"/> Surface Water (A1)                                                                                                                                                                                                                                                                                                                                                 | <input type="checkbox"/> Salt Crust (B11)                              | <input type="checkbox"/> Water Marks (B1) ( <b>Riverine</b> )                                         |
| <input type="checkbox"/> High Water Table (A2)                                                                                                                                                                                                                                                                                                                                              | <input type="checkbox"/> Biotic Crust (B12)                            | <input type="checkbox"/> Sediment Deposits (B2) ( <b>Riverine</b> )                                   |
| <input type="checkbox"/> Saturation (A3)                                                                                                                                                                                                                                                                                                                                                    | <input type="checkbox"/> Aquatic Invertebrates (B13)                   | <input type="checkbox"/> Drift Deposits (B3) ( <b>Riverine</b> )                                      |
| <input type="checkbox"/> Water Marks (B1) ( <b>Nonriverine</b> )                                                                                                                                                                                                                                                                                                                            | <input type="checkbox"/> Hydrogen Sulfide Odor (C1)                    | <input type="checkbox"/> Drainage Patterns (B10)                                                      |
| <input type="checkbox"/> Sediment Deposits (B2) ( <b>Nonriverine</b> )                                                                                                                                                                                                                                                                                                                      | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) | <input type="checkbox"/> Dry-Season Water Table (C2)                                                  |
| <input type="checkbox"/> Drift Deposits (B3) ( <b>Nonriverine</b> )                                                                                                                                                                                                                                                                                                                         | <input type="checkbox"/> Presence of Reduced Iron (C4)                 | <input type="checkbox"/> Crayfish Burrows (C8)                                                        |
| <input type="checkbox"/> Surface Soil Cracks (B6)                                                                                                                                                                                                                                                                                                                                           | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)    | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)                                    |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)                                                                                                                                                                                                                                                                                                                          | <input type="checkbox"/> Thin Muck Surface (C7)                        | <input type="checkbox"/> Shallow Aquitard (D3)                                                        |
| <input type="checkbox"/> Water-Stained Leaves (B9)                                                                                                                                                                                                                                                                                                                                          | <input type="checkbox"/> Other (Explain in Remarks)                    | <input type="checkbox"/> FAC-Neutral Test (D5)                                                        |
| <b>Field Observations:</b><br>Surface Water Present?    Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____<br>Water Table Present?    Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____<br>Saturation Present?    Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>6</u><br>(includes capillary fringe) |                                                                        | <b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:                                                                                                                                                                                                                                                                                  |                                                                        |                                                                                                       |
| Remarks:                                                                                                                                                                                                                                                                                                                                                                                    |                                                                        |                                                                                                       |

# WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Moraga-Oakland X 115 kV Rebuild Project City/County: Orinda/Contra Costa County Sampling Date: 12/28/23  
 Applicant/Owner: PG&E State: CA Sampling Point: SP-4a  
 Investigator(s): Kevin Fisher, Pim Laulikitnont-Lee Section, Township, Range: T1S, 3W  
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 3  
 Subregion (LRR): C Lat: 37.8428399 Long: -122.1771835 Datum: WGS 84  
 Soil Map Unit Name: Los Osos clay loam, 30 to 50 percent slopes NWI classification: \_\_\_\_\_

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 <input checked="" type="checkbox"/> No _____ | Is the Sampled Area<br>within a Wetland? | Yes <input checked="" type="checkbox"/> No _____ |
| Hydric Soil Present?                                | Yes <input checked="" type="checkbox"/> No _____ |                                          |                                                  |
| Wetland Hydrology Present?                          | Yes <input checked="" type="checkbox"/> No _____ |                                          |                                                  |
| Remarks:<br><br>Seep sloped wetland from hillslope. |                                                  |                                          |                                                  |

## VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: _____)                                       | Absolute<br>% Cover | Dominant<br>Species? | Indicator<br>Status | Dominance Test worksheet:                                                                                                   |  |
|-----------------------------------------------------------------------|---------------------|----------------------|---------------------|-----------------------------------------------------------------------------------------------------------------------------|--|
| 1. _____                                                              | _____               | _____                | _____               | Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)                                                         |  |
| 2. _____                                                              | _____               | _____                | _____               | Total Number of Dominant Species Across All Strata: <u>2</u> (B)                                                            |  |
| 3. _____                                                              | _____               | _____                | _____               | Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)                                                    |  |
| 4. _____                                                              | _____               | _____                | _____               |                                                                                                                             |  |
| _____ = Total Cover                                                   |                     |                      |                     |                                                                                                                             |  |
| Sapling/Shrub Stratum (Plot size: _____)                              |                     |                      |                     | Prevalence Index worksheet:                                                                                                 |  |
| 1. _____                                                              | _____               | _____                | _____               | Total % Cover of: _____ Multiply by: _____                                                                                  |  |
| 2. _____                                                              | _____               | _____                | _____               | OBL species _____ x 1 = _____                                                                                               |  |
| 3. _____                                                              | _____               | _____                | _____               | FACW species _____ x 2 = _____                                                                                              |  |
| 4. _____                                                              | _____               | _____                | _____               | FAC species _____ x 3 = _____                                                                                               |  |
| 5. _____                                                              | _____               | _____                | _____               | FACU species _____ x 4 = _____                                                                                              |  |
| _____ = Total Cover                                                   |                     |                      |                     | UPL species _____ x 5 = _____                                                                                               |  |
| Herb Stratum (Plot size: <u>5 ft</u> )                                |                     |                      |                     | Column Totals: _____ (A) _____ (B)                                                                                          |  |
| 1. <u>Cyperus eragrostis</u>                                          | <u>60</u>           | <u>Y</u>             | <u>FACW</u>         | Prevalence Index = B/A _____                                                                                                |  |
| 2. <u>Polypogon monspeliensis</u>                                     | <u>20</u>           | <u>Y</u>             | <u>FACW</u>         |                                                                                                                             |  |
| 3. <u>Lythrum hyssopifolium</u>                                       | <u>5</u>            | <u>N</u>             | <u>OBL</u>          |                                                                                                                             |  |
| 4. <u>Juncus sp.*</u>                                                 | <u>5</u>            | <u>N</u>             | <u>FAC</u>          |                                                                                                                             |  |
| 5. <u>Trifolium sp.*</u>                                              | <u>5</u>            | <u>N</u>             | <u>FAC</u>          |                                                                                                                             |  |
| 6. <u>Mimulus guttatus</u>                                            | <u>5</u>            | <u>N</u>             | <u>OBL</u>          |                                                                                                                             |  |
| 7. _____                                                              | _____               | _____                | _____               |                                                                                                                             |  |
| 8. _____                                                              | _____               | _____                | _____               |                                                                                                                             |  |
| _____ = Total Cover                                                   |                     |                      |                     |                                                                                                                             |  |
| Woody Vine Stratum (Plot size: _____)                                 |                     |                      |                     | Hydrophytic Vegetation Indicators:                                                                                          |  |
| 1. _____                                                              | _____               | _____                | _____               | <input checked="" type="checkbox"/> Dominance Test is >50%                                                                  |  |
| 2. _____                                                              | _____               | _____                | _____               | <input type="checkbox"/> Prevalence Index is ≤3.0 <sup>1</sup>                                                              |  |
|                                                                       |                     |                      |                     | <input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) |  |
|                                                                       |                     |                      |                     | <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)                                          |  |
|                                                                       |                     |                      |                     | <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.              |  |
|                                                                       |                     |                      |                     | Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____                                            |  |
| % Bare Ground in Herb Stratum <u>80</u> % Cover of Biotic Crust _____ |                     |                      |                     |                                                                                                                             |  |

Remarks:  
Most plants are not flowering making it difficult to key out to species. Juncus sp. is assumed to be FACW and Trifolium sp. is assumed to be FAC.



# SOIL

Sampling Point: SP-4a

## Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth<br>(inches) | Matrix        |     | Redox Features |    |                   |                  | Texture   | Remarks |
|-------------------|---------------|-----|----------------|----|-------------------|------------------|-----------|---------|
|                   | Color (moist) | %   | Color (moist)  | %  | Type <sup>1</sup> | Loc <sup>2</sup> |           |         |
| 0-5               | 10YR 3/2      | 90  | 7.5YR 4/4      | 10 | C                 | PL               | clay loam |         |
| 5-9               | 10YR 3/2      | 98  | 7.5YR 4/4      | 2  | C                 | PL               | clay loam |         |
| 9-12              | 10YR 4/1      | 100 |                |    |                   |                  | clay loam |         |
|                   |               |     |                |    |                   |                  |           |         |
|                   |               |     |                |    |                   |                  |           |         |
|                   |               |     |                |    |                   |                  |           |         |
|                   |               |     |                |    |                   |                  |           |         |
|                   |               |     |                |    |                   |                  |           |         |

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

### Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- |                                                              |                                                             |
|--------------------------------------------------------------|-------------------------------------------------------------|
| <input type="checkbox"/> Histosol (A1)                       | <input type="checkbox"/> Sandy Redox (S5)                   |
| <input type="checkbox"/> Histic Epipedon (A2)                | <input type="checkbox"/> Stripped Matrix (S6)               |
| <input type="checkbox"/> Black Histic (A3)                   | <input type="checkbox"/> Loamy Mucky Mineral (F1)           |
| <input type="checkbox"/> Hydrogen Sulfide (A4)               | <input type="checkbox"/> Loamy Gleyed Matrix (F2)           |
| <input type="checkbox"/> Stratified Layers (A5) <b>LRR C</b> | <input type="checkbox"/> Depleted Matrix (F3)               |
| <input type="checkbox"/> 1 cm Muck (A9) <b>(LRR D)</b>       | <input checked="" type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11)   | <input type="checkbox"/> Depleted Dark Surface (F7)         |
| <input type="checkbox"/> Thick Dark Surface (A12)            | <input type="checkbox"/> Redox Depressions (F8)             |
| <input type="checkbox"/> Sandy Mucky Mineral (S1)            | <input type="checkbox"/> Vernal Pools (F9)                  |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4)            |                                                             |

### Indicators for Problematic Hydric Soils<sup>3</sup>:

- ☐ 1 cm Muck (A9) **(LRR C)**  
☐ 2 cm Muck (A10) **LRR B**  
☐ Reduced Vertic (F18)  
☐ Red Parent Material (TF2)  
☐ Other (Explain in Remarks)

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

### Restrictive Layer (if present):

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes ☒ No ☐

Remarks:

# HYDROLOGY

## Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- |                                                                    |                                                                                   |
|--------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> Surface Water (A1)             | <input type="checkbox"/> Salt Crust (B11)                                         |
| <input type="checkbox"/> High Water Table (A2)                     | <input type="checkbox"/> Biotic Crust (B12)                                       |
| <input checked="" type="checkbox"/> Saturation (A3)                | <input type="checkbox"/> Aquatic Invertebrates (B13)                              |
| <input type="checkbox"/> Water Marks (B1) <b>(Nonriverine)</b>     | <input type="checkbox"/> Hydrogen Sulfide Odor (C1)                               |
| <input type="checkbox"/> Sediment Deposits (B2) <b>Nonriverine</b> | <input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) |
| <input type="checkbox"/> Drift Deposits (B3) <b>(Nonriverine)</b>  | <input type="checkbox"/> Presence of Reduced Iron (C4)                            |
| <input type="checkbox"/> Surface Soil Cracks (B6)                  | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)               |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Thin Muck Surface (C7)                                   |
| <input type="checkbox"/> Water-Stained Leaves (B9)                 | <input type="checkbox"/> Other (Explain in Remarks)                               |

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) **(Riverine)**  
☐ Sediment Deposits (B2) **Riverine**  
☐ Drift Deposits (B3) **(Riverine)**  
☐ Drainage Patterns (B10)  
☐ Dry-Season Water Table (C2)  
☐ Crayfish Burrows (C8)  
☐ Saturation Visible on Aerial Imagery (C9)  
☐ Shallow Aquitard (D3)  
☐ FAC-Neutral Test (D5)

### Field Observations:

Surface Water Present? Yes ☒ No ☐ Depth (inches): <1  
 Water Table Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_  
 Saturation Present? Yes ☒ No ☐ Depth (inches): 5  
 (includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks:

Inflow from hillslope seep. Wetted from top-down.

# WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Moraga-Oakland X 115 kV Rebuild Project City/County: Orinda/Contra Costa County Sampling Date: 12/28/23  
 Applicant/Owner: PG&E State: CA Sampling Point: SP-4b  
 Investigator(s): Kevin Fisher, Pim Laulikitnont-Lee Section, Township, Range: T1S, 3W  
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 2  
 Subregion (LRR): C Lat: 37.842829 Long: -122.177153 Datum: WGS 84  
 Soil Map Unit Name: Los Osos clay loam, 30 to 50 percent slopes NWI classification: \_\_\_\_\_

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 <input checked="" type="checkbox"/> | Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/> |
| Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/>            |                                                                                        |
| Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>      |                                                                                        |
| Remarks:<br>Upland point established for seep sloped wetland from hillslope.     |                                                                                        |

## VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: _____)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Absolute % Cover | Dominant Species? | Indicator Status | <b>Dominance Test worksheet:</b><br>Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A)<br><br>Total Number of Dominant Species Across All Strata: <u>2</u> (B)<br><br>Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)                                                                                                                                                                                                                                                                                                                                                           |                   |              |                      |                                  |                       |                |                      |                     |                        |                  |                       |                  |                               |                |                                    |          |       |       |       |                         |       |       |       |          |       |       |       |          |       |       |       |                          |  |  |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-------------------|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|--------------|----------------------|----------------------------------|-----------------------|----------------|----------------------|---------------------|------------------------|------------------|-----------------------|------------------|-------------------------------|----------------|------------------------------------|----------|-------|-------|-------|-------------------------|-------|-------|-------|----------|-------|-------|-------|----------|-------|-------|-------|--------------------------|--|--|--|
| 1. _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   |              |                      |                                  |                       |                |                      |                     |                        |                  |                       |                  |                               |                |                                    |          |       |       |       |                         |       |       |       |          |       |       |       |          |       |       |       |                          |  |  |  |
| 2. _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   |              |                      |                                  |                       |                |                      |                     |                        |                  |                       |                  |                               |                |                                    |          |       |       |       |                         |       |       |       |          |       |       |       |          |       |       |       |                          |  |  |  |
| 3. _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   |              |                      |                                  |                       |                |                      |                     |                        |                  |                       |                  |                               |                |                                    |          |       |       |       |                         |       |       |       |          |       |       |       |          |       |       |       |                          |  |  |  |
| 4. _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   |              |                      |                                  |                       |                |                      |                     |                        |                  |                       |                  |                               |                |                                    |          |       |       |       |                         |       |       |       |          |       |       |       |          |       |       |       |                          |  |  |  |
| _____ = Total Cover                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                  |                   |                  | <b>Prevalence Index worksheet:</b><br><table border="0"> <tr> <td>Total % Cover of:</td> <td>Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>90</u></td> <td>x 4 = <u>360</u></td> </tr> <tr> <td>UPL species <u>22</u></td> <td>x 5 = <u>110</u></td> </tr> <tr> <td>Column Totals: <u>112</u> (A)</td> <td><u>470</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A <u>4.20</u></td> </tr> </table> | Total % Cover of: | Multiply by: | OBL species <u>0</u> | x 1 = <u>0</u>                   | FACW species <u>0</u> | x 2 = <u>0</u> | FAC species <u>0</u> | x 3 = <u>0</u>      | FACU species <u>90</u> | x 4 = <u>360</u> | UPL species <u>22</u> | x 5 = <u>110</u> | Column Totals: <u>112</u> (A) | <u>470</u> (B) | Prevalence Index = B/A <u>4.20</u> |          |       |       |       |                         |       |       |       |          |       |       |       |          |       |       |       |                          |  |  |  |
| Total % Cover of:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Multiply by:     |                   |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   |              |                      |                                  |                       |                |                      |                     |                        |                  |                       |                  |                               |                |                                    |          |       |       |       |                         |       |       |       |          |       |       |       |          |       |       |       |                          |  |  |  |
| OBL species <u>0</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | x 1 = <u>0</u>   |                   |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   |              |                      |                                  |                       |                |                      |                     |                        |                  |                       |                  |                               |                |                                    |          |       |       |       |                         |       |       |       |          |       |       |       |          |       |       |       |                          |  |  |  |
| FACW species <u>0</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | x 2 = <u>0</u>   |                   |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   |              |                      |                                  |                       |                |                      |                     |                        |                  |                       |                  |                               |                |                                    |          |       |       |       |                         |       |       |       |          |       |       |       |          |       |       |       |                          |  |  |  |
| FAC species <u>0</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | x 3 = <u>0</u>   |                   |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   |              |                      |                                  |                       |                |                      |                     |                        |                  |                       |                  |                               |                |                                    |          |       |       |       |                         |       |       |       |          |       |       |       |          |       |       |       |                          |  |  |  |
| FACU species <u>90</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | x 4 = <u>360</u> |                   |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   |              |                      |                                  |                       |                |                      |                     |                        |                  |                       |                  |                               |                |                                    |          |       |       |       |                         |       |       |       |          |       |       |       |          |       |       |       |                          |  |  |  |
| UPL species <u>22</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | x 5 = <u>110</u> |                   |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   |              |                      |                                  |                       |                |                      |                     |                        |                  |                       |                  |                               |                |                                    |          |       |       |       |                         |       |       |       |          |       |       |       |          |       |       |       |                          |  |  |  |
| Column Totals: <u>112</u> (A)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <u>470</u> (B)   |                   |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   |              |                      |                                  |                       |                |                      |                     |                        |                  |                       |                  |                               |                |                                    |          |       |       |       |                         |       |       |       |          |       |       |       |          |       |       |       |                          |  |  |  |
| Prevalence Index = B/A <u>4.20</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                  |                   |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   |              |                      |                                  |                       |                |                      |                     |                        |                  |                       |                  |                               |                |                                    |          |       |       |       |                         |       |       |       |          |       |       |       |          |       |       |       |                          |  |  |  |
| <b>Sapling/Shrub Stratum</b> (Plot size: _____) <table border="0"> <tr> <td>1. <u>Baccharis pilularis</u></td> <td><u>10</u></td> <td><u>Y</u></td> <td><u>NL</u></td> </tr> <tr> <td>2. <u>Lupin albifrons</u></td> <td><u>2</u></td> <td><u>N</u></td> <td><u>NL</u></td> </tr> <tr> <td>3. _____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>4. _____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>5. _____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td colspan="4"><u>12</u> = Total Cover</td> </tr> </table>                                                                                                                                                                                                                                          |                  |                   |                  | 1. <u>Baccharis pilularis</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <u>10</u>         | <u>Y</u>     | <u>NL</u>            | 2. <u>Lupin albifrons</u>        | <u>2</u>              | <u>N</u>       | <u>NL</u>            | 3. _____            | _____                  | _____            | _____                 | 4. _____         | _____                         | _____          | _____                              | 5. _____ | _____ | _____ | _____ | <u>12</u> = Total Cover |       |       |       |          |       |       |       |          |       |       |       |                          |  |  |  |
| 1. <u>Baccharis pilularis</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <u>10</u>        | <u>Y</u>          | <u>NL</u>        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   |              |                      |                                  |                       |                |                      |                     |                        |                  |                       |                  |                               |                |                                    |          |       |       |       |                         |       |       |       |          |       |       |       |          |       |       |       |                          |  |  |  |
| 2. <u>Lupin albifrons</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <u>2</u>         | <u>N</u>          | <u>NL</u>        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   |              |                      |                                  |                       |                |                      |                     |                        |                  |                       |                  |                               |                |                                    |          |       |       |       |                         |       |       |       |          |       |       |       |          |       |       |       |                          |  |  |  |
| 3. _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   |              |                      |                                  |                       |                |                      |                     |                        |                  |                       |                  |                               |                |                                    |          |       |       |       |                         |       |       |       |          |       |       |       |          |       |       |       |                          |  |  |  |
| 4. _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   |              |                      |                                  |                       |                |                      |                     |                        |                  |                       |                  |                               |                |                                    |          |       |       |       |                         |       |       |       |          |       |       |       |          |       |       |       |                          |  |  |  |
| 5. _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   |              |                      |                                  |                       |                |                      |                     |                        |                  |                       |                  |                               |                |                                    |          |       |       |       |                         |       |       |       |          |       |       |       |          |       |       |       |                          |  |  |  |
| <u>12</u> = Total Cover                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                  |                   |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   |              |                      |                                  |                       |                |                      |                     |                        |                  |                       |                  |                               |                |                                    |          |       |       |       |                         |       |       |       |          |       |       |       |          |       |       |       |                          |  |  |  |
| <b>Herb Stratum</b> (Plot size: <u>5 ft</u> ) <table border="0"> <tr> <td>1. <u>Unknown upland grass*</u></td> <td><u>90</u></td> <td><u>Y</u></td> <td><u>FACU</u></td> </tr> <tr> <td>2. <u>Centaurea solstitialis</u></td> <td><u>10</u></td> <td><u>N</u></td> <td><u>NL</u></td> </tr> <tr> <td>3. _____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>4. _____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>5. _____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>6. _____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>7. _____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>8. _____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td colspan="4"><u>100</u> = Total Cover</td> </tr> </table> |                  |                   |                  | 1. <u>Unknown upland grass*</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <u>90</u>         | <u>Y</u>     | <u>FACU</u>          | 2. <u>Centaurea solstitialis</u> | <u>10</u>             | <u>N</u>       | <u>NL</u>            | 3. _____            | _____                  | _____            | _____                 | 4. _____         | _____                         | _____          | _____                              | 5. _____ | _____ | _____ | _____ | 6. _____                | _____ | _____ | _____ | 7. _____ | _____ | _____ | _____ | 8. _____ | _____ | _____ | _____ | <u>100</u> = Total Cover |  |  |  |
| 1. <u>Unknown upland grass*</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <u>90</u>        | <u>Y</u>          | <u>FACU</u>      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   |              |                      |                                  |                       |                |                      |                     |                        |                  |                       |                  |                               |                |                                    |          |       |       |       |                         |       |       |       |          |       |       |       |          |       |       |       |                          |  |  |  |
| 2. <u>Centaurea solstitialis</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <u>10</u>        | <u>N</u>          | <u>NL</u>        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   |              |                      |                                  |                       |                |                      |                     |                        |                  |                       |                  |                               |                |                                    |          |       |       |       |                         |       |       |       |          |       |       |       |          |       |       |       |                          |  |  |  |
| 3. _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   |              |                      |                                  |                       |                |                      |                     |                        |                  |                       |                  |                               |                |                                    |          |       |       |       |                         |       |       |       |          |       |       |       |          |       |       |       |                          |  |  |  |
| 4. _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   |              |                      |                                  |                       |                |                      |                     |                        |                  |                       |                  |                               |                |                                    |          |       |       |       |                         |       |       |       |          |       |       |       |          |       |       |       |                          |  |  |  |
| 5. _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   |              |                      |                                  |                       |                |                      |                     |                        |                  |                       |                  |                               |                |                                    |          |       |       |       |                         |       |       |       |          |       |       |       |          |       |       |       |                          |  |  |  |
| 6. _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   |              |                      |                                  |                       |                |                      |                     |                        |                  |                       |                  |                               |                |                                    |          |       |       |       |                         |       |       |       |          |       |       |       |          |       |       |       |                          |  |  |  |
| 7. _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   |              |                      |                                  |                       |                |                      |                     |                        |                  |                       |                  |                               |                |                                    |          |       |       |       |                         |       |       |       |          |       |       |       |          |       |       |       |                          |  |  |  |
| 8. _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   |              |                      |                                  |                       |                |                      |                     |                        |                  |                       |                  |                               |                |                                    |          |       |       |       |                         |       |       |       |          |       |       |       |          |       |       |       |                          |  |  |  |
| <u>100</u> = Total Cover                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                   |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   |              |                      |                                  |                       |                |                      |                     |                        |                  |                       |                  |                               |                |                                    |          |       |       |       |                         |       |       |       |          |       |       |       |          |       |       |       |                          |  |  |  |
| <b>Woody Vine Stratum</b> (Plot size: _____) <table border="0"> <tr> <td>1. _____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>2. _____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td colspan="4">_____ = Total Cover</td> </tr> </table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                  |                   |                  | 1. _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | _____             | _____        | _____                | 2. _____                         | _____                 | _____          | _____                | _____ = Total Cover |                        |                  |                       |                  |                               |                |                                    |          |       |       |       |                         |       |       |       |          |       |       |       |          |       |       |       |                          |  |  |  |
| 1. _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   |              |                      |                                  |                       |                |                      |                     |                        |                  |                       |                  |                               |                |                                    |          |       |       |       |                         |       |       |       |          |       |       |       |          |       |       |       |                          |  |  |  |
| 2. _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   |              |                      |                                  |                       |                |                      |                     |                        |                  |                       |                  |                               |                |                                    |          |       |       |       |                         |       |       |       |          |       |       |       |          |       |       |       |                          |  |  |  |
| _____ = Total Cover                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                  |                   |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   |              |                      |                                  |                       |                |                      |                     |                        |                  |                       |                  |                               |                |                                    |          |       |       |       |                         |       |       |       |          |       |       |       |          |       |       |       |                          |  |  |  |
| % Bare Ground in Herb Stratum <u>80</u> % Cover of Biotic Crust _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                  |                   |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   |              |                      |                                  |                       |                |                      |                     |                        |                  |                       |                  |                               |                |                                    |          |       |       |       |                         |       |       |       |          |       |       |       |          |       |       |       |                          |  |  |  |
| <b>Hydrophytic Vegetation Indicators:</b><br>_____ Dominance Test is >50%<br>_____ Prevalence Index is ≤3.0 <sup>1</sup><br>_____ Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)<br>_____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                  |                   |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   |              |                      |                                  |                       |                |                      |                     |                        |                  |                       |                  |                               |                |                                    |          |       |       |       |                         |       |       |       |          |       |       |       |          |       |       |       |                          |  |  |  |
| <b>Hydrophytic Vegetation Present?</b> Yes _____ No <input checked="" type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                  |                   |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   |              |                      |                                  |                       |                |                      |                     |                        |                  |                       |                  |                               |                |                                    |          |       |       |       |                         |       |       |       |          |       |       |       |          |       |       |       |                          |  |  |  |
| Remarks:<br>Most plants are not flowering making it difficult to key out to species. Unknown upland grass is assumed to be FACU.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                  |                   |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   |              |                      |                                  |                       |                |                      |                     |                        |                  |                       |                  |                               |                |                                    |          |       |       |       |                         |       |       |       |          |       |       |       |          |       |       |       |                          |  |  |  |

## SOIL

Sampling Point: SP-4b

[illegible]

## HYDROLOGY

| Wetland Hydrology Indicators:                                                                                                                                                                                                                                                                                                                                                            |                                                                        |                                                                                                       |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| Primary Indicators (minimum of one required; check all that apply)                                                                                                                                                                                                                                                                                                                       |                                                                        | Secondary Indicators (2 or more required)                                                             |
| <input type="checkbox"/> Surface Water (A1)                                                                                                                                                                                                                                                                                                                                              | <input type="checkbox"/> Salt Crust (B11)                              | <input type="checkbox"/> Water Marks (B1) ( <b>Riverine</b> )                                         |
| <input type="checkbox"/> High Water Table (A2)                                                                                                                                                                                                                                                                                                                                           | <input type="checkbox"/> Biotic Crust (B12)                            | <input type="checkbox"/> Sediment Deposits (B2) ( <b>Riverine</b> )                                   |
| <input type="checkbox"/> Saturation (A3)                                                                                                                                                                                                                                                                                                                                                 | <input type="checkbox"/> Aquatic Invertebrates (B13)                   | <input type="checkbox"/> Drift Deposits (B3) ( <b>Riverine</b> )                                      |
| <input type="checkbox"/> Water Marks (B1) ( <b>Nonriverine</b> )                                                                                                                                                                                                                                                                                                                         | <input type="checkbox"/> Hydrogen Sulfide Odor (C1)                    | <input type="checkbox"/> Drainage Patterns (B10)                                                      |
| <input type="checkbox"/> Sediment Deposits (B2) ( <b>Nonriverine</b> )                                                                                                                                                                                                                                                                                                                   | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) | <input type="checkbox"/> Dry-Season Water Table (C2)                                                  |
| <input type="checkbox"/> Drift Deposits (B3) ( <b>Nonriverine</b> )                                                                                                                                                                                                                                                                                                                      | <input type="checkbox"/> Presence of Reduced Iron (C4)                 | <input type="checkbox"/> Crayfish Burrows (C8)                                                        |
| <input type="checkbox"/> Surface Soil Cracks (B6)                                                                                                                                                                                                                                                                                                                                        | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)    | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)                                    |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)                                                                                                                                                                                                                                                                                                                       | <input type="checkbox"/> Thin Muck Surface (C7)                        | <input type="checkbox"/> Shallow Aquitard (D3)                                                        |
| <input type="checkbox"/> Water-Stained Leaves (B9)                                                                                                                                                                                                                                                                                                                                       | <input type="checkbox"/> Other (Explain in Remarks)                    | <input type="checkbox"/> FAC-Neutral Test (D5)                                                        |
| <b>Field Observations:</b><br>Surface Water Present?    Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____<br>Water Table Present?    Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____<br>Saturation Present?    Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____<br>(includes capillary fringe) |                                                                        | <b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:                                                                                                                                                                                                                                                                               |                                                                        |                                                                                                       |
| Remarks:                                                                                                                                                                                                                                                                                                                                                                                 |                                                                        |                                                                                                       |



# WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Moraga-Oakland X 115 kV Rebuild Project City/County: Orinda/Contra Costa County Sampling Date: 12/28/23  
 Applicant/Owner: PG&E State: CA Sampling Point: SP-5a  
 Investigator(s): Kevin Fisher, Pim Laulikitnont-Lee Section, Township, Range: T1S, 3W  
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 3  
 Subregion (LRR): C Lat: 37.8432391 Long: -122.1771980 Datum: WGS 84  
 Soil Map Unit Name: Los Osos clay loam, 30 to 50 percent slopes NWI classification: \_\_\_\_\_

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 <input checked="" type="checkbox"/> No _____ | Is the Sampled Area<br>within a Wetland? | Yes <input checked="" type="checkbox"/> No _____ |
| Hydric Soil Present?                                | Yes <input checked="" type="checkbox"/> No _____ |                                          |                                                  |
| Wetland Hydrology Present?                          | Yes <input checked="" type="checkbox"/> No _____ |                                          |                                                  |
| Remarks:<br><br>Seep sloped wetland from hillslope. |                                                  |                                          |                                                  |

## VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: _____)                                   | Absolute<br>% Cover | Dominant<br>Species? | Indicator<br>Status | Dominance Test worksheet:                                                                                      |  |
|-------------------------------------------------------------------|---------------------|----------------------|---------------------|----------------------------------------------------------------------------------------------------------------|--|
| 1. _____                                                          | _____               | _____                | _____               | Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)                                            |  |
| 2. _____                                                          | _____               | _____                | _____               | Total Number of Dominant Species Across All Strata: <u>1</u> (B)                                               |  |
| 3. _____                                                          | _____               | _____                | _____               | Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)                                       |  |
| 4. _____                                                          | _____               | _____                | _____               |                                                                                                                |  |
| _____ = Total Cover                                               |                     |                      |                     |                                                                                                                |  |
| Sapling/Shrub Stratum (Plot size: _____)                          |                     |                      |                     | Prevalence Index worksheet:                                                                                    |  |
| 1. _____                                                          | _____               | _____                | _____               | Total % Cover of: _____ Multiply by: _____                                                                     |  |
| 2. _____                                                          | _____               | _____                | _____               | OBL species _____ x 1 = _____                                                                                  |  |
| 3. _____                                                          | _____               | _____                | _____               | FACW species _____ x 2 = _____                                                                                 |  |
| 4. _____                                                          | _____               | _____                | _____               | FAC species _____ x 3 = _____                                                                                  |  |
| 5. _____                                                          | _____               | _____                | _____               | FACU species _____ x 4 = _____                                                                                 |  |
| _____ = Total Cover                                               |                     |                      |                     | UPL species _____ x 5 = _____                                                                                  |  |
| Herb Stratum (Plot size: <u>5 ft</u> )                            |                     |                      |                     | Column Totals: _____ (A) _____ (B)                                                                             |  |
| 1. <u>Unknown graminoid</u>                                       | <u>80</u>           | <u>Y</u>             | <u>FACW</u>         | Prevalence Index = B/A _____                                                                                   |  |
| 2. <u>Lythrum hyssopifolium</u>                                   | <u>10</u>           | <u>N</u>             | <u>OBL</u>          |                                                                                                                |  |
| 3. <u>Mentha arvensis</u>                                         | <u>5</u>            | <u>N</u>             | <u>FACW</u>         |                                                                                                                |  |
| 4. <u>Helminthotheca echioides</u>                                | <u>5</u>            | <u>N</u>             | <u>FAC</u>          |                                                                                                                |  |
| 5. _____                                                          | _____               | _____                | _____               |                                                                                                                |  |
| 6. _____                                                          | _____               | _____                | _____               |                                                                                                                |  |
| 7. _____                                                          | _____               | _____                | _____               |                                                                                                                |  |
| 8. _____                                                          | _____               | _____                | _____               |                                                                                                                |  |
| _____ = Total Cover                                               |                     |                      |                     |                                                                                                                |  |
| Woody Vine Stratum (Plot size: _____)                             |                     |                      |                     | Hydrophytic Vegetation Indicators:                                                                             |  |
| 1. _____                                                          | _____               | _____                | _____               | ___ Dominance Test is >50%                                                                                     |  |
| 2. _____                                                          | _____               | _____                | _____               | ___ Prevalence Index is ≤3.0 <sup>1</sup>                                                                      |  |
|                                                                   |                     |                      |                     | ___ Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)         |  |
|                                                                   |                     |                      |                     | ___ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)                                                  |  |
|                                                                   |                     |                      |                     | <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. |  |
|                                                                   |                     |                      |                     | Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____                               |  |
| % Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____ |                     |                      |                     |                                                                                                                |  |

Remarks:

No seed head on unknown graminoid to key out to species, assumed FACW if not wetter.

# SOIL

Sampling Point: SP-5a

## Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth<br>(inches) | Matrix        |     | Redox Features |    |                   |                  | Texture   | Remarks |
|-------------------|---------------|-----|----------------|----|-------------------|------------------|-----------|---------|
|                   | Color (moist) | %   | Color (moist)  | %  | Type <sup>1</sup> | Loc <sup>2</sup> |           |         |
| 0-3               | 10YR 3/1      | 98  | 7.5YR 4/4      | 2  | C                 | PL               | clay loam |         |
| 3-8               | 10YR 2/1      | 85  | 7.5YR 4/4      | 15 | C                 | PL               | clay loam |         |
| 8-12              | 10YR 2/1      | 100 |                |    |                   |                  | clay loam |         |
|                   |               |     |                |    |                   |                  |           |         |
|                   |               |     |                |    |                   |                  |           |         |
|                   |               |     |                |    |                   |                  |           |         |
|                   |               |     |                |    |                   |                  |           |         |
|                   |               |     |                |    |                   |                  |           |         |

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

### Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- |                                                              |                                                             |
|--------------------------------------------------------------|-------------------------------------------------------------|
| <input type="checkbox"/> Histosol (A1)                       | <input type="checkbox"/> Sandy Redox (S5)                   |
| <input type="checkbox"/> Histic Epipedon (A2)                | <input type="checkbox"/> Stripped Matrix (S6)               |
| <input type="checkbox"/> Black Histic (A3)                   | <input type="checkbox"/> Loamy Mucky Mineral (F1)           |
| <input type="checkbox"/> Hydrogen Sulfide (A4)               | <input type="checkbox"/> Loamy Gleyed Matrix (F2)           |
| <input type="checkbox"/> Stratified Layers (A5) <b>LRR C</b> | <input type="checkbox"/> Depleted Matrix (F3)               |
| <input type="checkbox"/> 1 cm Muck (A9) <b>(LRR D)</b>       | <input checked="" type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11)   | <input type="checkbox"/> Depleted Dark Surface (F7)         |
| <input type="checkbox"/> Thick Dark Surface (A12)            | <input type="checkbox"/> Redox Depressions (F8)             |
| <input type="checkbox"/> Sandy Mucky Mineral (S1)            | <input type="checkbox"/> Vernal Pools (F9)                  |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4)            |                                                             |

### Indicators for Problematic Hydric Soils<sup>3</sup>:

- ☐ 1 cm Muck (A9) **(LRR C)**  
☐ 2 cm Muck (A10) **LRR B**  
☐ Reduced Vertic (F18)  
☐ Red Parent Material (TF2)  
☐ Other (Explain in Remarks)

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

### Restrictive Layer (if present):

Type: \_\_\_\_\_  
 Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes ☒ No ☐

Remarks:

# HYDROLOGY

## Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- |                                                                    |                                                                                   |
|--------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> Surface Water (A1)             | <input type="checkbox"/> Salt Crust (B11)                                         |
| <input checked="" type="checkbox"/> High Water Table (A2)          | <input type="checkbox"/> Biotic Crust (B12)                                       |
| <input checked="" type="checkbox"/> Saturation (A3)                | <input type="checkbox"/> Aquatic Invertebrates (B13)                              |
| <input type="checkbox"/> Water Marks (B1) <b>(Nonriverine)</b>     | <input type="checkbox"/> Hydrogen Sulfide Odor (C1)                               |
| <input type="checkbox"/> Sediment Deposits (B2) <b>Nonriverine</b> | <input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) |
| <input type="checkbox"/> Drift Deposits (B3) <b>(Nonriverine)</b>  | <input type="checkbox"/> Presence of Reduced Iron (C4)                            |
| <input type="checkbox"/> Surface Soil Cracks (B6)                  | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)               |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Thin Muck Surface (C7)                                   |
| <input type="checkbox"/> Water-Stained Leaves (B9)                 | <input type="checkbox"/> Other (Explain in Remarks)                               |

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) **(Riverine)**  
☐ Sediment Deposits (B2) **Riverine**  
☐ Drift Deposits (B3) **(Riverine)**  
☐ Drainage Patterns (B10)  
☐ Dry-Season Water Table (C2)  
☐ Crayfish Burrows (C8)  
☐ Saturation Visible on Aerial Imagery (C9)  
☐ Shallow Aquitard (D3)  
☐ FAC-Neutral Test (D5)

### Field Observations:

Surface Water Present? Yes ☒ No ☐ Depth (inches): <1  
 Water Table Present? Yes ☒ No ☐ Depth (inches): 8  
 Saturation Present? Yes ☒ No ☐ Depth (inches): 8  
 (includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks:

Appears to be ponding as well as shallow water table at 8 inches.

# WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Moraga-Oakland X 115 kV Rebuild Project City/County: Orinda/Contra Costa County Sampling Date: 12/28/23  
 Applicant/Owner: PG&E State: CA Sampling Point: SP-5b  
 Investigator(s): Kevin Fisher, Pim Laulikitnont-Lee Section, Township, Range: T1S, 3W  
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 3  
 Subregion (LRR): C Lat: 37.843284 Long: -122.177128 Datum: WGS 84  
 Soil Map Unit Name: Los Osos clay loam, 30 to 50 percent slopes NWI classification: \_\_\_\_\_

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 <input checked="" type="checkbox"/> | Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/> |
| Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/>            |                                                                                        |
| Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>      |                                                                                        |
| Remarks:<br><br>Seep sloped wetland from hillslope.                              |                                                                                        |

## VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: _____)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Absolute % Cover | Dominant Species? | Indicator Status | <b>Dominance Test worksheet:</b><br>Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)<br><br>Total Number of Dominant Species Across All Strata: <u>2</u> (B)<br><br>Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B)                                                                                                                                                                                                                                                                                                                                                           |                   |              |                      |                            |                        |                 |                       |                            |                       |                |                       |                                 |                               |                |                                    |                                    |          |          |            |                          |          |          |            |          |       |       |       |          |       |       |       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-------------------|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|--------------|----------------------|----------------------------|------------------------|-----------------|-----------------------|----------------------------|-----------------------|----------------|-----------------------|---------------------------------|-------------------------------|----------------|------------------------------------|------------------------------------|----------|----------|------------|--------------------------|----------|----------|------------|----------|-------|-------|-------|----------|-------|-------|-------|
| 1. _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |              |                      |                            |                        |                 |                       |                            |                       |                |                       |                                 |                               |                |                                    |                                    |          |          |            |                          |          |          |            |          |       |       |       |          |       |       |       |
| 2. _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |              |                      |                            |                        |                 |                       |                            |                       |                |                       |                                 |                               |                |                                    |                                    |          |          |            |                          |          |          |            |          |       |       |       |          |       |       |       |
| 3. _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |              |                      |                            |                        |                 |                       |                            |                       |                |                       |                                 |                               |                |                                    |                                    |          |          |            |                          |          |          |            |          |       |       |       |          |       |       |       |
| 4. _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |              |                      |                            |                        |                 |                       |                            |                       |                |                       |                                 |                               |                |                                    |                                    |          |          |            |                          |          |          |            |          |       |       |       |          |       |       |       |
| _____ = Total Cover                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                  |                   |                  | <b>Prevalence Index worksheet:</b><br><table border="0"> <tr> <td>Total % Cover of:</td> <td>Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>30</u></td> <td>x 2 = <u>60</u></td> </tr> <tr> <td>FAC species <u>10</u></td> <td>x 3 = <u>30</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>60</u></td> <td>x 5 = <u>300</u></td> </tr> <tr> <td>Column Totals: <u>100</u> (A)</td> <td><u>390</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A <u>3.90</u></td> </tr> </table> | Total % Cover of: | Multiply by: | OBL species <u>0</u> | x 1 = <u>0</u>             | FACW species <u>30</u> | x 2 = <u>60</u> | FAC species <u>10</u> | x 3 = <u>30</u>            | FACU species <u>0</u> | x 4 = <u>0</u> | UPL species <u>60</u> | x 5 = <u>300</u>                | Column Totals: <u>100</u> (A) | <u>390</u> (B) | Prevalence Index = B/A <u>3.90</u> |                                    |          |          |            |                          |          |          |            |          |       |       |       |          |       |       |       |
| Total % Cover of:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Multiply by:     |                   |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |              |                      |                            |                        |                 |                       |                            |                       |                |                       |                                 |                               |                |                                    |                                    |          |          |            |                          |          |          |            |          |       |       |       |          |       |       |       |
| OBL species <u>0</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | x 1 = <u>0</u>   |                   |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |              |                      |                            |                        |                 |                       |                            |                       |                |                       |                                 |                               |                |                                    |                                    |          |          |            |                          |          |          |            |          |       |       |       |          |       |       |       |
| FACW species <u>30</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | x 2 = <u>60</u>  |                   |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |              |                      |                            |                        |                 |                       |                            |                       |                |                       |                                 |                               |                |                                    |                                    |          |          |            |                          |          |          |            |          |       |       |       |          |       |       |       |
| FAC species <u>10</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | x 3 = <u>30</u>  |                   |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |              |                      |                            |                        |                 |                       |                            |                       |                |                       |                                 |                               |                |                                    |                                    |          |          |            |                          |          |          |            |          |       |       |       |          |       |       |       |
| FACU species <u>0</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | x 4 = <u>0</u>   |                   |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |              |                      |                            |                        |                 |                       |                            |                       |                |                       |                                 |                               |                |                                    |                                    |          |          |            |                          |          |          |            |          |       |       |       |          |       |       |       |
| UPL species <u>60</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | x 5 = <u>300</u> |                   |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |              |                      |                            |                        |                 |                       |                            |                       |                |                       |                                 |                               |                |                                    |                                    |          |          |            |                          |          |          |            |          |       |       |       |          |       |       |       |
| Column Totals: <u>100</u> (A)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <u>390</u> (B)   |                   |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |              |                      |                            |                        |                 |                       |                            |                       |                |                       |                                 |                               |                |                                    |                                    |          |          |            |                          |          |          |            |          |       |       |       |          |       |       |       |
| Prevalence Index = B/A <u>3.90</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                  |                   |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |              |                      |                            |                        |                 |                       |                            |                       |                |                       |                                 |                               |                |                                    |                                    |          |          |            |                          |          |          |            |          |       |       |       |          |       |       |       |
| _____ = Total Cover                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                  |                   |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |              |                      |                            |                        |                 |                       |                            |                       |                |                       |                                 |                               |                |                                    |                                    |          |          |            |                          |          |          |            |          |       |       |       |          |       |       |       |
| <b>Sapling/Shrub Stratum</b> (Plot size: _____) <table border="0"> <tr> <td>1. _____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>2. _____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>3. _____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>4. _____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>5. _____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> </table>                                                                                                                                                                                                                                                                                                                                                                                                                           |                  |                   |                  | 1. _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | _____             | _____        | _____                | 2. _____                   | _____                  | _____           | _____                 | 3. _____                   | _____                 | _____          | _____                 | 4. _____                        | _____                         | _____          | _____                              | 5. _____                           | _____    | _____    | _____      |                          |          |          |            |          |       |       |       |          |       |       |       |
| 1. _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |              |                      |                            |                        |                 |                       |                            |                       |                |                       |                                 |                               |                |                                    |                                    |          |          |            |                          |          |          |            |          |       |       |       |          |       |       |       |
| 2. _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |              |                      |                            |                        |                 |                       |                            |                       |                |                       |                                 |                               |                |                                    |                                    |          |          |            |                          |          |          |            |          |       |       |       |          |       |       |       |
| 3. _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |              |                      |                            |                        |                 |                       |                            |                       |                |                       |                                 |                               |                |                                    |                                    |          |          |            |                          |          |          |            |          |       |       |       |          |       |       |       |
| 4. _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |              |                      |                            |                        |                 |                       |                            |                       |                |                       |                                 |                               |                |                                    |                                    |          |          |            |                          |          |          |            |          |       |       |       |          |       |       |       |
| 5. _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |              |                      |                            |                        |                 |                       |                            |                       |                |                       |                                 |                               |                |                                    |                                    |          |          |            |                          |          |          |            |          |       |       |       |          |       |       |       |
| _____ = Total Cover                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                  |                   |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |              |                      |                            |                        |                 |                       |                            |                       |                |                       |                                 |                               |                |                                    |                                    |          |          |            |                          |          |          |            |          |       |       |       |          |       |       |       |
| <b>Herb Stratum</b> (Plot size: <u>5 ft</u> ) <table border="0"> <tr> <td>1. <u>Anthriscus caucalis</u></td> <td><u>40</u></td> <td><u>Y</u></td> <td><u>NL</u></td> </tr> <tr> <td>2. <u>Conium maculatum</u></td> <td><u>30</u></td> <td><u>Y</u></td> <td><u>FACW</u></td> </tr> <tr> <td>3. <u>Silybum marianum</u></td> <td><u>10</u></td> <td><u>N</u></td> <td><u>NL</u></td> </tr> <tr> <td>4. <u>Carduus pycnocephalus</u></td> <td><u>10</u></td> <td><u>N</u></td> <td><u>NL</u></td> </tr> <tr> <td>5. <u>Helminthotheca echioides</u></td> <td><u>5</u></td> <td><u>N</u></td> <td><u>FAC</u></td> </tr> <tr> <td>6. <u>Unknown grass*</u></td> <td><u>5</u></td> <td><u>N</u></td> <td><u>FAC</u></td> </tr> <tr> <td>7. _____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>8. _____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> </table> |                  |                   |                  | 1. <u>Anthriscus caucalis</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <u>40</u>         | <u>Y</u>     | <u>NL</u>            | 2. <u>Conium maculatum</u> | <u>30</u>              | <u>Y</u>        | <u>FACW</u>           | 3. <u>Silybum marianum</u> | <u>10</u>             | <u>N</u>       | <u>NL</u>             | 4. <u>Carduus pycnocephalus</u> | <u>10</u>                     | <u>N</u>       | <u>NL</u>                          | 5. <u>Helminthotheca echioides</u> | <u>5</u> | <u>N</u> | <u>FAC</u> | 6. <u>Unknown grass*</u> | <u>5</u> | <u>N</u> | <u>FAC</u> | 7. _____ | _____ | _____ | _____ | 8. _____ | _____ | _____ | _____ |
| 1. <u>Anthriscus caucalis</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <u>40</u>        | <u>Y</u>          | <u>NL</u>        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |              |                      |                            |                        |                 |                       |                            |                       |                |                       |                                 |                               |                |                                    |                                    |          |          |            |                          |          |          |            |          |       |       |       |          |       |       |       |
| 2. <u>Conium maculatum</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <u>30</u>        | <u>Y</u>          | <u>FACW</u>      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |              |                      |                            |                        |                 |                       |                            |                       |                |                       |                                 |                               |                |                                    |                                    |          |          |            |                          |          |          |            |          |       |       |       |          |       |       |       |
| 3. <u>Silybum marianum</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <u>10</u>        | <u>N</u>          | <u>NL</u>        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |              |                      |                            |                        |                 |                       |                            |                       |                |                       |                                 |                               |                |                                    |                                    |          |          |            |                          |          |          |            |          |       |       |       |          |       |       |       |
| 4. <u>Carduus pycnocephalus</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <u>10</u>        | <u>N</u>          | <u>NL</u>        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |              |                      |                            |                        |                 |                       |                            |                       |                |                       |                                 |                               |                |                                    |                                    |          |          |            |                          |          |          |            |          |       |       |       |          |       |       |       |
| 5. <u>Helminthotheca echioides</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <u>5</u>         | <u>N</u>          | <u>FAC</u>       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |              |                      |                            |                        |                 |                       |                            |                       |                |                       |                                 |                               |                |                                    |                                    |          |          |            |                          |          |          |            |          |       |       |       |          |       |       |       |
| 6. <u>Unknown grass*</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <u>5</u>         | <u>N</u>          | <u>FAC</u>       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |              |                      |                            |                        |                 |                       |                            |                       |                |                       |                                 |                               |                |                                    |                                    |          |          |            |                          |          |          |            |          |       |       |       |          |       |       |       |
| 7. _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |              |                      |                            |                        |                 |                       |                            |                       |                |                       |                                 |                               |                |                                    |                                    |          |          |            |                          |          |          |            |          |       |       |       |          |       |       |       |
| 8. _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |              |                      |                            |                        |                 |                       |                            |                       |                |                       |                                 |                               |                |                                    |                                    |          |          |            |                          |          |          |            |          |       |       |       |          |       |       |       |
| _____ = Total Cover                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                  |                   |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |              |                      |                            |                        |                 |                       |                            |                       |                |                       |                                 |                               |                |                                    |                                    |          |          |            |                          |          |          |            |          |       |       |       |          |       |       |       |
| <b>Woody Vine Stratum</b> (Plot size: _____) <table border="0"> <tr> <td>1. _____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>2. _____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> </table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                  |                   |                  | 1. _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | _____             | _____        | _____                | 2. _____                   | _____                  | _____           | _____                 |                            |                       |                |                       |                                 |                               |                |                                    |                                    |          |          |            |                          |          |          |            |          |       |       |       |          |       |       |       |
| 1. _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |              |                      |                            |                        |                 |                       |                            |                       |                |                       |                                 |                               |                |                                    |                                    |          |          |            |                          |          |          |            |          |       |       |       |          |       |       |       |
| 2. _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | _____            | _____             | _____            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |              |                      |                            |                        |                 |                       |                            |                       |                |                       |                                 |                               |                |                                    |                                    |          |          |            |                          |          |          |            |          |       |       |       |          |       |       |       |
| _____ = Total Cover                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                  |                   |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |              |                      |                            |                        |                 |                       |                            |                       |                |                       |                                 |                               |                |                                    |                                    |          |          |            |                          |          |          |            |          |       |       |       |          |       |       |       |
| % Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                  |                   |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |              |                      |                            |                        |                 |                       |                            |                       |                |                       |                                 |                               |                |                                    |                                    |          |          |            |                          |          |          |            |          |       |       |       |          |       |       |       |
| <b>Hydrophytic Vegetation Indicators:</b><br>___ Dominance Test is >50%<br>___ Prevalence Index is ≤3.0 <sup>1</sup><br>___ Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)<br>___ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                  |                   |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |              |                      |                            |                        |                 |                       |                            |                       |                |                       |                                 |                               |                |                                    |                                    |          |          |            |                          |          |          |            |          |       |       |       |          |       |       |       |
| <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                  |                   |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |              |                      |                            |                        |                 |                       |                            |                       |                |                       |                                 |                               |                |                                    |                                    |          |          |            |                          |          |          |            |          |       |       |       |          |       |       |       |
| <b>Hydrophytic Vegetation Present?</b> Yes _____ No <input checked="" type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                  |                   |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |              |                      |                            |                        |                 |                       |                            |                       |                |                       |                                 |                               |                |                                    |                                    |          |          |            |                          |          |          |            |          |       |       |       |          |       |       |       |
| Remarks:<br><br>No seed head on unknown grass, assumed FAC.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |                   |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |              |                      |                            |                        |                 |                       |                            |                       |                |                       |                                 |                               |                |                                    |                                    |          |          |            |                          |          |          |            |          |       |       |       |          |       |       |       |



## SOIL

Sampling Point: SP-5b

[illegible]

## HYDROLOGY

| Wetland Hydrology Indicators:                                                                                                                                                                                                                                                                                                                                                            |                                                                        |                                                                                                       |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| Primary Indicators (minimum of one required; check all that apply)                                                                                                                                                                                                                                                                                                                       |                                                                        | Secondary Indicators (2 or more required)                                                             |
| <input type="checkbox"/> Surface Water (A1)                                                                                                                                                                                                                                                                                                                                              | <input type="checkbox"/> Salt Crust (B11)                              | <input type="checkbox"/> Water Marks (B1) ( <b>Riverine</b> )                                         |
| <input type="checkbox"/> High Water Table (A2)                                                                                                                                                                                                                                                                                                                                           | <input type="checkbox"/> Biotic Crust (B12)                            | <input type="checkbox"/> Sediment Deposits (B2) <b>Riverine</b>                                       |
| <input type="checkbox"/> Saturation (A3)                                                                                                                                                                                                                                                                                                                                                 | <input type="checkbox"/> Aquatic Invertebrates (B13)                   | <input type="checkbox"/> Drift Deposits (B3) ( <b>Riverine</b> )                                      |
| <input type="checkbox"/> Water Marks (B1) ( <b>Nonriverine</b> )                                                                                                                                                                                                                                                                                                                         | <input type="checkbox"/> Hydrogen Sulfide Odor (C1)                    | <input type="checkbox"/> Drainage Patterns (B10)                                                      |
| <input type="checkbox"/> Sediment Deposits (B2) <b>Nonriverine</b>                                                                                                                                                                                                                                                                                                                       | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) | <input type="checkbox"/> Dry-Season Water Table (C2)                                                  |
| <input type="checkbox"/> Drift Deposits (B3) ( <b>Nonriverine</b> )                                                                                                                                                                                                                                                                                                                      | <input type="checkbox"/> Presence of Reduced Iron (C4)                 | <input type="checkbox"/> Crayfish Burrows (C8)                                                        |
| <input type="checkbox"/> Surface Soil Cracks (B6)                                                                                                                                                                                                                                                                                                                                        | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)    | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)                                    |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)                                                                                                                                                                                                                                                                                                                       | <input type="checkbox"/> Thin Muck Surface (C7)                        | <input type="checkbox"/> Shallow Aquitard (D3)                                                        |
| <input type="checkbox"/> Water-Stained Leaves (B9)                                                                                                                                                                                                                                                                                                                                       | <input type="checkbox"/> Other (Explain in Remarks)                    | <input type="checkbox"/> FAC-Neutral Test (D5)                                                        |
| <b>Field Observations:</b><br>Surface Water Present?    Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____<br>Water Table Present?    Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____<br>Saturation Present?    Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____<br>(includes capillary fringe) |                                                                        | <b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:                                                                                                                                                                                                                                                                               |                                                                        |                                                                                                       |
| Remarks:                                                                                                                                                                                                                                                                                                                                                                                 |                                                                        |                                                                                                       |

# WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Moraga-Oakland X 115 kV Rebuild Project City/County: Orinda/Contra Costa County Sampling Date: 1/12/24  
 Applicant/Owner: PG&E State: CA Sampling Point: SP-6  
 Investigator(s): Kevin Fisher, Pim Laulikitnont-Lee Section, Township, Range: T1S, 3W  
 Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): None Slope (%):           
 Subregion (LRR): C Lat: 37.826995 Long: -122.203192 Datum: WGS 84  
 Soil Map Unit Name: Maymen loam, 30 to 75 percent slopes NWI classification:         

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 <input checked="" type="checkbox"/> No <u>        </u>                                                                                                                                                                                                                                                                         | Is the Sampled Area within a Wetland? Yes <u>        </u> No <input checked="" type="checkbox"/> |
| Hydric Soil Present? Yes <u>        </u> No <input checked="" type="checkbox"/>                                                                                                                                                                                                                                                                                    |                                                                                                  |
| Wetland Hydrology Present? Yes <u>        </u> No <input checked="" type="checkbox"/>                                                                                                                                                                                                                                                                              |                                                                                                  |
| Remarks:<br>Sampling point established on floodplain adjacent to constructed ephemeral drainage within managed native plant garden with presence of hydrophytic vegetation. Hydrophytic vegetation appeared to be planted as part of the managed native plant garden. Soils were disturbed with presence of filled and clayey materials mixed in the soil profile. |                                                                                                  |

## VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: <u>        </u> )                                      | Absolute % Cover | Dominant Species? | Indicator Status | <b>Dominance Test worksheet:</b><br>Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)<br><br>Total Number of Dominant Species Across All Strata: <u>3</u> (B)<br><br>Percent of Dominant Species That Are OBL, FACW, or FAC: <u>66.7</u> (A/B)                                                                                                                                                                                                                        |
|---------------------------------------------------------------------------------|------------------|-------------------|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. <u>        </u>                                                              | <u>        </u>  | <u>        </u>   | <u>        </u>  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 2. <u>        </u>                                                              | <u>        </u>  | <u>        </u>   | <u>        </u>  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 3. <u>        </u>                                                              | <u>        </u>  | <u>        </u>   | <u>        </u>  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 4. <u>        </u>                                                              | <u>        </u>  | <u>        </u>   | <u>        </u>  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <u>        </u> = Total Cover                                                   |                  |                   |                  | <b>Prevalence Index worksheet:</b><br>Total % Cover of: <u>        </u> Multiply by: <u>        </u><br>OBL species <u>        </u> x 1 = <u>        </u><br>FACW species <u>        </u> x 2 = <u>        </u><br>FAC species <u>        </u> x 3 = <u>        </u><br>FACU species <u>        </u> x 4 = <u>        </u><br>UPL species <u>        </u> x 5 = <u>        </u><br>Column Totals: <u>        </u> (A) <u>        </u> (B)<br><br>Prevalence Index = B/A <u>        </u> |
| <b>Sapling/Shrub Stratum</b> (Plot size: <u>1 m</u> )                           |                  |                   |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 1. <u>Heteromeles arbutifolia</u>                                               | <u>25</u>        | <u>Y</u>          | <u>NL</u>        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 2. <u>Frangula californica</u>                                                  | <u>5</u>         | <u>N</u>          | <u>NL</u>        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 3. <u>        </u>                                                              | <u>        </u>  | <u>        </u>   | <u>        </u>  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 4. <u>        </u>                                                              | <u>        </u>  | <u>        </u>   | <u>        </u>  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 5. <u>        </u>                                                              | <u>        </u>  | <u>        </u>   | <u>        </u>  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <u>30</u> = Total Cover                                                         |                  |                   |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Herb Stratum</b> (Plot size: <u>5 ft</u> )                                   |                  |                   |                  | <b>Hydrophytic Vegetation Indicators:</b><br><input checked="" type="checkbox"/> Dominance Test is >50%<br><input type="checkbox"/> Prevalence Index is ≤3.0 <sup>1</sup><br><input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)<br><input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain <u>        </u> )                                                                         |
| 1. <u>Juncus patens</u>                                                         | <u>15</u>        | <u>Y</u>          | <u>FACW</u>      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 2. <u>        </u>                                                              | <u>        </u>  | <u>        </u>   | <u>        </u>  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 3. <u>        </u>                                                              | <u>        </u>  | <u>        </u>   | <u>        </u>  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 4. <u>        </u>                                                              | <u>        </u>  | <u>        </u>   | <u>        </u>  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 5. <u>        </u>                                                              | <u>        </u>  | <u>        </u>   | <u>        </u>  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 6. <u>        </u>                                                              | <u>        </u>  | <u>        </u>   | <u>        </u>  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 7. <u>        </u>                                                              | <u>        </u>  | <u>        </u>   | <u>        </u>  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 8. <u>        </u>                                                              | <u>        </u>  | <u>        </u>   | <u>        </u>  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <u>15</u> = Total Cover                                                         |                  |                   |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Woody Vine Stratum</b> (Plot size: <u>1 m</u> )                              |                  |                   |                  | <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.                                                                                                                                                                                                                                                                                                                                                                          |
| 1. <u>Rubus ursinus</u>                                                         | <u>15</u>        | <u>Y</u>          | <u>FAC</u>       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 2. <u>        </u>                                                              | <u>        </u>  | <u>        </u>   | <u>        </u>  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 3. <u>        </u>                                                              | <u>        </u>  | <u>        </u>   | <u>        </u>  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 4. <u>        </u>                                                              | <u>        </u>  | <u>        </u>   | <u>        </u>  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <u>15</u> = Total Cover                                                         |                  |                   |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| % Bare Ground in Herb Stratum <u>85</u> % Cover of Biotic Crust <u>        </u> |                  |                   |                  | <b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <u>        </u>                                                                                                                                                                                                                                                                                                                                                                                       |

Remarks:

Juncus patens appeared to be planted as part of the managed native plant garden.

# SOIL

Sampling Point: SP-6

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth<br>(inches) | Matrix        |     | Redox Features |   |                   |                  | Texture | Remarks |
|-------------------|---------------|-----|----------------|---|-------------------|------------------|---------|---------|
|                   | Color (moist) | %   | Color (moist)  | % | Type <sup>1</sup> | Loc <sup>2</sup> |         |         |
| 0-10              | 10YR 3/2      | 100 |                |   |                   |                  | loam    |         |
| 10-12             | 10YR 5/4      | 100 |                |   |                   |                  | clay    |         |
|                   |               |     |                |   |                   |                  |         |         |
|                   |               |     |                |   |                   |                  |         |         |
|                   |               |     |                |   |                   |                  |         |         |
|                   |               |     |                |   |                   |                  |         |         |
|                   |               |     |                |   |                   |                  |         |         |
|                   |               |     |                |   |                   |                  |         |         |
|                   |               |     |                |   |                   |                  |         |         |
|                   |               |     |                |   |                   |                  |         |         |
|                   |               |     |                |   |                   |                  |         |         |
|                   |               |     |                |   |                   |                  |         |         |
|                   |               |     |                |   |                   |                  |         |         |
|                   |               |     |                |   |                   |                  |         |         |

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

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- |                                                              |                                                     |
|--------------------------------------------------------------|-----------------------------------------------------|
| <input type="checkbox"/> Histosol (A1)                       | <input type="checkbox"/> Sandy Redox (S5)           |
| <input type="checkbox"/> Histic Epipedon (A2)                | <input type="checkbox"/> Stripped Matrix (S6)       |
| <input type="checkbox"/> Black Histic (A3)                   | <input type="checkbox"/> Loamy Mucky Mineral (F1)   |
| <input type="checkbox"/> Hydrogen Sulfide (A4)               | <input type="checkbox"/> Loamy Gleyed Matrix (F2)   |
| <input type="checkbox"/> Stratified Layers (A5) <b>LRR C</b> | <input type="checkbox"/> Depleted Matrix (F3)       |
| <input type="checkbox"/> 1 cm Muck (A9) <b>(LRR D)</b>       | <input type="checkbox"/> Redox Dark Surface (F6)    |
| <input type="checkbox"/> Depleted Below Dark Surface (A11)   | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Thick Dark Surface (A12)            | <input type="checkbox"/> Redox Depressions (F8)     |
| <input type="checkbox"/> Sandy Mucky Mineral (S1)            | <input type="checkbox"/> Vernal Pools (F9)          |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4)            |                                                     |

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

- ☐ 1 cm Muck (A9) **(LRR C)**  
☐ 2 cm Muck (A10) **LRR B**  
☐ Reduced Vertic (F18)  
☐ Red Parent Material (TF2)  
☐ Other (Explain in Remarks)

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

**Restrictive Layer (if present):**

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

**Hydric Soil Present?** Yes \_\_\_\_\_ No ☒

Remarks:

Soils appeared to disturbed; fill material mixed in soil profile.

# HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- |                                                                    |                                                                        |
|--------------------------------------------------------------------|------------------------------------------------------------------------|
| <input type="checkbox"/> Surface Water (A1)                        | <input type="checkbox"/> Salt Crust (B11)                              |
| <input type="checkbox"/> High Water Table (A2)                     | <input type="checkbox"/> Biotic Crust (B12)                            |
| <input type="checkbox"/> Saturation (A3)                           | <input type="checkbox"/> Aquatic Invertebrates (B13)                   |
| <input type="checkbox"/> Water Marks (B1) <b>(Nonriverine)</b>     | <input type="checkbox"/> Hydrogen Sulfide Odor (C1)                    |
| <input type="checkbox"/> Sediment Deposits (B2) <b>Nonriverine</b> | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) |
| <input type="checkbox"/> Drift Deposits (B3) <b>(Nonriverine)</b>  | <input type="checkbox"/> Presence of Reduced Iron (C4)                 |
| <input type="checkbox"/> Surface Soil Cracks (B6)                  | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)    |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Thin Muck Surface (C7)                        |
| <input type="checkbox"/> Water-Stained Leaves (B9)                 | <input type="checkbox"/> Other (Explain in Remarks)                    |

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) **(Riverine)**  
☐ Sediment Deposits (B2) **Riverine**  
☐ Drift Deposits (B3) **(Riverine)**  
☐ Drainage Patterns (B10)  
☐ Dry-Season Water Table (C2)  
☐ Crayfish Burrows (C8)  
☐ Saturation Visible on Aerial Imagery (C9)  
☐ Shallow Aquitard (D3)  
☐ FAC-Neutral Test (D5)

**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 (USACE)  
**INTERIM DRAFT RAPID ORDINARY HIGH WATER MARK (OHWM) FIELD  
IDENTIFICATION DATA SHEET**

The proponent agency is Headquarters USACE CECW-COR.

**Form Approved -**  
**OMB No. 0710-0024**  
**Expires: 2024-04-30**

**The Agency Disclosure Notice (ADN)**

The Public reporting burden for this collection of information, 0710-0024, is estimated to average 30 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or burden reduction suggestions to the Department of Defense, Washington Headquarters Services, at [whs.mc-alex.esd.mbx.dd-dod-information-collections@mail.mil](mailto:whs.mc-alex.esd.mbx.dd-dod-information-collections@mail.mil). Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

Project ID #: MOX 115 kV Rebuild

Site Name: MOX 115 kV Rebuild

Date and Time: 12/12/23 9:42am

Location (lat/long): 37.846837, -122.161876

Investigator(s): Kevin Fisher, Pim Laulikitnont-Lee

**Step 1** Site overview from remote and online resources

**Check boxes for online resources used to evaluate site:**

- |                                                   |                                                       |                                                   |
|---------------------------------------------------|-------------------------------------------------------|---------------------------------------------------|
| <input type="checkbox"/> gage data                | <input type="checkbox"/> LiDAR                        | <input checked="" type="checkbox"/> geologic maps |
| <input checked="" type="checkbox"/> climatic data | <input checked="" type="checkbox"/> satellite imagery | <input checked="" type="checkbox"/> land use maps |
| <input checked="" type="checkbox"/> aerial photos | <input checked="" type="checkbox"/> topographic maps  | <input type="checkbox"/> Other: _____             |

**Describe land use and flow conditions from online resources.**

Were there any recent extreme events (floods or drought)?

Land use is residential/open space.

**Step 2** Site conditions during field assessment. First look for changes in channel shape, depositional and erosional features, and changes in vegetation and sediment type, size, density, and distribution. Make note of natural or man-made disturbances that would affect flow and channel form, such as bridges, riprap, landslides, rockfalls etc.

Intermittent stream nearby substation. There is a flood gate near the substation where the streams widened. Streambed is filled with cobbles and no vegetation. Change in vegetation observed on bank slope.

**Step 3** Check the boxes next to the indicators used to identify the location of the OHWM.

**OHWM is at a transition point**, therefore some indicators that are used to determine location may be just below and above the OHWM. From the drop-down menu next to each indicator, select the appropriate location of the indicator by selecting either just below 'b', at 'x', or just above 'a' the OHWM.

Go to page 2 to describe overall rationale for location of OHWM, write any additional observations, and to attach a photo log.

**Geomorphic indicators**

☒ **Break in slope:** x

- ☐ on the bank:  
☐ undercut bank:  
☐ valley bottom:  
☐ Other: \_\_\_\_\_

☐ **Shelving:**

- ☐ shelf at top of bank:  
☐ natural levee:  
☐ man-made berms or levees:  
☐ other  
berms: \_\_\_\_\_

☐ **Channel bar:**

- ☐ shelving (berms) on bar:  
☐ unvegetated:  
☐ vegetation transition  
(go to veg. indicators)  
☐ sediment transition  
(go to sed. indicators)  
☐ upper limit of deposition  
on bar:

☒ **Instream bedforms and other  
bedload transport evidence:** b

- ☒ deposition bedload indicators  
(e.g., imbricated clasts, b  
gravel sheets, etc.)  
☒ bedforms (e.g., pools, b  
riffles, steps, etc.):

- ☐ erosional bedload indicators  
(e.g., obstacle marks, scour,  
smoothing, etc.)

☐ **Secondary channels:**

**Sediment indicators**

☒ **Soil development:** a

☐ Changes in character of soil:

☐ Mudcracks:

☒ **Changes in particle-sized  
distribution:**

- ☒ transition from cobbles to soil  
☐ upper limit of sand-sized particles  
☐ silt deposits:

**Vegetation Indicators**

☒ **Change in vegetation type  
and/or density:** x

Check the appropriate boxes and select the general vegetation change (e.g., graminoids to woody shrubs). **Describe the vegetation transition looking from the middle of the channel, up the banks, and into the floodplain.**

- ☒ vegetation  
absent to: forbs  
☐ moss to:

☒ **forbs to:** woody shrubs

☐ graminoids to:

- ☒ woody  
shrubs to: deciduous trees  
☐ deciduous  
trees to:  
☐ coniferous  
trees to:

☐ **Vegetation matted down  
and/or bent:**

☐ **Exposed roots below  
intact soil layer:**

**Ancillary indicators**

☒ **Wracking/presence of  
organic litter:** b

☐ Presence of large wood:

☐ Leaf litter disturbed or  
washed away:

☐ Water staining:

☐ Weathered clasts or bedrock:

**Other observed indicators? Describe:**

Project ID #: MOX 115 kV Rebuild

**Step 4** Is additional information needed to support this determination? ☐ Yes ☒ No If yes, describe and attach information to datasheet:

### Step 5 Describe rationale for location of OHWM

OHWB is 8ft wide above the low flow channel. Streambed is filled with cobbles and transitioned into soil and vegetation at OHWB. A change in vegetation from absent to herbaceous and shrubs was observed.

|                                  |
|----------------------------------|
| Additional observations or notes |
|----------------------------------|

Top of bank is 15ft wide and was clearly defined.

Attach a photo log of the site. Use the table below, or attach separately.

Photo log attached? ☒ Yes ☐ No If no, explain why not:

List photographs and include descriptions in the table below.

Number photographs in the order that they are taken. Attach photographs and include annotations of features.

[illegible]

## OHWM Field Identification Datasheet Instructions and Field Procedure

### Step 1 Site overview from remote and online resources

Complete Step 1 prior to site visit.

**Online Resources:** Identify what information is available for the site. Check boxes on datasheet next to the resources used to assess this site.

- |                      |                                                  |
|----------------------|--------------------------------------------------|
| a. gage data         | e. topographic maps                              |
| b. aerial photos     | f. geologic maps                                 |
| c. satellite imagery | g. land use maps                                 |
| d. LiDAR             | h. climatic data (precipitation and temperature) |

**Landscape context:** Use the online resources to put the site in the context of the surrounding landscape.

**a. Note on the datasheet under Step 1:**

- i. Overall land use and change if known
  - ii. Recent extreme events if known (e.g., flood, drought, landslides, debris flows, wildfires)
- b. Consider the following to inform weighting of evidence observed during field visit.
- i. What physical characteristics are likely to be observed in specific environments?
  - ii. Was there a recent flood or drought? Are you expecting to see recently formed or obscured indicators?
  - iii. How will land use affect specific stream characteristics? How natural is the hydrologic regime? How stable has the landscape been over the last year, decade, century?

### Step 2 Site conditions during the field assessment (assemble evidence)

- |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ol style="list-style-type: none"> <li>a. Identify the assessment area.</li> <li>b. Walk up and down the assessment area noting all the potential OHWM indicators.</li> <li>c. Note broad trends in channel shape, vegetation, and sediment characteristics.                         <ol style="list-style-type: none"> <li>i. Is this a single thread or multi-thread system? Is this a stream-wetland complex?</li> <li>ii. Are there any secondary and/or floodplain channels?</li> <li>iii. Are there obvious man-made alterations to the system?</li> <li>iv. Are there man-made (e.g., bridges, dams, culverts) or natural structures (e.g., bedrock outcrops, Large Wood jams) that will influence or control flow?</li> </ol> </li> </ol> | <ol style="list-style-type: none"> <li>d. Look for signs of recurring fluvial action.                         <ol style="list-style-type: none"> <li>i. Where does the flow converge on the landscape?</li> <li>ii. Are there signs of fluvial action (sediment sorting, bedforms, etc.) at the convergence zone?</li> </ol> </li> <li>e. Look for indicators on both banks. If the opposite bank is not accessible, then look across the channel at the bank.</li> <li>f. <b>In Step 2 of the datasheet</b> describe any adjacent land use or flow conditions that may influence interpretation of each line of evidence.                         <ol style="list-style-type: none"> <li>i. What land use and flow conditions may be affecting your ability to observe indicators at the site?</li> <li>ii. What recent extreme events may have caused changes to the site and affected your ability to observe indicators?</li> </ol> </li> </ol> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### Step 3a List evidence

**Assemble evidence by checking the boxes next to each line of evidence:**

- a. If needed, use a separate scratch datasheet to check boxes next to possible indicators, or check boxes of possible indicators in pencil and use pen for final decision.
- b. If using fillable form, then follow the instructions for filling in the fillable form.

*Context is important when assembling evidence. For instance, pool development may be an indicator of interest on the bed of a dry stream, but may not be a useful indicator to take note of in a flowing stream. On the other hand, if the pool is found in a secondary channel adjacent to the main channel, it could provide a line of evidence for a minimum elevation of high flows. Therefore, consider the site context when deciding which indicators provide evidence for identifying the OHWM. Explain reasoning in Step 5.*

**Questions to consider while making observations and listing evidence at a site:**

| Geomorphic indicators                                  | Sediment and soil indicators                         | Vegetation Indicators                                                                                                       | Ancillary indicators                               |
|--------------------------------------------------------|------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|
| Where are the breaks in slope?                         | Where does evidence of soil formation appear?        | Where are the significant transitions in vegetation species, density, and age?                                              | Is there organic litter present?                   |
| Are there identifiable banks?                          |                                                      | Is there vegetation growing on the channel bed?                                                                             | Is there any leaf litter disturbed or washed away? |
| Is there an easily identifiable top of bank?           | Are there mudcracks present?                         | If no, how long does it take for the non-tolerant vegetation to establish relative to how often flows occur in the channel? | Is there large wood deposition?                    |
| Are the banks actively eroding?                        | Is there evidence of sediment sorting by grain size? | Where are the significant transitions in vegetation?                                                                        | Is there evidence of water staining?               |
| Are the banks undercut?                                |                                                      | Is the vegetation tolerant of flowing water?                                                                                |                                                    |
| Are the banks armored?                                 |                                                      | Has any vegetation been flattened by flowing water?                                                                         |                                                    |
| Is the channel confined by the surrounding hillslopes? |                                                      |                                                                                                                             |                                                    |
| Are there natural or man-made berms and levees?        |                                                      |                                                                                                                             |                                                    |
| Are there fluvial terraces?                            |                                                      |                                                                                                                             |                                                    |
| Are there channel bars?                                |                                                      |                                                                                                                             |                                                    |

Are the following features of fluvial transport present?

*Evidence of erosion: obstacle marks, scour, armoring  
Bedforms: riffles, pools, steps, knickpoints/headcuts  
Evidence of deposition: imbricated clasts, gravel sheets, etc.*

**In some cases, it may be helpful to explain why an indicator was NOT at the OHWM elevation, but found above or below. It can also be useful to note if specific indicators (e.g., vegetation) are NOT present. For instance, note if the site has no clear vegetation zonation.**



## OHWM Field Identification Datasheet Instructions and Field Procedure

### Step 3b Weight each line of evidence and weigh body of evidence

Weight each indicator by considering its importance based upon:

#### a. Relevance:

- i. Is this indicator left by low, high, or extreme flows?

##### Tips on how to assess the indicator relative to type of flow:

*Consider the elevation of the indicator relative to the channel bed.*

*What is the current flow level based on season or nearby gages?*

*Consider the elevation of the indicator relative to the current flow.*

*If the stream is currently at baseflow and indicator is adjacent to that, then it is likely a low flow indicator. The difference between high and extreme flow indicators can sometimes be difficult to determine.*

- ii. Did recent extreme events and/or land use affect this indicator?

1. Recent floods may have left many extreme flow indicators, or temporarily altered channel form.

Other resources will likely be needed to support any OHWM identification at this site. Field evidence of the OHWM may have to wait for the site to recover from the recent flood.

2. Droughts may cause field evidence of OHWM to be obscured, because there has been an extended time since the last high flow event. There can be overgrowth of vegetation or deposition of material from surrounding landscape that can obscure indicators.
3. Both man-made (e.g., dams, construction, mining activities, urbanization, agriculture, grazing) and natural (e.g., fires, floods, debris flows, beaver dams) disturbances can all alter how indicators are expected to appear at a site. Chapter 6 and Chapter 7 of the OHWM field manual provides specific case-studies that can help in interpreting evidence at these sites.

#### b. Strength:

- i. Is this indicator persistent across the landscape?

1. Look up and downstream and across the channel to see if you see the same indicator at multiple locations.
2. Does the indicator occur at the same elevation as other indicators?

#### c. Reliability:

- i. Is this indicator persistent on the landscape over time? Will this indicator still persist across seasons?

1. This can be difficult to determine for some indicators and may be specific to climatic region (in terms of persistence of vegetation) and history of land use or other natural disturbances.
2. Chapter 2, Chapter 6, and Chapter 7 of the OHWM field manual describes each indicator in detail and provides examples of areas where indicators are difficult to interpret.

#### d. Weigh body of evidence:

- i. Combine weights: integrate the weighted line of evidence (relevance, strength, reliability) of each indicator.
- ii. For each of the observed indicators, which are more heavily weighted? Where do high value indicators co-occur along the stream reach? Do they co-occur at a similar elevation along the banks relative to water surface (or channel bed if there is no water).
- iii. On datasheet, select the indicators used to identify the OHWM. Information in Chapter 2 of the OHWM field manual provides descriptions of specific indicators which can assist in putting these in context and determining relevance, strength, and reliability.

#### e. Take photographs of indicators and attach a log using either page 2 of datasheet or another method of logging photos.

- i. Annotate photos with descriptions of indicators.

**\*Landscape context from Step 1 can help determine the relevance, strength, and reliability of the indicators observed in the field.**

**\*Information in Chapter 2 of the OHWM field manual provides information on specific indicators which can assist in putting these in context and determining relevance, strength, and reliability.**

### Step 4 Is additional information needed? Are other resources needed to support the lines of evidence observed in the field?

- a. If additional resources are needed, then repeat steps 3a and 3b for the resources selected in Step 1 of assembling, weighting, and weighing evidence collected from online resources. Chapter 5 of the OHWM field manual provides information on using online resources.
- b. Any data collected from online tools have strengths and weaknesses. Make sure these are clear when determining relevance, strength, and reliability of the remotely collected data. Clearly describe why other resources were needed to support the lines of evidence observed in the field, as well as the relevance, strength, and reliability of the supporting data and/or resources.
- c. Attach any remote data and data analysis to the datasheet.

### Step 5 Describe rationale for location of OHWM:

- a. Why do the combination of indicators represent the OHWM?
- b. If there are multiple possibilities for the OHWM, explain why there are two (or more) possibilities. Include any relevant discussion on why specific indicators were not included in the final decision.
- c. If needed, add additional site notes on page 2 of the datasheet under Step 5.

U.S. Army Corps of Engineers (USACE)  
**INTERIM DRAFT RAPID ORDINARY HIGH WATER MARK (OHWM) FIELD  
IDENTIFICATION DATA SHEET**

The proponent agency is Headquarters USACE CECW-COR.

**Form Approved -**  
**OMB No. 0710-0024**  
**Expires: 2024-04-30**

**The Agency Disclosure Notice (ADN)**

The Public reporting burden for this collection of information, 0710-0024, is estimated to average 30 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or burden reduction suggestions to the Department of Defense, Washington Headquarters Services, at [whs.mc-alex.esd.mbx.dd-dod-information-collections@mail.mil](mailto:whs.mc-alex.esd.mbx.dd-dod-information-collections@mail.mil). Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

Project ID #: MOX 115 kV Rebuild

Site Name: MOX 115 kV Rebuild

Date and Time: 12/12/23

Location (lat/long): 37.8504128, -122.1693656

Investigator(s): Kevin Fisher, Pim Laulikitnont-Lee

**Step 1** Site overview from remote and online resources

**Check boxes for online resources used to evaluate site:**

- |                                                   |                                                       |                                                   |
|---------------------------------------------------|-------------------------------------------------------|---------------------------------------------------|
| <input type="checkbox"/> gage data                | <input type="checkbox"/> LiDAR                        | <input checked="" type="checkbox"/> geologic maps |
| <input checked="" type="checkbox"/> climatic data | <input checked="" type="checkbox"/> satellite imagery | <input checked="" type="checkbox"/> land use maps |
| <input checked="" type="checkbox"/> aerial photos | <input checked="" type="checkbox"/> topographic maps  | <input type="checkbox"/> Other: _____             |

**Describe land use and flow conditions from online resources.**

Were there any recent extreme events (floods or drought)?

Land use is recreation space owned by East Bay Parks.

**Step 2** Site conditions during field assessment. First look for changes in channel shape, depositional and erosional features, and changes in vegetation and sediment type, size, density, and distribution. Make note of natural or man-made disturbances that would affect flow and channel form, such as bridges, riprap, landslides, rockfalls etc.

Ephemeral drainage connected by culverts.

**Step 3** Check the boxes next to the indicators used to identify the location of the OHWM.

**OHWM is at a transition point**, therefore some indicators that are used to determine location may be just below and above the OHWM. From the drop-down menu next to each indicator, select the appropriate location of the indicator by selecting either just below 'b', at 'x', or just above 'a' the OHWM.

Go to page 2 to describe overall rationale for location of OHWM, write any additional observations, and to attach a photo log.

**Geomorphic indicators**

☒ **Break in slope:** x

☒ on the bank: x

☐ undercut bank:

☐ valley bottom:

☐ Other: \_\_\_\_\_

☐ **Shelving:**

☐ shelf at top of bank:

☐ natural levee:

☐ man-made berms or levees:

☐ other  
berms: \_\_\_\_\_

☐ **Channel bar:**

☐ shelving (berms) on bar:

☐ unvegetated:

☐ vegetation transition  
(go to veg. indicators)

☐ sediment transition  
(go to sed. indicators)

☐ upper limit of deposition  
on bar:

☐ **Instream bedforms and other  
bedload transport evidence:** b

☐ deposition bedload indicators  
(e.g., imbricated clasts, b  
gravel sheets, etc.)

☐ bedforms (e.g., pools, b  
riffles, steps, etc.):

☐ erosional bedload indicators  
(e.g., obstacle marks, scour,  
smoothing, etc.)

☐ **Secondary channels:**

**Sediment indicators**

☒ **Soil development:** a

☐ Changes in character of soil:

☐ Mudcracks:

☒ Changes in particle-sized  
distribution: x

☒ transition from cobbles to soil

☐ upper limit of sand-sized particles

☐ silt deposits:

**Vegetation Indicators**

☒ **Change in vegetation type  
and/or density:** x

Check the appropriate boxes and select the general vegetation change (e.g., graminoids to woody shrubs). **Describe the vegetation transition looking from the middle of the channel, up the banks, and into the floodplain.**

☒ vegetation  
absent to: woody shrubs

☐ moss to:

☐ forbs to:

☐ graminoids to:

☐ woody  
shrubs to:

☐ deciduous

trees to:

☐ coniferous

trees to:

☐ **Vegetation matted down  
and/or bent:**

☐ **Exposed roots below  
intact soil layer:**

**Ancillary indicators**

☐ **Wracking/presence of  
organic litter:**

☐ **Presence of large wood:**

☐ **Leaf litter disturbed or  
washed away:**

☐ **Water staining:**

☐ **Weathered clasts or bedrock:**

**Other observed indicators? Describe:**

Project ID #: MOX 115 kV Rebuild

**Step 4** Is additional information needed to support this determination? ☐ Yes ☒ No If yes, describe and attach information to datasheet:

#### Step 5 Describe rationale for location of OHWM

OHWB is 8ft wide above the low flow channel. Streambed is filled with cobbles and transitioned into soil and vegetation at OHWB. A change in vegetation from absent to herbaceous and shrubs was observed.

|                                  |
|----------------------------------|
| Additional observations or notes |
|----------------------------------|

Top of bank is 14ft wide and was clearly defined.

Attach a photo log of the site. Use the table below, or attach separately.

Photo log attached? ☒ Yes ☐ No If no, explain why not:

List photographs and include descriptions in the table below.

Number photographs in the order that they are taken. Attach photographs and include annotations of features.

[illegible]



## OHWM Field Identification Datasheet Instructions and Field Procedure

### Step 1 Site overview from remote and online resources

Complete Step 1 prior to site visit.

**Online Resources:** Identify what information is available for the site. Check boxes on datasheet next to the resources used to assess this site.

- |                      |                                                  |
|----------------------|--------------------------------------------------|
| a. gage data         | e. topographic maps                              |
| b. aerial photos     | f. geologic maps                                 |
| c. satellite imagery | g. land use maps                                 |
| d. LiDAR             | h. climatic data (precipitation and temperature) |

**Landscape context:** Use the online resources to put the site in the context of the surrounding landscape.

**a. Note on the datasheet under Step 1:**

- i. Overall land use and change if known
  - ii. Recent extreme events if known (e.g., flood, drought, landslides, debris flows, wildfires)
- b. Consider the following to inform weighting of evidence observed during field visit.
- i. What physical characteristics are likely to be observed in specific environments?
  - ii. Was there a recent flood or drought? Are you expecting to see recently formed or obscured indicators?
  - iii. How will land use affect specific stream characteristics? How natural is the hydrologic regime? How stable has the landscape been over the last year, decade, century?

### Step 2 Site conditions during the field assessment (assemble evidence)

- |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ol style="list-style-type: none"> <li>a. Identify the assessment area.</li> <li>b. Walk up and down the assessment area noting all the potential OHWM indicators.</li> <li>c. Note broad trends in channel shape, vegetation, and sediment characteristics.                             <ol style="list-style-type: none"> <li>i. Is this a single thread or multi-thread system? Is this a stream-wetland complex?</li> <li>ii. Are there any secondary and/or floodplain channels?</li> <li>iii. Are there obvious man-made alterations to the system?</li> <li>iv. Are there man-made (e.g., bridges, dams, culverts) or natural structures (e.g., bedrock outcrops, Large Wood jams) that will influence or control flow?</li> </ol> </li> </ol> | <ol style="list-style-type: none"> <li>d. Look for signs of recurring fluvial action.                             <ol style="list-style-type: none"> <li>i. Where does the flow converge on the landscape?</li> <li>ii. Are there signs of fluvial action (sediment sorting, bedforms, etc.) at the convergence zone?</li> </ol> </li> <li>e. Look for indicators on both banks. If the opposite bank is not accessible, then look across the channel at the bank.</li> <li>f. <b>In Step 2 of the datasheet</b> describe any adjacent land use or flow conditions that may influence interpretation of each line of evidence.                             <ol style="list-style-type: none"> <li>i. What land use and flow conditions may be affecting your ability to observe indicators at the site?</li> <li>ii. What recent extreme events may have caused changes to the site and affected your ability to observe indicators?</li> </ol> </li> </ol> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### Step 3a List evidence

**Assemble evidence by checking the boxes next to each line of evidence:**

- a. If needed, use a separate scratch datasheet to check boxes next to possible indicators, or check boxes of possible indicators in pencil and use pen for final decision.
- b. If using fillable form, then follow the instructions for filling in the fillable form.

*Context is important when assembling evidence. For instance, pool development may be an indicator of interest on the bed of a dry stream, but may not be a useful indicator to take note of in a flowing stream. On the other hand, if the pool is found in a secondary channel adjacent to the main channel, it could provide a line of evidence for a minimum elevation of high flows. Therefore, consider the site context when deciding which indicators provide evidence for identifying the OHWM. Explain reasoning in Step 5.*

**Questions to consider while making observations and listing evidence at a site:**

| Geomorphic indicators                                  | Sediment and soil indicators                         | Vegetation Indicators                                                                                                       | Ancillary indicators                               |
|--------------------------------------------------------|------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|
| Where are the breaks in slope?                         | Where does evidence of soil formation appear?        | Where are the significant transitions in vegetation species, density, and age?                                              | Is there organic litter present?                   |
| Are there identifiable banks?                          |                                                      | Is there vegetation growing on the channel bed?                                                                             | Is there any leaf litter disturbed or washed away? |
| Is there an easily identifiable top of bank?           | Are there mudcracks present?                         | If no, how long does it take for the non-tolerant vegetation to establish relative to how often flows occur in the channel? | Is there large wood deposition?                    |
| Are the banks actively eroding?                        | Is there evidence of sediment sorting by grain size? | Where are the significant transitions in vegetation?                                                                        | Is there evidence of water staining?               |
| Are the banks undercut?                                |                                                      | Is the vegetation tolerant of flowing water?                                                                                |                                                    |
| Are the banks armored?                                 |                                                      | Has any vegetation been flattened by flowing water?                                                                         |                                                    |
| Is the channel confined by the surrounding hillslopes? |                                                      |                                                                                                                             |                                                    |
| Are there natural or man-made berms and levees?        |                                                      |                                                                                                                             |                                                    |
| Are there fluvial terraces?                            |                                                      |                                                                                                                             |                                                    |
| Are there channel bars?                                |                                                      |                                                                                                                             |                                                    |

Are the following features of fluvial transport present?

*Evidence of erosion: obstacle marks, scour, armoring  
Bedforms: riffles, pools, steps, knickpoints/headcuts  
Evidence of deposition: imbricated clasts, gravel sheets, etc.*

**In some cases, it may be helpful to explain why an indicator was NOT at the OHWM elevation, but found above or below. It can also be useful to note if specific indicators (e.g., vegetation) are NOT present. For instance, note if the site has no clear vegetation zonation.**

## OHWM Field Identification Datasheet Instructions and Field Procedure

### Step 3b Weight each line of evidence and weigh body of evidence

Weight each indicator by considering its importance based upon:

#### a. Relevance:

- i. Is this indicator left by low, high, or extreme flows?

##### Tips on how to assess the indicator relative to type of flow:

*Consider the elevation of the indicator relative to the channel bed.*

*What is the current flow level based on season or nearby gages?*

*Consider the elevation of the indicator relative to the current flow.*

*If the stream is currently at baseflow and indicator is adjacent to that, then it is likely a low flow indicator. The difference between high and extreme flow indicators can sometimes be difficult to determine.*

- ii. Did recent extreme events and/or land use affect this indicator?

1. Recent floods may have left many extreme flow indicators, or temporarily altered channel form.

Other resources will likely be needed to support any OHWM identification at this site. Field evidence of the OHWM may have to wait for the site to recover from the recent flood.

2. Droughts may cause field evidence of OHWM to be obscured, because there has been an extended time since the last high flow event. There can be overgrowth of vegetation or deposition of material from surrounding landscape that can obscure indicators.
3. Both man-made (e.g., dams, construction, mining activities, urbanization, agriculture, grazing) and natural (e.g., fires, floods, debris flows, beaver dams) disturbances can all alter how indicators are expected to appear at a site. Chapter 6 and Chapter 7 of the OHWM field manual provides specific case-studies that can help in interpreting evidence at these sites.

#### b. Strength:

- i. Is this indicator persistent across the landscape?

1. Look up and downstream and across the channel to see if you see the same indicator at multiple locations.
2. Does the indicator occur at the same elevation as other indicators?

#### c. Reliability:

- i. Is this indicator persistent on the landscape over time? Will this indicator still persist across seasons?

1. This can be difficult to determine for some indicators and may be specific to climatic region (in terms of persistence of vegetation) and history of land use or other natural disturbances.
2. Chapter 2, Chapter 6, and Chapter 7 of the OHWM field manual describes each indicator in detail and provides examples of areas where indicators are difficult to interpret.

#### d. Weigh body of evidence:

- i. Combine weights: integrate the weighted line of evidence (relevance, strength, reliability) of each indicator.
- ii. For each of the observed indicators, which are more heavily weighted? Where do high value indicators co-occur along the stream reach? Do they co-occur at a similar elevation along the banks relative to water surface (or channel bed if there is no water).
- iii. On datasheet, select the indicators used to identify the OHWM. Information in Chapter 2 of the OHWM field manual provides descriptions of specific indicators which can assist in putting these in context and determining relevance, strength, and reliability.

#### e. Take photographs of indicators and attach a log using either page 2 of datasheet or another method of logging photos.

- i. Annotate photos with descriptions of indicators.

**\*Landscape context from Step 1 can help determine the relevance, strength, and reliability of the indicators observed in the field.**

**\*Information in Chapter 2 of the OHWM field manual provides information on specific indicators which can assist in putting these in context and determining relevance, strength, and reliability.**

### Step 4 Is additional information needed? Are other resources needed to support the lines of evidence observed in the field?

- a. If additional resources are needed, then repeat steps 3a and 3b for the resources selected in Step 1 of assembling, weighting, and weighing evidence collected from online resources. Chapter 5 of the OHWM field manual provides information on using online resources.
- b. Any data collected from online tools have strengths and weaknesses. Make sure these are clear when determining relevance, strength, and reliability of the remotely collected data. Clearly describe why other resources were needed to support the lines of evidence observed in the field, as well as the relevance, strength, and reliability of the supporting data and/or resources.
- c. Attach any remote data and data analysis to the datasheet.

### Step 5 Describe rationale for location of OHWM:

- a. Why do the combination of indicators represent the OHWM?
- b. If there are multiple possibilities for the OHWM, explain why there are two (or more) possibilities. Include any relevant discussion on why specific indicators were not included in the final decision.
- c. If needed, add additional site notes on page 2 of the datasheet under Step 5.

U.S. Army Corps of Engineers (USACE)  
**INTERIM DRAFT RAPID ORDINARY HIGH WATER MARK (OHWM) FIELD  
IDENTIFICATION DATA SHEET**

The proponent agency is Headquarters USACE CECW-COR.

**Form Approved -**  
**OMB No. 0710-0024**  
**Expires: 2024-04-30**

**The Agency Disclosure Notice (ADN)**

The Public reporting burden for this collection of information, 0710-0024, is estimated to average 30 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or burden reduction suggestions to the Department of Defense, Washington Headquarters Services, at [whs.mc-alex.esd.mbx.dd-dod-information-collections@mail.mil](mailto:whs.mc-alex.esd.mbx.dd-dod-information-collections@mail.mil). Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

Project ID #: MOX 115 kV Rebuild

Site Name: OHWM-3

Date and Time: 12/28/23

Location (lat/long): 37.843435, -122.180461

Investigator(s): Kevin Fisher, Pim Laulikitnont-Lee

**Step 1** Site overview from remote and online resources

**Check boxes for online resources used to evaluate site:**

- |                                                   |                                                       |                                                   |
|---------------------------------------------------|-------------------------------------------------------|---------------------------------------------------|
| <input type="checkbox"/> gage data                | <input type="checkbox"/> LiDAR                        | <input checked="" type="checkbox"/> geologic maps |
| <input checked="" type="checkbox"/> climatic data | <input checked="" type="checkbox"/> satellite imagery | <input checked="" type="checkbox"/> land use maps |
| <input checked="" type="checkbox"/> aerial photos | <input checked="" type="checkbox"/> topographic maps  | <input type="checkbox"/> Other: _____             |

**Describe land use and flow conditions from online resources.**

Were there any recent extreme events (floods or drought)?

Land use is recreation space owned by East Bay Parks. Recently daylighted/restored creek.  
Stream flow present from recent rain.

**Step 2** Site conditions during field assessment. First look for changes in channel shape, depositional and erosional features, and changes in vegetation and sediment type, size, density, and distribution. Make note of natural or man-made disturbances that would affect flow and channel form, such as bridges, riprap, landslides, rockfalls etc.

Constructed/restored channel lined with angular rock to OHWM elevation.

**Step 3** Check the boxes next to the indicators used to identify the location of the OHWM.

**OHWM is at a transition point**, therefore some indicators that are used to determine location may be just below and above the OHWM. From the drop-down menu next to each indicator, select the appropriate location of the indicator by selecting either just below 'b', at 'x', or just above 'a' the OHWM.

Go to page 2 to describe overall rationale for location of OHWM, write any additional observations, and to attach a photo log.

**Geomorphic indicators**

☒ **Break in slope:** x

☒ on the bank: x

☐ undercut bank:

☐ valley bottom:

☐ Other: \_\_\_\_\_

☐ **Shelving:**

☐ shelf at top of bank:

☐ natural levee:

☐ man-made berms or levees:

☐ other

berms: \_\_\_\_\_

☐ **Channel bar:**

☐ shelving (berms) on bar:

☐ unvegetated:

☐ vegetation transition  
(go to veg. indicators)

☐ sediment transition

(go to sed. indicators)

☐ upper limit of deposition  
on bar:

☐ **Instream bedforms and other  
bedload transport evidence:**

☐ deposition bedload indicators  
(e.g., imbricated clasts,  
gravel sheets, etc.)

☐ bedforms (e.g., pools,  
riffles, steps, etc.):

☐ **erosional bedload indicators**  
(e.g., obstacle marks, scour,  
smoothing, etc.)

☐ **Secondary channels:**

**Sediment indicators**

☐ **Soil development:**

☐ **Changes in character of soil:**

☐ **Mudcracks:**

☒ **Changes in particle-sized  
distribution:** x

☒ transition from boulder to soil

☐ upper limit of sand-sized particles

☐ silt deposits:

**Vegetation Indicators**

☒ **Change in vegetation type  
and/or density:** b

Check the appropriate boxes and select the general vegetation change (e.g., graminoids to woody shrubs). **Describe the vegetation transition looking from the middle of the channel, up the banks, and into the floodplain.**

☒ vegetation  
absent to: forbs

☐ moss to:

☒ forbs to: woody shrubs

☐ graminoids to:

☐ woody  
shrubs to:

☐ deciduous

trees to:

☐ coniferous

trees to:

☐ **Vegetation matted down  
and/or bent:**

☐ **Exposed roots below  
intact soil layer:**

**Ancillary indicators**

☐ **Wracking/presence of  
organic litter:**

☐ **Presence of large wood:**

☐ **Leaf litter disturbed or  
washed away:**

☐ **Water staining:**

☐ **Weathered clasts or bedrock:**

**Other observed indicators? Describe:**

Bed is artificially coarse which limits observation of bedload transport. Materials smaller and gravels are mobile.



Project ID #: MOX 115 kV Rebuild

**Step 4** Is additional information needed to support this determination? ☐ Yes ☒ No If yes, describe and attach information to datasheet:

#### Step 5 Describe rationale for location of OHWM

Recently constructed creek with well-defined bed and bank. Large angular material defines the limits of OHWM along with recent scour.

|                                  |
|----------------------------------|
| Additional observations or notes |
|----------------------------------|

Top of bank is 35ft, OHWM is 14ft.

Attach a photo log of the site. Use the table below, or attach separately.

Photo log attached? ☒ Yes ☐ No If no, explain why not:

List photographs and include descriptions in the table below.

Number photographs in the order that they are taken. Attach photographs and include annotations of features.

[illegible]

## OHWM Field Identification Datasheet Instructions and Field Procedure

### Step 1 Site overview from remote and online resources

Complete Step 1 prior to site visit.

**Online Resources:** Identify what information is available for the site. Check boxes on datasheet next to the resources used to assess this site.

- |                      |                                                  |
|----------------------|--------------------------------------------------|
| a. gage data         | e. topographic maps                              |
| b. aerial photos     | f. geologic maps                                 |
| c. satellite imagery | g. land use maps                                 |
| d. LiDAR             | h. climatic data (precipitation and temperature) |

**Landscape context:** Use the online resources to put the site in the context of the surrounding landscape.

**a. Note on the datasheet under Step 1:**

- i. Overall land use and change if known
  - ii. Recent extreme events if known (e.g., flood, drought, landslides, debris flows, wildfires)
- b. Consider the following to inform weighting of evidence observed during field visit.
- i. What physical characteristics are likely to be observed in specific environments?
  - ii. Was there a recent flood or drought? Are you expecting to see recently formed or obscured indicators?
  - iii. How will land use affect specific stream characteristics? How natural is the hydrologic regime? How stable has the landscape been over the last year, decade, century?

### Step 2 Site conditions during the field assessment (assemble evidence)

- |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ol style="list-style-type: none"> <li>a. Identify the assessment area.</li> <li>b. Walk up and down the assessment area noting all the potential OHWM indicators.</li> <li>c. Note broad trends in channel shape, vegetation, and sediment characteristics.                             <ol style="list-style-type: none"> <li>i. Is this a single thread or multi-thread system? Is this a stream-wetland complex?</li> <li>ii. Are there any secondary and/or floodplain channels?</li> <li>iii. Are there obvious man-made alterations to the system?</li> <li>iv. Are there man-made (e.g., bridges, dams, culverts) or natural structures (e.g., bedrock outcrops, Large Wood jams) that will influence or control flow?</li> </ol> </li> </ol> | <ol style="list-style-type: none"> <li>d. Look for signs of recurring fluvial action.                             <ol style="list-style-type: none"> <li>i. Where does the flow converge on the landscape?</li> <li>ii. Are there signs of fluvial action (sediment sorting, bedforms, etc.) at the convergence zone?</li> </ol> </li> <li>e. Look for indicators on both banks. If the opposite bank is not accessible, then look across the channel at the bank.</li> <li>f. <b>In Step 2 of the datasheet</b> describe any adjacent land use or flow conditions that may influence interpretation of each line of evidence.                             <ol style="list-style-type: none"> <li>i. What land use and flow conditions may be affecting your ability to observe indicators at the site?</li> <li>ii. What recent extreme events may have caused changes to the site and affected your ability to observe indicators?</li> </ol> </li> </ol> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### Step 3a List evidence

**Assemble evidence by checking the boxes next to each line of evidence:**

- a. If needed, use a separate scratch datasheet to check boxes next to possible indicators, or check boxes of possible indicators in pencil and use pen for final decision.
- b. If using fillable form, then follow the instructions for filling in the fillable form.

*Context is important when assembling evidence. For instance, pool development may be an indicator of interest on the bed of a dry stream, but may not be a useful indicator to take note of in a flowing stream. On the other hand, if the pool is found in a secondary channel adjacent to the main channel, it could provide a line of evidence for a minimum elevation of high flows. Therefore, consider the site context when deciding which indicators provide evidence for identifying the OHWM. Explain reasoning in Step 5.*

**Questions to consider while making observations and listing evidence at a site:**

| Geomorphic indicators                                  | Sediment and soil indicators                         | Vegetation Indicators                                                                                                       | Ancillary indicators                               |
|--------------------------------------------------------|------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|
| Where are the breaks in slope?                         | Where does evidence of soil formation appear?        | Where are the significant transitions in vegetation species, density, and age?                                              | Is there organic litter present?                   |
| Are there identifiable banks?                          |                                                      | Is there vegetation growing on the channel bed?                                                                             | Is there any leaf litter disturbed or washed away? |
| Is there an easily identifiable top of bank?           | Are there mudcracks present?                         | If no, how long does it take for the non-tolerant vegetation to establish relative to how often flows occur in the channel? | Is there large wood deposition?                    |
| Are the banks actively eroding?                        | Is there evidence of sediment sorting by grain size? | Where are the significant transitions in vegetation?                                                                        | Is there evidence of water staining?               |
| Are the banks undercut?                                |                                                      | Is the vegetation tolerant of flowing water?                                                                                |                                                    |
| Are the banks armored?                                 |                                                      | Has any vegetation been flattened by flowing water?                                                                         |                                                    |
| Is the channel confined by the surrounding hillslopes? |                                                      |                                                                                                                             |                                                    |
| Are there natural or man-made berms and levees?        |                                                      |                                                                                                                             |                                                    |
| Are there fluvial terraces?                            |                                                      |                                                                                                                             |                                                    |
| Are there channel bars?                                |                                                      |                                                                                                                             |                                                    |

Are the following features of fluvial transport present?

*Evidence of erosion: obstacle marks, scour, armoring  
Bedforms: riffles, pools, steps, knickpoints/headcuts  
Evidence of deposition: imbricated clasts, gravel sheets, etc.*

**In some cases, it may be helpful to explain why an indicator was NOT at the OHWM elevation, but found above or below. It can also be useful to note if specific indicators (e.g., vegetation) are NOT present. For instance, note if the site has no clear vegetation zonation.**

## OHWM Field Identification Datasheet Instructions and Field Procedure

### Step 3b Weight each line of evidence and weigh body of evidence

Weight each indicator by considering its importance based upon:

#### a. Relevance:

- i. Is this indicator left by low, high, or extreme flows?

##### Tips on how to assess the indicator relative to type of flow:

*Consider the elevation of the indicator relative to the channel bed.*

*What is the current flow level based on season or nearby gages?*

*Consider the elevation of the indicator relative to the current flow.*

*If the stream is currently at baseflow and indicator is adjacent to that, then it is likely a low flow indicator. The difference between high and extreme flow indicators can sometimes be difficult to determine.*

- ii. Did recent extreme events and/or land use affect this indicator?

1. Recent floods may have left many extreme flow indicators, or temporarily altered channel form.

Other resources will likely be needed to support any OHWM identification at this site. Field evidence of the OHWM may have to wait for the site to recover from the recent flood.

2. Droughts may cause field evidence of OHWM to be obscured, because there has been an extended time since the last high flow event. There can be overgrowth of vegetation or deposition of material from surrounding landscape that can obscure indicators.
3. Both man-made (e.g., dams, construction, mining activities, urbanization, agriculture, grazing) and natural (e.g., fires, floods, debris flows, beaver dams) disturbances can all alter how indicators are expected to appear at a site. Chapter 6 and Chapter 7 of the OHWM field manual provides specific case-studies that can help in interpreting evidence at these sites.

#### b. Strength:

- i. Is this indicator persistent across the landscape?

1. Look up and downstream and across the channel to see if you see the same indicator at multiple locations.
2. Does the indicator occur at the same elevation as other indicators?

#### c. Reliability:

- i. Is this indicator persistent on the landscape over time? Will this indicator still persist across seasons?

1. This can be difficult to determine for some indicators and may be specific to climatic region (in terms of persistence of vegetation) and history of land use or other natural disturbances.
2. Chapter 2, Chapter 6, and Chapter 7 of the OHWM field manual describes each indicator in detail and provides examples of areas where indicators are difficult to interpret.

#### d. Weigh body of evidence:

- i. Combine weights: integrate the weighted line of evidence (relevance, strength, reliability) of each indicator.
- ii. For each of the observed indicators, which are more heavily weighted? Where do high value indicators co-occur along the stream reach? Do they co-occur at a similar elevation along the banks relative to water surface (or channel bed if there is no water).
- iii. On datasheet, select the indicators used to identify the OHWM. Information in Chapter 2 of the OHWM field manual provides descriptions of specific indicators which can assist in putting these in context and determining relevance, strength, and reliability.

#### e. Take photographs of indicators and attach a log using either page 2 of datasheet or another method of logging photos.

- i. Annotate photos with descriptions of indicators.

**\*Landscape context from Step 1 can help determine the relevance, strength, and reliability of the indicators observed in the field.**

**\*Information in Chapter 2 of the OHWM field manual provides information on specific indicators which can assist in putting these in context and determining relevance, strength, and reliability.**

### Step 4 Is additional information needed? Are other resources needed to support the lines of evidence observed in the field?

- a. If additional resources are needed, then repeat steps 3a and 3b for the resources selected in Step 1 of assembling, weighting, and weighing evidence collected from online resources. Chapter 5 of the OHWM field manual provides information on using online resources.
- b. Any data collected from online tools have strengths and weaknesses. Make sure these are clear when determining relevance, strength, and reliability of the remotely collected data. Clearly describe why other resources were needed to support the lines of evidence observed in the field, as well as the relevance, strength, and reliability of the supporting data and/or resources.
- c. Attach any remote data and data analysis to the datasheet.

### Step 5 Describe rationale for location of OHWM:

- a. Why do the combination of indicators represent the OHWM?
- b. If there are multiple possibilities for the OHWM, explain why there are two (or more) possibilities. Include any relevant discussion on why specific indicators were not included in the final decision.
- c. If needed, add additional site notes on page 2 of the datasheet under Step 5.



U.S. Army Corps of Engineers (USACE)  
**INTERIM DRAFT RAPID ORDINARY HIGH WATER MARK (OHWM) FIELD  
IDENTIFICATION DATA SHEET**

The proponent agency is Headquarters USACE CECW-COR.

**Form Approved -**  
**OMB No. 0710-0024**  
**Expires: 2024-04-30**

**The Agency Disclosure Notice (ADN)**

The Public reporting burden for this collection of information, 0710-0024, is estimated to average 30 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or burden reduction suggestions to the Department of Defense, Washington Headquarters Services, at [whs.mc-alex.esd.mbx.dd-dod-information-collections@mail.mil](mailto:whs.mc-alex.esd.mbx.dd-dod-information-collections@mail.mil). Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

Project ID #: MOX 115 kV Rebuild

Site Name: OHWM-4

Date and Time: 12/29/23

Location (lat/long): 37.849249, -122.174820

Investigator(s): Kevin Fisher, Pim Laulikitnont-Lee

**Step 1** Site overview from remote and online resources

**Check boxes for online resources used to evaluate site:**

- |                                                   |                                                       |                                                   |
|---------------------------------------------------|-------------------------------------------------------|---------------------------------------------------|
| <input type="checkbox"/> gage data                | <input type="checkbox"/> LiDAR                        | <input checked="" type="checkbox"/> geologic maps |
| <input checked="" type="checkbox"/> climatic data | <input checked="" type="checkbox"/> satellite imagery | <input checked="" type="checkbox"/> land use maps |
| <input checked="" type="checkbox"/> aerial photos | <input checked="" type="checkbox"/> topographic maps  | <input type="checkbox"/> Other: _____             |

**Describe land use and flow conditions from online resources.**

Were there any recent extreme events (floods or drought)?

Land use is recreation space owned by East Bay Parks. Flow is absent during survey.

**Step 2** Site conditions during field assessment. First look for changes in channel shape, depositional and erosional features, and changes in vegetation and sediment type, size, density, and distribution. Make note of natural or man-made disturbances that would affect flow and channel form, such as bridges, riprap, landslides, rockfalls etc.

Waters on west and east side of existing roadway. Unclear if culvert is buried. No flow during visit.

**Step 3** Check the boxes next to the indicators used to identify the location of the OHWM.

**OHWM is at a transition point**, therefore some indicators that are used to determine location may be just below and above the OHWM. From the drop-down menu next to each indicator, select the appropriate location of the indicator by selecting either just below 'b', at 'x', or just above 'a' the OHWM.

Go to page 2 to describe overall rationale for location of OHWM, write any additional observations, and to attach a photo log.

**Geomorphic indicators**

☒ **Break in slope:** x

☒ on the bank: x

☐ undercut bank:

☐ valley bottom:

☐ Other: \_\_\_\_\_

☐ **Shelving:**

☐ shelf at top of bank:

☐ natural levee:

☐ man-made berms or levees:

☐ other  
berms: \_\_\_\_\_

☐ **Channel bar:**

☐ shelving (berms) on bar:

☐ unvegetated:

☐ vegetation transition  
(go to veg. indicators)

☐ sediment transition  
(go to sed. indicators)  
☐ upper limit of deposition  
on bar:

☐ **Instream bedforms and other  
bedload transport evidence:**

☐ deposition bedload indicators  
(e.g., imbricated clasts,  
gravel sheets, etc.)

☐ bedforms (e.g., pools,  
riffles, steps, etc.):

☐ erosional bedload indicators  
(e.g., obstacle marks, scour,  
smoothing, etc.)

☐ **Secondary channels:**

**Sediment indicators**

☐ **Soil development:**

☐ **Changes in character of soil:**

☐ **Mudcracks:**

☐ **Changes in particle-sized  
distribution:**

☐ transition from \_\_\_\_\_ to \_\_\_\_\_

☐ upper limit of sand-sized particles

☐ silt deposits:

**Vegetation Indicators**

☒ **Change in vegetation type  
and/or density:** x

Check the appropriate boxes and select the general vegetation change (e.g., *graminoids to woody shrubs*). **Describe the vegetation transition looking from the middle of the channel, up the banks, and into the floodplain.**

☒ vegetation  
absent to: forbs

☐ moss to:

☐ forbs to:

☐ graminoids to:

☐ woody  
shrubs to:  
☐ deciduous  
trees to:  
☐ coniferous  
trees to:

☐ **Vegetation matted down  
and/or bent:**

☒ **Exposed roots below  
intact soil layer:** a

**Ancillary indicators**

☐ **Wracking/presence of  
organic litter:**

☐ **Presence of large wood:**

☒ **Leaf litter disturbed or  
washed away:** b

☐ **Water staining:**

☐ **Weathered clasts or bedrock:**

**Other observed indicators? Describe:**

Project ID #: MOX 115 kV Rebuild

**Step 4** Is additional information needed to support this determination? ☐ Yes ☒ No If yes, describe and attach information to datasheet:

### Step 5 Describe rationale for location of OHWM

Steep ephemeral waters on headwater of drainage.

Additional observations or notes

Top of bank is 8ft, OHWM is 2ft.

Attach a photo log of the site. Use the table below, or attach separately.

Photo log attached? ☒ Yes ☐ No If no, explain why not:

List photographs and include descriptions in the table below.

Number photographs in the order that they are taken. Attach photographs and include annotations of features.

[illegible]

## OHWM Field Identification Datasheet Instructions and Field Procedure

### Step 1 Site overview from remote and online resources

Complete Step 1 prior to site visit.

**Online Resources:** Identify what information is available for the site. Check boxes on datasheet next to the resources used to assess this site.

- |                      |                                                  |
|----------------------|--------------------------------------------------|
| a. gage data         | e. topographic maps                              |
| b. aerial photos     | f. geologic maps                                 |
| c. satellite imagery | g. land use maps                                 |
| d. LiDAR             | h. climatic data (precipitation and temperature) |

**Landscape context:** Use the online resources to put the site in the context of the surrounding landscape.

**a. Note on the datasheet under Step 1:**

- i. Overall land use and change if known
  - ii. Recent extreme events if known (e.g., flood, drought, landslides, debris flows, wildfires)
- b. Consider the following to inform weighting of evidence observed during field visit.
- i. What physical characteristics are likely to be observed in specific environments?
  - ii. Was there a recent flood or drought? Are you expecting to see recently formed or obscured indicators?
  - iii. How will land use affect specific stream characteristics? How natural is the hydrologic regime? How stable has the landscape been over the last year, decade, century?

### Step 2 Site conditions during the field assessment (assemble evidence)

- |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ol style="list-style-type: none"> <li>a. Identify the assessment area.</li> <li>b. Walk up and down the assessment area noting all the potential OHWM indicators.</li> <li>c. Note broad trends in channel shape, vegetation, and sediment characteristics.                         <ol style="list-style-type: none"> <li>i. Is this a single thread or multi-thread system? Is this a stream-wetland complex?</li> <li>ii. Are there any secondary and/or floodplain channels?</li> <li>iii. Are there obvious man-made alterations to the system?</li> <li>iv. Are there man-made (e.g., bridges, dams, culverts) or natural structures (e.g., bedrock outcrops, Large Wood jams) that will influence or control flow?</li> </ol> </li> </ol> | <ol style="list-style-type: none"> <li>d. Look for signs of recurring fluvial action.                         <ol style="list-style-type: none"> <li>i. Where does the flow converge on the landscape?</li> <li>ii. Are there signs of fluvial action (sediment sorting, bedforms, etc.) at the convergence zone?</li> </ol> </li> <li>e. Look for indicators on both banks. If the opposite bank is not accessible, then look across the channel at the bank.</li> <li>f. <b>In Step 2 of the datasheet</b> describe any adjacent land use or flow conditions that may influence interpretation of each line of evidence.                         <ol style="list-style-type: none"> <li>i. What land use and flow conditions may be affecting your ability to observe indicators at the site?</li> <li>ii. What recent extreme events may have caused changes to the site and affected your ability to observe indicators?</li> </ol> </li> </ol> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### Step 3a List evidence

**Assemble evidence by checking the boxes next to each line of evidence:**

- a. If needed, use a separate scratch datasheet to check boxes next to possible indicators, or check boxes of possible indicators in pencil and use pen for final decision.
- b. If using fillable form, then follow the instructions for filling in the fillable form.

*Context is important when assembling evidence. For instance, pool development may be an indicator of interest on the bed of a dry stream, but may not be a useful indicator to take note of in a flowing stream. On the other hand, if the pool is found in a secondary channel adjacent to the main channel, it could provide a line of evidence for a minimum elevation of high flows. Therefore, consider the site context when deciding which indicators provide evidence for identifying the OHWM. Explain reasoning in Step 5.*

**Questions to consider while making observations and listing evidence at a site:**

| Geomorphic indicators                                  | Sediment and soil indicators                         | Vegetation Indicators                                                                                                       | Ancillary indicators                               |
|--------------------------------------------------------|------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|
| Where are the breaks in slope?                         | Where does evidence of soil formation appear?        | Where are the significant transitions in vegetation species, density, and age?                                              | Is there organic litter present?                   |
| Are there identifiable banks?                          |                                                      | Is there vegetation growing on the channel bed?                                                                             | Is there any leaf litter disturbed or washed away? |
| Is there an easily identifiable top of bank?           | Are there mudcracks present?                         | If no, how long does it take for the non-tolerant vegetation to establish relative to how often flows occur in the channel? | Is there large wood deposition?                    |
| Are the banks actively eroding?                        | Is there evidence of sediment sorting by grain size? | Where are the significant transitions in vegetation?                                                                        | Is there evidence of water staining?               |
| Are the banks undercut?                                |                                                      | Is the vegetation tolerant of flowing water?                                                                                |                                                    |
| Are the banks armored?                                 |                                                      | Has any vegetation been flattened by flowing water?                                                                         |                                                    |
| Is the channel confined by the surrounding hillslopes? |                                                      |                                                                                                                             |                                                    |
| Are there natural or man-made berms and levees?        |                                                      |                                                                                                                             |                                                    |
| Are there fluvial terraces?                            |                                                      |                                                                                                                             |                                                    |
| Are there channel bars?                                |                                                      |                                                                                                                             |                                                    |

Are the following features of fluvial transport present?

*Evidence of erosion: obstacle marks, scour, armoring  
Bedforms: riffles, pools, steps, knickpoints/headcuts  
Evidence of deposition: imbricated clasts, gravel sheets, etc.*

**In some cases, it may be helpful to explain why an indicator was NOT at the OHWM elevation, but found above or below. It can also be useful to note if specific indicators (e.g., vegetation) are NOT present. For instance, note if the site has no clear vegetation zonation.**



## OHWM Field Identification Datasheet Instructions and Field Procedure

### Step 3b Weight each line of evidence and weigh body of evidence

Weight each indicator by considering its importance based upon:

#### a. Relevance:

- i. Is this indicator left by low, high, or extreme flows?

##### Tips on how to assess the indicator relative to type of flow:

*Consider the elevation of the indicator relative to the channel bed.*

*What is the current flow level based on season or nearby gages?*

*Consider the elevation of the indicator relative to the current flow.*

*If the stream is currently at baseflow and indicator is adjacent to that, then it is likely a low flow indicator. The difference between high and extreme flow indicators can sometimes be difficult to determine.*

- ii. Did recent extreme events and/or land use affect this indicator?

1. Recent floods may have left many extreme flow indicators, or temporarily altered channel form.

Other resources will likely be needed to support any OHWM identification at this site. Field evidence of the OHWM may have to wait for the site to recover from the recent flood.

2. Droughts may cause field evidence of OHWM to be obscured, because there has been an extended time since the last high flow event. There can be overgrowth of vegetation or deposition of material from surrounding landscape that can obscure indicators.
3. Both man-made (e.g., dams, construction, mining activities, urbanization, agriculture, grazing) and natural (e.g., fires, floods, debris flows, beaver dams) disturbances can all alter how indicators are expected to appear at a site. Chapter 6 and Chapter 7 of the OHWM field manual provides specific case-studies that can help in interpreting evidence at these sites.

#### b. Strength:

- i. Is this indicator persistent across the landscape?

1. Look up and downstream and across the channel to see if you see the same indicator at multiple locations.
2. Does the indicator occur at the same elevation as other indicators?

#### c. Reliability:

- i. Is this indicator persistent on the landscape over time? Will this indicator still persist across seasons?

1. This can be difficult to determine for some indicators and may be specific to climatic region (in terms of persistence of vegetation) and history of land use or other natural disturbances.
2. Chapter 2, Chapter 6, and Chapter 7 of the OHWM field manual describes each indicator in detail and provides examples of areas where indicators are difficult to interpret.

#### d. Weigh body of evidence:

- i. Combine weights: integrate the weighted line of evidence (relevance, strength, reliability) of each indicator.
- ii. For each of the observed indicators, which are more heavily weighted? Where do high value indicators co-occur along the stream reach? Do they co-occur at a similar elevation along the banks relative to water surface (or channel bed if there is no water).
- iii. On datasheet, select the indicators used to identify the OHWM. Information in Chapter 2 of the OHWM field manual provides descriptions of specific indicators which can assist in putting these in context and determining relevance, strength, and reliability.

#### e. Take photographs of indicators and attach a log using either page 2 of datasheet or another method of logging photos.

- i. Annotate photos with descriptions of indicators.

**\*Landscape context from Step 1 can help determine the relevance, strength, and reliability of the indicators observed in the field.**

**\*Information in Chapter 2 of the OHWM field manual provides information on specific indicators which can assist in putting these in context and determining relevance, strength, and reliability.**

### Step 4 Is additional information needed? Are other resources needed to support the lines of evidence observed in the field?

- a. If additional resources are needed, then repeat steps 3a and 3b for the resources selected in Step 1 of assembling, weighting, and weighing evidence collected from online resources. Chapter 5 of the OHWM field manual provides information on using online resources.
- b. Any data collected from online tools have strengths and weaknesses. Make sure these are clear when determining relevance, strength, and reliability of the remotely collected data. Clearly describe why other resources were needed to support the lines of evidence observed in the field, as well as the relevance, strength, and reliability of the supporting data and/or resources.
- c. Attach any remote data and data analysis to the datasheet.

### Step 5 Describe rationale for location of OHWM:

- a. Why do the combination of indicators represent the OHWM?
- b. If there are multiple possibilities for the OHWM, explain why there are two (or more) possibilities. Include any relevant discussion on why specific indicators were not included in the final decision.
- c. If needed, add additional site notes on page 2 of the datasheet under Step 5.

U.S. Army Corps of Engineers (USACE)  
**INTERIM DRAFT RAPID ORDINARY HIGH WATER MARK (OHWM) FIELD  
IDENTIFICATION DATA SHEET**

The proponent agency is Headquarters USACE CECW-COR.

**Form Approved -**  
**OMB No. 0710-0024**  
**Expires: 2024-04-30**

**The Agency Disclosure Notice (ADN)**

The Public reporting burden for this collection of information, 0710-0024, is estimated to average 30 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or burden reduction suggestions to the Department of Defense, Washington Headquarters Services, at [whs.mc-alex.esd.mbx.dd-dod-information-collections@mail.mil](mailto:whs.mc-alex.esd.mbx.dd-dod-information-collections@mail.mil). Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

Project ID #: MOX 115 kV Rebuild

Site Name: OHWM-5

Date and Time: 12/29/23

Location (lat/long): 37.818544, -122.206786

Investigator(s): Kevin Fisher, Pim Laulikitnont-Lee

**Step 1** Site overview from remote and online resources

**Check boxes for online resources used to evaluate site:**

- |                                                   |                                                       |                                                   |
|---------------------------------------------------|-------------------------------------------------------|---------------------------------------------------|
| <input type="checkbox"/> gage data                | <input type="checkbox"/> LiDAR                        | <input checked="" type="checkbox"/> geologic maps |
| <input checked="" type="checkbox"/> climatic data | <input checked="" type="checkbox"/> satellite imagery | <input checked="" type="checkbox"/> land use maps |
| <input checked="" type="checkbox"/> aerial photos | <input checked="" type="checkbox"/> topographic maps  | <input type="checkbox"/> Other: _____             |

**Describe land use and flow conditions from online resources.**

Were there any recent extreme events (floods or drought)?

Flow is present during survey.

**Step 2** Site conditions during field assessment. First look for changes in channel shape, depositional and erosional features, and changes in vegetation and sediment type, size, density, and distribution. Make note of natural or man-made disturbances that would affect flow and channel form, such as bridges, riprap, landslides, rockfalls etc.

Tributary of Palo Seco Creek near culvert. Flow present during survey.

**Step 3** Check the boxes next to the indicators used to identify the location of the OHWM.

**OHWM is at a transition point**, therefore some indicators that are used to determine location may be just below and above the OHWM. From the drop-down menu next to each indicator, select the appropriate location of the indicator by selecting either just below 'b', at 'x', or just above 'a' the OHWM.

Go to page 2 to describe overall rationale for location of OHWM, write any additional observations, and to attach a photo log.

**Geomorphic indicators**

☒ **Break in slope:** x

☒ on the bank: x

☐ undercut bank:

☐ valley bottom:

☐ Other: \_\_\_\_\_

☒ **Shelving:** b

☐ shelf at top of bank:

☐ natural levee:

☐ man-made berms or levees:

☐ other  
berms: \_\_\_\_\_

☒ **Channel bar:** b

☐ shelving (berms) on bar:

☐ unvegetated:

☒ vegetation transition  
(go to veg. indicators) x

☐ sediment transition  
(go to sed. indicators)

☐ upper limit of deposition  
on bar:

☒ **Instream bedforms and other  
bedload transport evidence:**

☒ deposition bedload indicators  
(e.g., imbricated clasts, b  
gravel sheets, etc.)

☒ bedforms (e.g., pools, b  
riffles, steps, etc.):

☒ erosional bedload indicators  
(e.g., obstacle marks, scour, b  
smoothing, etc.)

☐ **Secondary channels:**

**Sediment indicators**

☐ **Soil development:**

☐ **Changes in character of soil:**

☐ **Mudcracks:**

☐ **Changes in particle-sized  
distribution:**

☐ transition from \_\_\_\_\_ to \_\_\_\_\_

☐ upper limit of sand-sized particles

☐ silt deposits:

**Vegetation Indicators**

☒ **Change in vegetation type  
and/or density:** a

Check the appropriate boxes and select the general vegetation change (e.g., graminoids to woody shrubs). **Describe the vegetation transition looking from the middle of the channel, up the banks, and into the floodplain.**

☒ vegetation  
absent to: forbs

☐ moss to:

☐ forbs to:

☐ graminoids to:

☐ woody  
shrubs to:

☐ deciduous

trees to:

☐ coniferous

trees to:

☐ **Vegetation matted down  
and/or bent:**

☐ **Exposed roots below  
intact soil layer:**

**Ancillary indicators**

☐ **Wracking/presence of  
organic litter:**

☐ **Presence of large wood:**

☐ **Leaf litter disturbed or  
washed away:**

☐ **Water staining:**

☐ **Weathered clasts or bedrock:**

**Other observed indicators? Describe:**

Project ID #: MOX 115 kV Rebuild

**Step 4** Is additional information needed to support this determination? ☐ Yes ☒ No If yes, describe and attach information to datasheet:

### Step 5 Describe rationale for location of OHWM

Vegetation change from low flow channel (no vegetation) to dense ivy at and above OHWM. Scour on left bank and point bar on right bank. OHWM is above scour and bar.

Additional observations or notes

Top of bank is 25ft, OHWM is 8ft.

Attach a photo log of the site. Use the table below, or attach separately.

Photo log attached? ☒ Yes ☐ No If no, explain why not:

List photographs and include descriptions in the table below.

Number photographs in the order that they are taken. Attach photographs and include annotations of features.

[illegible]



## OHWM Field Identification Datasheet Instructions and Field Procedure

### Step 1 Site overview from remote and online resources

Complete Step 1 prior to site visit.

**Online Resources:** Identify what information is available for the site. Check boxes on datasheet next to the resources used to assess this site.

- |                      |                                                  |
|----------------------|--------------------------------------------------|
| a. gage data         | e. topographic maps                              |
| b. aerial photos     | f. geologic maps                                 |
| c. satellite imagery | g. land use maps                                 |
| d. LiDAR             | h. climatic data (precipitation and temperature) |

**Landscape context:** Use the online resources to put the site in the context of the surrounding landscape.

**a. Note on the datasheet under Step 1:**

- i. Overall land use and change if known
  - ii. Recent extreme events if known (e.g., flood, drought, landslides, debris flows, wildfires)
- b. Consider the following to inform weighting of evidence observed during field visit.
- i. What physical characteristics are likely to be observed in specific environments?
  - ii. Was there a recent flood or drought? Are you expecting to see recently formed or obscured indicators?
  - iii. How will land use affect specific stream characteristics? How natural is the hydrologic regime? How stable has the landscape been over the last year, decade, century?

### Step 2 Site conditions during the field assessment (assemble evidence)

- |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ol style="list-style-type: none"> <li>a. Identify the assessment area.</li> <li>b. Walk up and down the assessment area noting all the potential OHWM indicators.</li> <li>c. Note broad trends in channel shape, vegetation, and sediment characteristics.                         <ol style="list-style-type: none"> <li>i. Is this a single thread or multi-thread system? Is this a stream-wetland complex?</li> <li>ii. Are there any secondary and/or floodplain channels?</li> <li>iii. Are there obvious man-made alterations to the system?</li> <li>iv. Are there man-made (e.g., bridges, dams, culverts) or natural structures (e.g., bedrock outcrops, Large Wood jams) that will influence or control flow?</li> </ol> </li> </ol> | <ol style="list-style-type: none"> <li>d. Look for signs of recurring fluvial action.                         <ol style="list-style-type: none"> <li>i. Where does the flow converge on the landscape?</li> <li>ii. Are there signs of fluvial action (sediment sorting, bedforms, etc.) at the convergence zone?</li> </ol> </li> <li>e. Look for indicators on both banks. If the opposite bank is not accessible, then look across the channel at the bank.</li> <li>f. <b>In Step 2 of the datasheet</b> describe any adjacent land use or flow conditions that may influence interpretation of each line of evidence.                         <ol style="list-style-type: none"> <li>i. What land use and flow conditions may be affecting your ability to observe indicators at the site?</li> <li>ii. What recent extreme events may have caused changes to the site and affected your ability to observe indicators?</li> </ol> </li> </ol> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### Step 3a List evidence

**Assemble evidence by checking the boxes next to each line of evidence:**

- a. If needed, use a separate scratch datasheet to check boxes next to possible indicators, or check boxes of possible indicators in pencil and use pen for final decision.
- b. If using fillable form, then follow the instructions for filling in the fillable form.

*Context is important when assembling evidence. For instance, pool development may be an indicator of interest on the bed of a dry stream, but may not be a useful indicator to take note of in a flowing stream. On the other hand, if the pool is found in a secondary channel adjacent to the main channel, it could provide a line of evidence for a minimum elevation of high flows. Therefore, consider the site context when deciding which indicators provide evidence for identifying the OHWM. Explain reasoning in Step 5.*

**Questions to consider while making observations and listing evidence at a site:**

| Geomorphic indicators                                  | Sediment and soil indicators                         | Vegetation Indicators                                                                                                       | Ancillary indicators                               |
|--------------------------------------------------------|------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|
| Where are the breaks in slope?                         | Where does evidence of soil formation appear?        | Where are the significant transitions in vegetation species, density, and age?                                              | Is there organic litter present?                   |
| Are there identifiable banks?                          |                                                      | Is there vegetation growing on the channel bed?                                                                             | Is there any leaf litter disturbed or washed away? |
| Is there an easily identifiable top of bank?           | Are there mudcracks present?                         | If no, how long does it take for the non-tolerant vegetation to establish relative to how often flows occur in the channel? | Is there large wood deposition?                    |
| Are the banks actively eroding?                        | Is there evidence of sediment sorting by grain size? | Where are the significant transitions in vegetation?                                                                        | Is there evidence of water staining?               |
| Are the banks undercut?                                |                                                      | Is the vegetation tolerant of flowing water?                                                                                |                                                    |
| Are the banks armored?                                 |                                                      | Has any vegetation been flattened by flowing water?                                                                         |                                                    |
| Is the channel confined by the surrounding hillslopes? |                                                      |                                                                                                                             |                                                    |
| Are there natural or man-made berms and levees?        |                                                      |                                                                                                                             |                                                    |
| Are there fluvial terraces?                            |                                                      |                                                                                                                             |                                                    |
| Are there channel bars?                                |                                                      |                                                                                                                             |                                                    |

Are the following features of fluvial transport present?

*Evidence of erosion: obstacle marks, scour, armoring  
Bedforms: riffles, pools, steps, knickpoints/headcuts  
Evidence of deposition: imbricated clasts, gravel sheets, etc.*

**In some cases, it may be helpful to explain why an indicator was NOT at the OHWM elevation, but found above or below. It can also be useful to note if specific indicators (e.g., vegetation) are NOT present. For instance, note if the site has no clear vegetation zonation.**

## OHWM Field Identification Datasheet Instructions and Field Procedure

### Step 3b Weight each line of evidence and weigh body of evidence

Weight each indicator by considering its importance based upon:

#### a. Relevance:

- i. Is this indicator left by low, high, or extreme flows?

##### Tips on how to assess the indicator relative to type of flow:

*Consider the elevation of the indicator relative to the channel bed.*

*What is the current flow level based on season or nearby gages?*

*Consider the elevation of the indicator relative to the current flow.*

*If the stream is currently at baseflow and indicator is adjacent to that, then it is likely a low flow indicator. The difference between high and extreme flow indicators can sometimes be difficult to determine.*

- ii. Did recent extreme events and/or land use affect this indicator?

1. Recent floods may have left many extreme flow indicators, or temporarily altered channel form.

Other resources will likely be needed to support any OHWM identification at this site. Field evidence of the OHWM may have to wait for the site to recover from the recent flood.

2. Droughts may cause field evidence of OHWM to be obscured, because there has been an extended time since the last high flow event. There can be overgrowth of vegetation or deposition of material from surrounding landscape that can obscure indicators.
3. Both man-made (e.g., dams, construction, mining activities, urbanization, agriculture, grazing) and natural (e.g., fires, floods, debris flows, beaver dams) disturbances can all alter how indicators are expected to appear at a site. Chapter 6 and Chapter 7 of the OHWM field manual provides specific case-studies that can help in interpreting evidence at these sites.

#### b. Strength:

- i. Is this indicator persistent across the landscape?

1. Look up and downstream and across the channel to see if you see the same indicator at multiple locations.
2. Does the indicator occur at the same elevation as other indicators?

#### c. Reliability:

- i. Is this indicator persistent on the landscape over time? Will this indicator still persist across seasons?

1. This can be difficult to determine for some indicators and may be specific to climatic region (in terms of persistence of vegetation) and history of land use or other natural disturbances.
2. Chapter 2, Chapter 6, and Chapter 7 of the OHWM field manual describes each indicator in detail and provides examples of areas where indicators are difficult to interpret.

#### d. Weigh body of evidence:

- i. Combine weights: integrate the weighted line of evidence (relevance, strength, reliability) of each indicator.
- ii. For each of the observed indicators, which are more heavily weighted? Where do high value indicators co-occur along the stream reach? Do they co-occur at a similar elevation along the banks relative to water surface (or channel bed if there is no water).
- iii. On datasheet, select the indicators used to identify the OHWM. Information in Chapter 2 of the OHWM field manual provides descriptions of specific indicators which can assist in putting these in context and determining relevance, strength, and reliability.

#### e. Take photographs of indicators and attach a log using either page 2 of datasheet or another method of logging photos.

- i. Annotate photos with descriptions of indicators.

**\*Landscape context from Step 1 can help determine the relevance, strength, and reliability of the indicators observed in the field.**

**\*Information in Chapter 2 of the OHWM field manual provides information on specific indicators which can assist in putting these in context and determining relevance, strength, and reliability.**

### Step 4 Is additional information needed? Are other resources needed to support the lines of evidence observed in the field?

- a. If additional resources are needed, then repeat steps 3a and 3b for the resources selected in Step 1 of assembling, weighting, and weighing evidence collected from online resources. Chapter 5 of the OHWM field manual provides information on using online resources.
- b. Any data collected from online tools have strengths and weaknesses. Make sure these are clear when determining relevance, strength, and reliability of the remotely collected data. Clearly describe why other resources were needed to support the lines of evidence observed in the field, as well as the relevance, strength, and reliability of the supporting data and/or resources.
- c. Attach any remote data and data analysis to the datasheet.

### Step 5 Describe rationale for location of OHWM:

- a. Why do the combination of indicators represent the OHWM?
- b. If there are multiple possibilities for the OHWM, explain why there are two (or more) possibilities. Include any relevant discussion on why specific indicators were not included in the final decision.
- c. If needed, add additional site notes on page 2 of the datasheet under Step 5.

U.S. Army Corps of Engineers (USACE)  
**INTERIM DRAFT RAPID ORDINARY HIGH WATER MARK (OHWM) FIELD  
IDENTIFICATION DATA SHEET**

The proponent agency is Headquarters USACE CECW-COR.

**Form Approved -**  
**OMB No. 0710-0024**  
**Expires: 2024-04-30**

**The Agency Disclosure Notice (ADN)**

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Project ID #: MOX 115 kV Rebuild

Site Name: OHWM-6

Date and Time: 1/12/24

Location (lat/long): 37.835654, -122.191024

Investigator(s): Kevin Fisher, Pim Laulikitnont-Lee

**Step 1** Site overview from remote and online resources

**Check boxes for online resources used to evaluate site:**

- |                                                   |                                                       |                                                   |
|---------------------------------------------------|-------------------------------------------------------|---------------------------------------------------|
| <input type="checkbox"/> gage data                | <input type="checkbox"/> LiDAR                        | <input checked="" type="checkbox"/> geologic maps |
| <input checked="" type="checkbox"/> climatic data | <input checked="" type="checkbox"/> satellite imagery | <input checked="" type="checkbox"/> land use maps |
| <input checked="" type="checkbox"/> aerial photos | <input checked="" type="checkbox"/> topographic maps  | <input type="checkbox"/> Other: _____             |

**Describe land use and flow conditions from online resources.**

Were there any recent extreme events (floods or drought)?  
Intermittent stream with low flow during visit.

**Step 2** Site conditions during field assessment. First look for changes in channel shape, depositional and erosional features, and changes in vegetation and sediment type, size, density, and distribution. Make note of natural or man-made disturbances that would affect flow and channel form, such as bridges, riprap, landslides, rockfalls etc.

Stream downslope on steep slope into a culvert inlet near roadway. Culvert inlet was concrete lined.

**Step 3** Check the boxes next to the indicators used to identify the location of the OHWM.

**OHWM is at a transition point**, therefore some indicators that are used to determine location may be just below and above the OHWM. From the drop-down menu next to each indicator, select the appropriate location of the indicator by selecting either just below 'b', at 'x', or just above 'a' the OHWM.

Go to page 2 to describe overall rationale for location of OHWM, write any additional observations, and to attach a photo log.

**Geomorphic indicators**

- |                                                              |                                                                                                             |                                                                                                                |
|--------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> <b>Break in slope:</b> x | <input type="checkbox"/> <b>Channel bar:</b>                                                                | <input type="checkbox"/> <b>erosional bedload indicators</b><br>(e.g., obstacle marks, scour, smoothing, etc.) |
| <input checked="" type="checkbox"/> on the bank: x           | <input type="checkbox"/> shelving (berms) on bar:                                                           | <input type="checkbox"/> <b>Secondary channels:</b>                                                            |
| <input type="checkbox"/> undercut bank:                      | <input type="checkbox"/> unvegetated:                                                                       | <b>Sediment indicators</b>                                                                                     |
| <input type="checkbox"/> valley bottom:                      | <input type="checkbox"/> vegetation transition<br>(go to veg. indicators)                                   | <input checked="" type="checkbox"/> <b>Soil development:</b> a                                                 |
| <input type="checkbox"/> Other: _____                        | <input type="checkbox"/> sediment transition<br>(go to sed. indicators)                                     | <input type="checkbox"/> <b>Changes in character of soil:</b>                                                  |
| <input type="checkbox"/> <b>Shelving:</b>                    | <input type="checkbox"/> upper limit of deposition<br>on bar:                                               | <input type="checkbox"/> <b>Mudcracks:</b>                                                                     |
| <input type="checkbox"/> shelf at top of bank:               | <input type="checkbox"/> <b>Instream bedforms and other<br/>bedload transport evidence:</b>                 | <input type="checkbox"/> <b>Changes in particle-sized<br/>distribution:</b>                                    |
| <input type="checkbox"/> natural levee:                      | <input type="checkbox"/> deposition bedload indicators<br>(e.g., imbricated clasts,<br>gravel sheets, etc.) | <input type="checkbox"/> transition from _____ to _____                                                        |
| <input type="checkbox"/> man-made berms or levees:           | <input type="checkbox"/> bedforms (e.g., pools,<br>riffles, steps, etc.):                                   | <input type="checkbox"/> upper limit of sand-sized particles                                                   |
| <input type="checkbox"/> other<br>berms: _____               |                                                                                                             | <input type="checkbox"/> silt deposits:                                                                        |

**Vegetation Indicators**

- |                                                                                                                                                                                                                                                     |                                                                         |                                                                                        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> <b>Change in vegetation type<br/>and/or density:</b> a                                                                                                                                                          | <input type="checkbox"/> forbs to:                                      | <input type="checkbox"/> <b>Exposed roots below<br/>intact soil layer:</b>             |
| Check the appropriate boxes and select<br>the general vegetation change (e.g.,<br>graminoids to woody shrubs). <b>Describe<br/>the vegetation transition looking from<br/>the middle of the channel, up the<br/>banks, and into the floodplain.</b> | <input type="checkbox"/> graminoids to:                                 | <b>Ancillary indicators</b>                                                            |
| <input checked="" type="checkbox"/> vegetation<br>absent to: forbs                                                                                                                                                                                  | <input type="checkbox"/> woody<br>shrubs to:                            | <input checked="" type="checkbox"/> <b>Wracking/presence of<br/>organic litter:</b> x  |
| <input type="checkbox"/> moss to:                                                                                                                                                                                                                   | <input type="checkbox"/> deciduous<br>trees to:                         | <input type="checkbox"/> <b>Presence of large wood:</b>                                |
|                                                                                                                                                                                                                                                     | <input type="checkbox"/> coniferous<br>trees to:                        | <input checked="" type="checkbox"/> <b>Leaf litter disturbed or<br/>washed away:</b> b |
|                                                                                                                                                                                                                                                     | <input type="checkbox"/> <b>Vegetation matted down<br/>and/or bent:</b> | <input checked="" type="checkbox"/> <b>Water staining:</b> b                           |
|                                                                                                                                                                                                                                                     |                                                                         | <input type="checkbox"/> <b>Weathered clasts or bedrock:</b>                           |

**Other observed indicators?** Describe:



Project ID #: MOX 115 kV Rebuild

**Step 4** Is additional information needed to support this determination? ☐ Yes ☒ No If yes, describe and attach information to datasheet:

**Step 5** Describe rationale for location of OHWM

Riverine feature mapped on NWI. Upon field investigation, a stream and culvert was observed with active flow. Low flow stream was active.

|                                  |
|----------------------------------|
| Additional observations or notes |
|----------------------------------|

Top of bank is 8ft, OHWM is 3ft.

Attach a photo log of the site. Use the table below, or attach separately.

Photo log attached? ☒ Yes ☐ No If no, explain why not: \_\_\_\_\_

List photographs and include descriptions in the table below.

Number photographs in the order that they are taken. Attach photographs and include annotations of features.

[illegible]

## OHWM Field Identification Datasheet Instructions and Field Procedure

### Step 1 Site overview from remote and online resources

Complete Step 1 prior to site visit.

**Online Resources:** Identify what information is available for the site. Check boxes on datasheet next to the resources used to assess this site.

- |                      |                                                  |
|----------------------|--------------------------------------------------|
| a. gage data         | e. topographic maps                              |
| b. aerial photos     | f. geologic maps                                 |
| c. satellite imagery | g. land use maps                                 |
| d. LiDAR             | h. climatic data (precipitation and temperature) |

**Landscape context:** Use the online resources to put the site in the context of the surrounding landscape.

**a. Note on the datasheet under Step 1:**

- i. Overall land use and change if known
  - ii. Recent extreme events if known (e.g., flood, drought, landslides, debris flows, wildfires)
- b. Consider the following to inform weighting of evidence observed during field visit.
- i. What physical characteristics are likely to be observed in specific environments?
  - ii. Was there a recent flood or drought? Are you expecting to see recently formed or obscured indicators?
  - iii. How will land use affect specific stream characteristics? How natural is the hydrologic regime? How stable has the landscape been over the last year, decade, century?

### Step 2 Site conditions during the field assessment (assemble evidence)

- |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ol style="list-style-type: none"> <li>a. Identify the assessment area.</li> <li>b. Walk up and down the assessment area noting all the potential OHWM indicators.</li> <li>c. Note broad trends in channel shape, vegetation, and sediment characteristics.                         <ol style="list-style-type: none"> <li>i. Is this a single thread or multi-thread system? Is this a stream-wetland complex?</li> <li>ii. Are there any secondary and/or floodplain channels?</li> <li>iii. Are there obvious man-made alterations to the system?</li> <li>iv. Are there man-made (e.g., bridges, dams, culverts) or natural structures (e.g., bedrock outcrops, Large Wood jams) that will influence or control flow?</li> </ol> </li> </ol> | <ol style="list-style-type: none"> <li>d. Look for signs of recurring fluvial action.                         <ol style="list-style-type: none"> <li>i. Where does the flow converge on the landscape?</li> <li>ii. Are there signs of fluvial action (sediment sorting, bedforms, etc.) at the convergence zone?</li> </ol> </li> <li>e. Look for indicators on both banks. If the opposite bank is not accessible, then look across the channel at the bank.</li> <li>f. <b>In Step 2 of the datasheet</b> describe any adjacent land use or flow conditions that may influence interpretation of each line of evidence.                         <ol style="list-style-type: none"> <li>i. What land use and flow conditions may be affecting your ability to observe indicators at the site?</li> <li>ii. What recent extreme events may have caused changes to the site and affected your ability to observe indicators?</li> </ol> </li> </ol> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### Step 3a List evidence

**Assemble evidence by checking the boxes next to each line of evidence:**

- a. If needed, use a separate scratch datasheet to check boxes next to possible indicators, or check boxes of possible indicators in pencil and use pen for final decision.
- b. If using fillable form, then follow the instructions for filling in the fillable form.

*Context is important when assembling evidence. For instance, pool development may be an indicator of interest on the bed of a dry stream, but may not be a useful indicator to take note of in a flowing stream. On the other hand, if the pool is found in a secondary channel adjacent to the main channel, it could provide a line of evidence for a minimum elevation of high flows. Therefore, consider the site context when deciding which indicators provide evidence for identifying the OHWM. Explain reasoning in Step 5.*

**Questions to consider while making observations and listing evidence at a site:**

| Geomorphic indicators                                  | Sediment and soil indicators                         | Vegetation Indicators                                                                                                       | Ancillary indicators                               |
|--------------------------------------------------------|------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|
| Where are the breaks in slope?                         | Where does evidence of soil formation appear?        | Where are the significant transitions in vegetation species, density, and age?                                              | Is there organic litter present?                   |
| Are there identifiable banks?                          |                                                      | Is there vegetation growing on the channel bed?                                                                             | Is there any leaf litter disturbed or washed away? |
| Is there an easily identifiable top of bank?           | Are there mudcracks present?                         | If no, how long does it take for the non-tolerant vegetation to establish relative to how often flows occur in the channel? | Is there large wood deposition?                    |
| Are the banks actively eroding?                        | Is there evidence of sediment sorting by grain size? | Where are the significant transitions in vegetation?                                                                        | Is there evidence of water staining?               |
| Are the banks undercut?                                |                                                      | Is the vegetation tolerant of flowing water?                                                                                |                                                    |
| Are the banks armored?                                 |                                                      | Has any vegetation been flattened by flowing water?                                                                         |                                                    |
| Is the channel confined by the surrounding hillslopes? |                                                      |                                                                                                                             |                                                    |
| Are there natural or man-made berms and levees?        |                                                      |                                                                                                                             |                                                    |
| Are there fluvial terraces?                            |                                                      |                                                                                                                             |                                                    |
| Are there channel bars?                                |                                                      |                                                                                                                             |                                                    |

Are the following features of fluvial transport present?

*Evidence of erosion: obstacle marks, scour, armoring  
Bedforms: riffles, pools, steps, knickpoints/headcuts  
Evidence of deposition: imbricated clasts, gravel sheets, etc.*

**In some cases, it may be helpful to explain why an indicator was NOT at the OHWM elevation, but found above or below. It can also be useful to note if specific indicators (e.g., vegetation) are NOT present. For instance, note if the site has no clear vegetation zonation.**

## OHWM Field Identification Datasheet Instructions and Field Procedure

### Step 3b Weight each line of evidence and weigh body of evidence

Weight each indicator by considering its importance based upon:

#### a. Relevance:

- i. Is this indicator left by low, high, or extreme flows?

##### Tips on how to assess the indicator relative to type of flow:

*Consider the elevation of the indicator relative to the channel bed.*

*What is the current flow level based on season or nearby gages?*

*Consider the elevation of the indicator relative to the current flow.*

*If the stream is currently at baseflow and indicator is adjacent to that, then it is likely a low flow indicator. The difference between high and extreme flow indicators can sometimes be difficult to determine.*

- ii. Did recent extreme events and/or land use affect this indicator?

1. Recent floods may have left many extreme flow indicators, or temporarily altered channel form.

Other resources will likely be needed to support any OHWM identification at this site. Field evidence of the OHWM may have to wait for the site to recover from the recent flood.

2. Droughts may cause field evidence of OHWM to be obscured, because there has been an extended time since the last high flow event. There can be overgrowth of vegetation or deposition of material from surrounding landscape that can obscure indicators.
3. Both man-made (e.g., dams, construction, mining activities, urbanization, agriculture, grazing) and natural (e.g., fires, floods, debris flows, beaver dams) disturbances can all alter how indicators are expected to appear at a site. Chapter 6 and Chapter 7 of the OHWM field manual provides specific case-studies that can help in interpreting evidence at these sites.

#### b. Strength:

- i. Is this indicator persistent across the landscape?

1. Look up and downstream and across the channel to see if you see the same indicator at multiple locations.
2. Does the indicator occur at the same elevation as other indicators?

#### c. Reliability:

- i. Is this indicator persistent on the landscape over time? Will this indicator still persist across seasons?

1. This can be difficult to determine for some indicators and may be specific to climatic region (in terms of persistence of vegetation) and history of land use or other natural disturbances.
2. Chapter 2, Chapter 6, and Chapter 7 of the OHWM field manual describes each indicator in detail and provides examples of areas where indicators are difficult to interpret.

#### d. Weigh body of evidence:

- i. Combine weights: integrate the weighted line of evidence (relevance, strength, reliability) of each indicator.
- ii. For each of the observed indicators, which are more heavily weighted? Where do high value indicators co-occur along the stream reach? Do they co-occur at a similar elevation along the banks relative to water surface (or channel bed if there is no water).
- iii. On datasheet, select the indicators used to identify the OHWM. Information in Chapter 2 of the OHWM field manual provides descriptions of specific indicators which can assist in putting these in context and determining relevance, strength, and reliability.

#### e. Take photographs of indicators and attach a log using either page 2 of datasheet or another method of logging photos.

- i. Annotate photos with descriptions of indicators.

**\*Landscape context from Step 1 can help determine the relevance, strength, and reliability of the indicators observed in the field.**

**\*Information in Chapter 2 of the OHWM field manual provides information on specific indicators which can assist in putting these in context and determining relevance, strength, and reliability.**

### Step 4 Is additional information needed? Are other resources needed to support the lines of evidence observed in the field?

- a. If additional resources are needed, then repeat steps 3a and 3b for the resources selected in Step 1 of assembling, weighting, and weighing evidence collected from online resources. Chapter 5 of the OHWM field manual provides information on using online resources.
- b. Any data collected from online tools have strengths and weaknesses. Make sure these are clear when determining relevance, strength, and reliability of the remotely collected data. Clearly describe why other resources were needed to support the lines of evidence observed in the field, as well as the relevance, strength, and reliability of the supporting data and/or resources.
- c. Attach any remote data and data analysis to the datasheet.

### Step 5 Describe rationale for location of OHWM:

- a. Why do the combination of indicators represent the OHWM?
- b. If there are multiple possibilities for the OHWM, explain why there are two (or more) possibilities. Include any relevant discussion on why specific indicators were not included in the final decision.
- c. If needed, add additional site notes on page 2 of the datasheet under Step 5.



U.S. Army Corps of Engineers (USACE)  
**INTERIM DRAFT RAPID ORDINARY HIGH WATER MARK (OHWM) FIELD  
IDENTIFICATION DATA SHEET**

The proponent agency is Headquarters USACE CECW-COR.

**Form Approved -**  
**OMB No. 0710-0024**  
**Expires: 2024-04-30**

**The Agency Disclosure Notice (ADN)**

The Public reporting burden for this collection of information, 0710-0024, is estimated to average 30 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or burden reduction suggestions to the Department of Defense, Washington Headquarters Services, at [whs.mc-alex.esd.mbx.dd-dod-information-collections@mail.mil](mailto:whs.mc-alex.esd.mbx.dd-dod-information-collections@mail.mil). Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

Project ID #: MOX 115 kV Rebuild

Site Name: OHWM-7

Date and Time: 1/12/24

Location (lat/long): 37.8259909, -122.2022160

Investigator(s): Kevin Fisher, Pim Laulikitnont-Lee

**Step 1** Site overview from remote and online resources

**Check boxes for online resources used to evaluate site:**

- |                                                   |                                                       |                                                   |
|---------------------------------------------------|-------------------------------------------------------|---------------------------------------------------|
| <input type="checkbox"/> gage data                | <input type="checkbox"/> LiDAR                        | <input checked="" type="checkbox"/> geologic maps |
| <input checked="" type="checkbox"/> climatic data | <input checked="" type="checkbox"/> satellite imagery | <input checked="" type="checkbox"/> land use maps |
| <input checked="" type="checkbox"/> aerial photos | <input checked="" type="checkbox"/> topographic maps  | <input type="checkbox"/> Other: _____             |

**Describe land use and flow conditions from online resources.**

Were there any recent extreme events (floods or drought)?

Intermittent stream near Shepherd Canyon Park.

**Step 2** Site conditions during field assessment. First look for changes in channel shape, depositional and erosional features, and changes in

vegetation and sediment type, size, density, and distribution. Make note of natural or man-made disturbances that would affect flow and channel form, such as bridges, riprap, landslides, rockfalls etc.

Lots of woody debris present in stream and between TOB and OHWM.

**Step 3** Check the boxes next to the indicators used to identify the location of the OHWM.

**OHWM is at a transition point**, therefore some indicators that are used to determine location may be just below and above the OHWM. From the drop-down menu next to each indicator, select the appropriate location of the indicator by selecting either just below 'b', at 'x', or just above 'a' the OHWM.

Go to page 2 to describe overall rationale for location of OHWM, write any additional observations, and to attach a photo log.

**Geomorphic indicators**

☒ **Break in slope:** x

☒ on the bank: x

☐ undercut bank:

☐ valley bottom:

☐ Other: \_\_\_\_\_

☐ **Shelving:**

☐ shelf at top of bank:

☐ natural levee:

☐ man-made berms or levees:

☐ other  
berms: \_\_\_\_\_

☐ **Channel bar:**

☐ shelving (berms) on bar:

☐ unvegetated:

☐ vegetation transition  
(go to veg. indicators)

☐ sediment transition

(go to sed. indicators)

☐ upper limit of deposition  
on bar:

☒ **Instream bedforms and other  
bedload transport evidence:**

☐ deposition bedload indicators  
(e.g., imbricated clasts,  
gravel sheets, etc.)

☒ bedforms (e.g., pools,  
riffles, steps, etc.): x

☒ **erosional bedload indicators**  
(e.g., obstacle marks, scour, b  
smoothing, etc.)

☐ **Secondary channels:**

**Sediment indicators**

☒ **Soil development:** a

☐ **Changes in character of soil:**

☐ **Mudcracks:**

☐ **Changes in particle-sized  
distribution:**

☐ transition from \_\_\_\_\_ to \_\_\_\_\_

☐ upper limit of sand-sized particles

☐ silt deposits:

**Vegetation Indicators**

☒ **Change in vegetation type  
and/or density:** a

Check the appropriate boxes and select the general vegetation change (e.g., *graminoids to woody shrubs*). **Describe the vegetation transition looking from the middle of the channel, up the banks, and into the floodplain.**

☒ vegetation  
absent to: forbs

☐ moss to:

☒ forbs to: coniferous trees

☐ graminoids to:

☐ woody  
shrubs to:

☐ deciduous

trees to:

☐ coniferous

trees to:

☐ **Vegetation matted down  
and/or bent:**

☒ **Exposed roots below  
intact soil layer:** a

**Ancillary indicators**

☒ **Wracking/presence of  
organic litter:** x

☒ **Presence of large wood:** x

☒ **Leaf litter disturbed or  
washed away:** x

☐ **Water staining:**

☐ **Weathered clasts or bedrock:**

**Other observed indicators? Describe:**

Project ID #: MOX 115 kV Rebuild

**Step 4** Is additional information needed to support this determination? ☐ Yes ☒ No If yes, describe and attach information to datasheet:

### Step 5 Describe rationale for location of OHWM

Feature mapped on NHD seems to be accurate showing presence of Shepherd Creek. Field investigation verify existing intermittent stream (Shepherd Creek) with defined bed and bank, vegetation change, abd presence of rocky substrates and boulders.

## Additional observations or notes

Top of bank width (in ft) varies, OHWM is varies from 3-7 ft.

Attach a photo log of the site. Use the table below, or attach separately.

Photo log attached? ☒ Yes ☐ No If no, explain why not:

List photographs and include descriptions in the table below.

Number photographs in the order that they are taken. Attach photographs and include annotations of features.

[illegible]

## OHWM Field Identification Datasheet Instructions and Field Procedure

### Step 1 Site overview from remote and online resources

Complete Step 1 prior to site visit.

**Online Resources:** Identify what information is available for the site. Check boxes on datasheet next to the resources used to assess this site.

- |                      |                                                  |
|----------------------|--------------------------------------------------|
| a. gage data         | e. topographic maps                              |
| b. aerial photos     | f. geologic maps                                 |
| c. satellite imagery | g. land use maps                                 |
| d. LiDAR             | h. climatic data (precipitation and temperature) |

**Landscape context:** Use the online resources to put the site in the context of the surrounding landscape.

**a. Note on the datasheet under Step 1:**

- i. Overall land use and change if known
  - ii. Recent extreme events if known (e.g., flood, drought, landslides, debris flows, wildfires)
- b. Consider the following to inform weighting of evidence observed during field visit.
- i. What physical characteristics are likely to be observed in specific environments?
  - ii. Was there a recent flood or drought? Are you expecting to see recently formed or obscured indicators?
  - iii. How will land use affect specific stream characteristics? How natural is the hydrologic regime? How stable has the landscape been over the last year, decade, century?

### Step 2 Site conditions during the field assessment (assemble evidence)

- |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ol style="list-style-type: none"> <li>a. Identify the assessment area.</li> <li>b. Walk up and down the assessment area noting all the potential OHWM indicators.</li> <li>c. Note broad trends in channel shape, vegetation, and sediment characteristics.                             <ol style="list-style-type: none"> <li>i. Is this a single thread or multi-thread system? Is this a stream-wetland complex?</li> <li>ii. Are there any secondary and/or floodplain channels?</li> <li>iii. Are there obvious man-made alterations to the system?</li> <li>iv. Are there man-made (e.g., bridges, dams, culverts) or natural structures (e.g., bedrock outcrops, Large Wood jams) that will influence or control flow?</li> </ol> </li> </ol> | <ol style="list-style-type: none"> <li>d. Look for signs of recurring fluvial action.                             <ol style="list-style-type: none"> <li>i. Where does the flow converge on the landscape?</li> <li>ii. Are there signs of fluvial action (sediment sorting, bedforms, etc.) at the convergence zone?</li> </ol> </li> <li>e. Look for indicators on both banks. If the opposite bank is not accessible, then look across the channel at the bank.</li> <li>f. <b>In Step 2 of the datasheet</b> describe any adjacent land use or flow conditions that may influence interpretation of each line of evidence.                             <ol style="list-style-type: none"> <li>i. What land use and flow conditions may be affecting your ability to observe indicators at the site?</li> <li>ii. What recent extreme events may have caused changes to the site and affected your ability to observe indicators?</li> </ol> </li> </ol> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### Step 3a List evidence

**Assemble evidence by checking the boxes next to each line of evidence:**

- a. If needed, use a separate scratch datasheet to check boxes next to possible indicators, or check boxes of possible indicators in pencil and use pen for final decision.
- b. If using fillable form, then follow the instructions for filling in the fillable form.

*Context is important when assembling evidence. For instance, pool development may be an indicator of interest on the bed of a dry stream, but may not be a useful indicator to take note of in a flowing stream. On the other hand, if the pool is found in a secondary channel adjacent to the main channel, it could provide a line of evidence for a minimum elevation of high flows. Therefore, consider the site context when deciding which indicators provide evidence for identifying the OHWM. Explain reasoning in Step 5.*

**Questions to consider while making observations and listing evidence at a site:**

| Geomorphic indicators                                  | Sediment and soil indicators                         | Vegetation Indicators                                                                                                       | Ancillary indicators                               |
|--------------------------------------------------------|------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|
| Where are the breaks in slope?                         | Where does evidence of soil formation appear?        | Where are the significant transitions in vegetation species, density, and age?                                              | Is there organic litter present?                   |
| Are there identifiable banks?                          |                                                      | Is there vegetation growing on the channel bed?                                                                             | Is there any leaf litter disturbed or washed away? |
| Is there an easily identifiable top of bank?           | Are there mudcracks present?                         | If no, how long does it take for the non-tolerant vegetation to establish relative to how often flows occur in the channel? | Is there large wood deposition?                    |
| Are the banks actively eroding?                        | Is there evidence of sediment sorting by grain size? | Where are the significant transitions in vegetation?                                                                        | Is there evidence of water staining?               |
| Are the banks undercut?                                |                                                      | Is the vegetation tolerant of flowing water?                                                                                |                                                    |
| Are the banks armored?                                 |                                                      | Has any vegetation been flattened by flowing water?                                                                         |                                                    |
| Is the channel confined by the surrounding hillslopes? |                                                      |                                                                                                                             |                                                    |
| Are there natural or man-made berms and levees?        |                                                      |                                                                                                                             |                                                    |
| Are there fluvial terraces?                            |                                                      |                                                                                                                             |                                                    |
| Are there channel bars?                                |                                                      |                                                                                                                             |                                                    |

Are the following features of fluvial transport present?

*Evidence of erosion: obstacle marks, scour, armoring  
Bedforms: riffles, pools, steps, knickpoints/headcuts  
Evidence of deposition: imbricated clasts, gravel sheets, etc.*

**In some cases, it may be helpful to explain why an indicator was NOT at the OHWM elevation, but found above or below. It can also be useful to note if specific indicators (e.g., vegetation) are NOT present. For instance, note if the site has no clear vegetation zonation.**



## OHWM Field Identification Datasheet Instructions and Field Procedure

### Step 3b Weight each line of evidence and weigh body of evidence

Weight each indicator by considering its importance based upon:

#### a. Relevance:

- i. Is this indicator left by low, high, or extreme flows?

##### Tips on how to assess the indicator relative to type of flow:

*Consider the elevation of the indicator relative to the channel bed.*

*What is the current flow level based on season or nearby gages?*

*Consider the elevation of the indicator relative to the current flow.*

*If the stream is currently at baseflow and indicator is adjacent to that, then it is likely a low flow indicator. The difference between high and extreme flow indicators can sometimes be difficult to determine.*

- ii. Did recent extreme events and/or land use affect this indicator?

1. Recent floods may have left many extreme flow indicators, or temporarily altered channel form.

Other resources will likely be needed to support any OHWM identification at this site. Field evidence of the OHWM may have to wait for the site to recover from the recent flood.

2. Droughts may cause field evidence of OHWM to be obscured, because there has been an extended time since the last high flow event. There can be overgrowth of vegetation or deposition of material from surrounding landscape that can obscure indicators.
3. Both man-made (e.g., dams, construction, mining activities, urbanization, agriculture, grazing) and natural (e.g., fires, floods, debris flows, beaver dams) disturbances can all alter how indicators are expected to appear at a site. Chapter 6 and Chapter 7 of the OHWM field manual provides specific case-studies that can help in interpreting evidence at these sites.

#### b. Strength:

- i. Is this indicator persistent across the landscape?

1. Look up and downstream and across the channel to see if you see the same indicator at multiple locations.
2. Does the indicator occur at the same elevation as other indicators?

#### c. Reliability:

- i. Is this indicator persistent on the landscape over time? Will this indicator still persist across seasons?

1. This can be difficult to determine for some indicators and may be specific to climatic region (in terms of persistence of vegetation) and history of land use or other natural disturbances.
2. Chapter 2, Chapter 6, and Chapter 7 of the OHWM field manual describes each indicator in detail and provides examples of areas where indicators are difficult to interpret.

#### d. Weigh body of evidence:

- i. Combine weights: integrate the weighted line of evidence (relevance, strength, reliability) of each indicator.
- ii. For each of the observed indicators, which are more heavily weighted? Where do high value indicators co-occur along the stream reach? Do they co-occur at a similar elevation along the banks relative to water surface (or channel bed if there is no water).
- iii. On datasheet, select the indicators used to identify the OHWM. Information in Chapter 2 of the OHWM field manual provides descriptions of specific indicators which can assist in putting these in context and determining relevance, strength, and reliability.

#### e. Take photographs of indicators and attach a log using either page 2 of datasheet or another method of logging photos.

- i. Annotate photos with descriptions of indicators.

**\*Landscape context from Step 1 can help determine the relevance, strength, and reliability of the indicators observed in the field.**

**\*Information in Chapter 2 of the OHWM field manual provides information on specific indicators which can assist in putting these in context and determining relevance, strength, and reliability.**

### Step 4 Is additional information needed? Are other resources needed to support the lines of evidence observed in the field?

- a. If additional resources are needed, then repeat steps 3a and 3b for the resources selected in Step 1 of assembling, weighting, and weighing evidence collected from online resources. Chapter 5 of the OHWM field manual provides information on using online resources.
- b. Any data collected from online tools have strengths and weaknesses. Make sure these are clear when determining relevance, strength, and reliability of the remotely collected data. Clearly describe why other resources were needed to support the lines of evidence observed in the field, as well as the relevance, strength, and reliability of the supporting data and/or resources.
- c. Attach any remote data and data analysis to the datasheet.

### Step 5 Describe rationale for location of OHWM:

- a. Why do the combination of indicators represent the OHWM?
- b. If there are multiple possibilities for the OHWM, explain why there are two (or more) possibilities. Include any relevant discussion on why specific indicators were not included in the final decision.
- c. If needed, add additional site notes on page 2 of the datasheet under Step 5.

U.S. Army Corps of Engineers (USACE)  
**INTERIM DRAFT RAPID ORDINARY HIGH WATER MARK (OHWM) FIELD  
IDENTIFICATION DATA SHEET**

The proponent agency is Headquarters USACE CECW-COR.

**Form Approved -**  
**OMB No. 0710-0024**  
**Expires: 2024-04-30**

**The Agency Disclosure Notice (ADN)**

The Public reporting burden for this collection of information, 0710-0024, is estimated to average 30 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or burden reduction suggestions to the Department of Defense, Washington Headquarters Services, at [whs.mc-alex.esd.mbx.dd-dod-information-collections@mail.mil](mailto:whs.mc-alex.esd.mbx.dd-dod-information-collections@mail.mil). Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

Project ID #: MOX 115 kV Rebuild

Site Name: OHWM-8

Date and Time: 1/12/24

Location (lat/long): 37.826902, -122.203109

Investigator(s): Kevin Fisher, Pim Laulikitnont-Lee

**Step 1** Site overview from remote and online resources

**Check boxes for online resources used to evaluate site:**

- |                                                   |                                                       |                                                   |
|---------------------------------------------------|-------------------------------------------------------|---------------------------------------------------|
| <input type="checkbox"/> gage data                | <input type="checkbox"/> LiDAR                        | <input checked="" type="checkbox"/> geologic maps |
| <input checked="" type="checkbox"/> climatic data | <input checked="" type="checkbox"/> satellite imagery | <input checked="" type="checkbox"/> land use maps |
| <input checked="" type="checkbox"/> aerial photos | <input checked="" type="checkbox"/> topographic maps  | <input type="checkbox"/> Other: _____             |

**Describe land use and flow conditions from online resources.**

Were there any recent extreme events (floods or drought)?

Constructed ephemeral drainage near native plant garden along trail. No flow present during survey.

**Step 2** Site conditions during field assessment. First look for changes in channel shape, depositional and erosional features, and changes in vegetation and sediment type, size, density, and distribution. Make note of natural or man-made disturbances that would affect flow and channel form, such as bridges, riprap, landslides, rockfalls etc.

Appears to be a constructed drainage with defined bed and bank near managed native plant garden along public trail.

**Step 3** Check the boxes next to the indicators used to identify the location of the OHWM.

**OHWM is at a transition point**, therefore some indicators that are used to determine location may be just below and above the OHWM. From the drop-down menu next to each indicator, select the appropriate location of the indicator by selecting either just below 'b', at 'x', or just above 'a' the OHWM.

Go to page 2 to describe overall rationale for location of OHWM, write any additional observations, and to attach a photo log.

**Geomorphic indicators**

☒ **Break in slope:** x

☒ on the bank: x

☐ undercut bank:

☐ valley bottom:

☐ Other: \_\_\_\_\_

☐ **Shelving:**

☐ shelf at top of bank:

☐ natural levee:

☐ man-made berms or levees:

☐ other

berms: \_\_\_\_\_

☐ **Channel bar:**

☐ shelving (berms) on bar:

☐ unvegetated:

☐ vegetation transition  
(go to veg. indicators)

☐ sediment transition

(go to sed. indicators)

☐ upper limit of deposition  
on bar:

☐ **Instream bedforms and other  
bedload transport evidence:**

☐ deposition bedload indicators  
(e.g., imbricated clasts,  
gravel sheets, etc.)

☐ bedforms (e.g., pools,  
riffles, steps, etc.):

☐ **erosional bedload indicators**  
(e.g., obstacle marks, scour, b  
smoothing, etc.)

☐ **Secondary channels:**

**Sediment indicators**

☒ **Soil development:** a

☐ **Changes in character of soil:**

☐ **Mudcracks:**

☒ **Changes in particle-sized  
distribution:** x

☒ transition from gravel to soil

☐ upper limit of sand-sized particles

☐ silt deposits:

**Vegetation Indicators**

☒ **Change in vegetation type  
and/or density:** a

Check the appropriate boxes and select the general vegetation change (e.g., graminoids to woody shrubs). **Describe the vegetation transition looking from the middle of the channel, up the banks, and into the floodplain.**

☒ vegetation  
absent to: forbs

☐ moss to:

☐ forbs to:

☐ graminoids to:

☐ woody  
shrubs to:

☐ deciduous

trees to:

☐ coniferous

trees to:

☒ **Vegetation matted down** x  
and/or bent:

☐ **Exposed roots below  
intact soil layer:**

**Ancillary indicators**

☐ **Wracking/presence of  
organic litter:**

☐ **Presence of large wood:**

☒ **Leaf litter disturbed or  
washed away:** b

☐ **Water staining:**

☐ **Weathered clasts or bedrock:**

**Other observed indicators? Describe:**

Project ID #: MOX 115 kV Rebuild

**Step 4** Is additional information needed to support this determination? ☐ Yes ☒ No If yes, describe and attach information to datasheet:

### Step 5 Describe rationale for location of OHWM

Drainage has defined bed and bank as well as change in vegetation cover and types. Drainage visible on aerial imagery,

Additional observations or notes

Top of bank is 3ft and OHWM is 2ft.

Attach a photo log of the site. Use the table below, or attach separately.

Photo log attached? ☒ Yes ☐ No If no, explain why not:

List photographs and include descriptions in the table below.

Number photographs in the order that they are taken. Attach photographs and include annotations of features.

[illegible]



## OHWM Field Identification Datasheet Instructions and Field Procedure

### Step 1 Site overview from remote and online resources

Complete Step 1 prior to site visit.

**Online Resources:** Identify what information is available for the site. Check boxes on datasheet next to the resources used to assess this site.

- |                      |                                                  |
|----------------------|--------------------------------------------------|
| a. gage data         | e. topographic maps                              |
| b. aerial photos     | f. geologic maps                                 |
| c. satellite imagery | g. land use maps                                 |
| d. LiDAR             | h. climatic data (precipitation and temperature) |

**Landscape context:** Use the online resources to put the site in the context of the surrounding landscape.

**a. Note on the datasheet under Step 1:**

- i. Overall land use and change if known
  - ii. Recent extreme events if known (e.g., flood, drought, landslides, debris flows, wildfires)
- b. Consider the following to inform weighting of evidence observed during field visit.
- i. What physical characteristics are likely to be observed in specific environments?
  - ii. Was there a recent flood or drought? Are you expecting to see recently formed or obscured indicators?
  - iii. How will land use affect specific stream characteristics? How natural is the hydrologic regime? How stable has the landscape been over the last year, decade, century?

### Step 2 Site conditions during the field assessment (assemble evidence)

- |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ol style="list-style-type: none"> <li>a. Identify the assessment area.</li> <li>b. Walk up and down the assessment area noting all the potential OHWM indicators.</li> <li>c. Note broad trends in channel shape, vegetation, and sediment characteristics.                         <ol style="list-style-type: none"> <li>i. Is this a single thread or multi-thread system? Is this a stream-wetland complex?</li> <li>ii. Are there any secondary and/or floodplain channels?</li> <li>iii. Are there obvious man-made alterations to the system?</li> <li>iv. Are there man-made (e.g., bridges, dams, culverts) or natural structures (e.g., bedrock outcrops, Large Wood jams) that will influence or control flow?</li> </ol> </li> </ol> | <ol style="list-style-type: none"> <li>d. Look for signs of recurring fluvial action.                         <ol style="list-style-type: none"> <li>i. Where does the flow converge on the landscape?</li> <li>ii. Are there signs of fluvial action (sediment sorting, bedforms, etc.) at the convergence zone?</li> </ol> </li> <li>e. Look for indicators on both banks. If the opposite bank is not accessible, then look across the channel at the bank.</li> <li>f. <b>In Step 2 of the datasheet</b> describe any adjacent land use or flow conditions that may influence interpretation of each line of evidence.                         <ol style="list-style-type: none"> <li>i. What land use and flow conditions may be affecting your ability to observe indicators at the site?</li> <li>ii. What recent extreme events may have caused changes to the site and affected your ability to observe indicators?</li> </ol> </li> </ol> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### Step 3a List evidence

**Assemble evidence by checking the boxes next to each line of evidence:**

- a. If needed, use a separate scratch datasheet to check boxes next to possible indicators, or check boxes of possible indicators in pencil and use pen for final decision.
- b. If using fillable form, then follow the instructions for filling in the fillable form.

*Context is important when assembling evidence. For instance, pool development may be an indicator of interest on the bed of a dry stream, but may not be a useful indicator to take note of in a flowing stream. On the other hand, if the pool is found in a secondary channel adjacent to the main channel, it could provide a line of evidence for a minimum elevation of high flows. Therefore, consider the site context when deciding which indicators provide evidence for identifying the OHWM. Explain reasoning in Step 5.*

**Questions to consider while making observations and listing evidence at a site:**

| Geomorphic indicators                                  | Sediment and soil indicators                         | Vegetation Indicators                                                                                                       | Ancillary indicators                               |
|--------------------------------------------------------|------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|
| Where are the breaks in slope?                         | Where does evidence of soil formation appear?        | Where are the significant transitions in vegetation species, density, and age?                                              | Is there organic litter present?                   |
| Are there identifiable banks?                          |                                                      | Is there vegetation growing on the channel bed?                                                                             | Is there any leaf litter disturbed or washed away? |
| Is there an easily identifiable top of bank?           | Are there mudcracks present?                         | If no, how long does it take for the non-tolerant vegetation to establish relative to how often flows occur in the channel? | Is there large wood deposition?                    |
| Are the banks actively eroding?                        | Is there evidence of sediment sorting by grain size? | Where are the significant transitions in vegetation?                                                                        | Is there evidence of water staining?               |
| Are the banks undercut?                                |                                                      | Is the vegetation tolerant of flowing water?                                                                                |                                                    |
| Are the banks armored?                                 |                                                      | Has any vegetation been flattened by flowing water?                                                                         |                                                    |
| Is the channel confined by the surrounding hillslopes? |                                                      |                                                                                                                             |                                                    |
| Are there natural or man-made berms and levees?        |                                                      |                                                                                                                             |                                                    |
| Are there fluvial terraces?                            |                                                      |                                                                                                                             |                                                    |
| Are there channel bars?                                |                                                      |                                                                                                                             |                                                    |

Are the following features of fluvial transport present?

*Evidence of erosion: obstacle marks, scour, armoring  
Bedforms: riffles, pools, steps, knickpoints/headcuts  
Evidence of deposition: imbricated clasts, gravel sheets, etc.*

**In some cases, it may be helpful to explain why an indicator was NOT at the OHWM elevation, but found above or below. It can also be useful to note if specific indicators (e.g., vegetation) are NOT present. For instance, note if the site has no clear vegetation zonation.**

## OHWM Field Identification Datasheet Instructions and Field Procedure

### Step 3b Weight each line of evidence and weigh body of evidence

Weight each indicator by considering its importance based upon:

#### a. Relevance:

- i. Is this indicator left by low, high, or extreme flows?

##### Tips on how to assess the indicator relative to type of flow:

*Consider the elevation of the indicator relative to the channel bed.*

*What is the current flow level based on season or nearby gages?*

*Consider the elevation of the indicator relative to the current flow.*

*If the stream is currently at baseflow and indicator is adjacent to that, then it is likely a low flow indicator. The difference between high and extreme flow indicators can sometimes be difficult to determine.*

- ii. Did recent extreme events and/or land use affect this indicator?

1. Recent floods may have left many extreme flow indicators, or temporarily altered channel form.

Other resources will likely be needed to support any OHWM identification at this site. Field evidence of the OHWM may have to wait for the site to recover from the recent flood.

2. Droughts may cause field evidence of OHWM to be obscured, because there has been an extended time since the last high flow event. There can be overgrowth of vegetation or deposition of material from surrounding landscape that can obscure indicators.
3. Both man-made (e.g., dams, construction, mining activities, urbanization, agriculture, grazing) and natural (e.g., fires, floods, debris flows, beaver dams) disturbances can all alter how indicators are expected to appear at a site. Chapter 6 and Chapter 7 of the OHWM field manual provides specific case-studies that can help in interpreting evidence at these sites.

#### b. Strength:

- i. Is this indicator persistent across the landscape?

1. Look up and downstream and across the channel to see if you see the same indicator at multiple locations.
2. Does the indicator occur at the same elevation as other indicators?

#### c. Reliability:

- i. Is this indicator persistent on the landscape over time? Will this indicator still persist across seasons?

1. This can be difficult to determine for some indicators and may be specific to climatic region (in terms of persistence of vegetation) and history of land use or other natural disturbances.
2. Chapter 2, Chapter 6, and Chapter 7 of the OHWM field manual describes each indicator in detail and provides examples of areas where indicators are difficult to interpret.

#### d. Weigh body of evidence:

- i. Combine weights: integrate the weighted line of evidence (relevance, strength, reliability) of each indicator.
- ii. For each of the observed indicators, which are more heavily weighted? Where do high value indicators co-occur along the stream reach? Do they co-occur at a similar elevation along the banks relative to water surface (or channel bed if there is no water).
- iii. On datasheet, select the indicators used to identify the OHWM. Information in Chapter 2 of the OHWM field manual provides descriptions of specific indicators which can assist in putting these in context and determining relevance, strength, and reliability.

#### e. Take photographs of indicators and attach a log using either page 2 of datasheet or another method of logging photos.

- i. Annotate photos with descriptions of indicators.

**\*Landscape context from Step 1 can help determine the relevance, strength, and reliability of the indicators observed in the field.**

**\*Information in Chapter 2 of the OHWM field manual provides information on specific indicators which can assist in putting these in context and determining relevance, strength, and reliability.**

### Step 4 Is additional information needed? Are other resources needed to support the lines of evidence observed in the field?

- a. If additional resources are needed, then repeat steps 3a and 3b for the resources selected in Step 1 of assembling, weighting, and weighing evidence collected from online resources. Chapter 5 of the OHWM field manual provides information on using online resources.
- b. Any data collected from online tools have strengths and weaknesses. Make sure these are clear when determining relevance, strength, and reliability of the remotely collected data. Clearly describe why other resources were needed to support the lines of evidence observed in the field, as well as the relevance, strength, and reliability of the supporting data and/or resources.
- c. Attach any remote data and data analysis to the datasheet.

### Step 5 Describe rationale for location of OHWM:

- a. Why do the combination of indicators represent the OHWM?
- b. If there are multiple possibilities for the OHWM, explain why there are two (or more) possibilities. Include any relevant discussion on why specific indicators were not included in the final decision.
- c. If needed, add additional site notes on page 2 of the datasheet under Step 5.

## **Appendix C**

### **Representative Site Photographs**





**Photo 1.** Area on the east side of Moraga Substation where the National Hydrography Dataset (NHD) and National Wetlands Inventory (NWI) show a riverine feature; no aquatic resources were observed in this area. Photo taken facing northeast on December 12, 2023.



**Photo 2.** Ordinary high water mark (OHWM)-1 data point at feature R-2 southeast of Moraga Substation. Photo taken facing west/upstream on December 12, 2023.





**Photo 3. R-3 along the boundary of the Study Area northwest of Moraga Substation, facing west on December 12, 2023.**



**Photo 4. Sample point (SP)-1 located in a swale with hydrophytic vegetation. The sample point lacked wetland hydrology and hydric soils; therefore, no wetlands were delineated. Photo taken facing south on December 12, 2023.**





**Photo 5. SP-2 located in a swale with hydrophytic vegetation. The sample point lacked wetland hydrology and hydric soils; therefore, no wetlands were delineated. Photo taken facing northwest on December 12, 2023.**



**Photo 6. OHWM-2 data point taken at R-4 along access route southeast of Edgewood Road. Photo taken facing east on December 12, 2023.**





**Photo 7. OHWM-4 data point taken at R-6 along access route southeast of the proposed staging area on Wilder Road. Photo taken facing east/downstream on December 29, 2023.**



**Photo 8. Wetland W-01a along access route on Edgewood Road. Photo taken facing northeast on December 12, 2023.**





**Photo 9. Wetland W-02 northeast of the proposed staging area southeast of the proposed overhead structures RN8 and RS8. Photo taken facing southwest on December 28, 2023.**



**Photo 10. SP-4a taken at wetland W-03 southwest of the proposed staging area southeast of the proposed overhead structures RN8 and RS8. Photo taken facing northeast on December 28, 2023.**





**Photo 11. Alder Creek along access route within EBRPD Wilcox Staging Station Staging Area. Photo taken facing northeast on December 28, 2023.**



**Photo 12. OHWM-3 data point at Alder Creek (R-8) along access route at EBRPD Wilcox Station Staging Area. Photo taken facing south on December 28, 2023.**





**Photo 13. OHWM-6 data point taken at R-10 west of the proposed overhead structures RN12 and RS12. Photo taken facing north/upstream on January 12, 2024.**



**Photo 14. OHWM-8 data point taken at R-11 adjacent to a managed native plant garden along access route on Montclair Railroad Trail. Photo taken facing northwest on January 12, 2023.**





**Photo 15. R-11 ends and sheetflows along trail on access route on Montclair Railroad Trail. Photo taken facing southwest on January 12, 2024.**



**Photo 16. OHWM-7 data point taken at Shephard Creek (R-12) east of proposed staging area at Shepherd Canyon Park. Photo taken facing north on January 12, 2024.**





**Photo 17. R-13 north of the tension pull site north of Mountain Boulevard. Photo taken facing west on January 12, 2024.**



**Photo 18. OHWM-5 data point taken at Palo Seco Creek section of R-14 east of the staging area at Montclair Golf Course. Photo taken facing west and downstream on December 29, 2023.**





**Photo 19.** R-14 at the confluence of Shephard Creek and Palo Seco Creek northeast of the staging area at Montclair Golf Course. Photo taken facing southwest on December 29, 2023.



**Photo 20.** Concrete-lined ditch connecting to steep ephemeral waters (R-15) northeast of the proposed overhead structures RN24 and RS24. Photo taken facing east on December 29, 2023.