Appendix C4

Delineation of Potential Waters of the U.S. and State - Lassen Facility

Delineation of Potential Waters of the U.S. and State

Lassen Facility in Nubieber Forest Resiliency Project

Nubieber, Lassen County, California

Prepared for:

Kimley-Horn
555 Capitol Mall, Suite 300
Sacramento, CA 95814

Attn: Steve Peterson, AICP, LEED AP
Steve.Peterson@kimley-horn.com

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Prepared by:

WRA, Inc.
2169 G East Francisco Boulevard
San Rafael, CA 94901

Attn: Rachel Miller
rachel.miller@wra-ca.com

WRA# 340154

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List of Preparers

Hope Kingma	Principal in Charge
Rhiannon Korhummel	Senior Plant Biologist
Rachel Miller	Wetland Ecologist / Plant Biologist
Michael Rochelle	GIS Analyst

List of Acronyms

CFR	Code of Federal Regulations
Corps	U.S. Army Corps of Engineers
CSRL	California Soil Resource Lab
CWA	Clean Water Act
EPA	Federal Environmental Protection Agency
FAC	Facultative Plant
FACU	Facultative Upland Plant
FACW	Facultative Wetland Plant
HUC	Hydrologic Unit Code
NL	Not Listed
NOAA	National Oceanic and Atmospheric Administration
NRCS	Natural Resources Conservation Service
NWI	National Wetland Inventory
NWPL	National Wetland Plant List
OBL	Obligate Wetland Plant
OHWM	Ordinary High Water Mark
RWQCB	Regional Water Quality Control Board
SWRCB	California State Water Resources Control Board
TNW	Traditional Navigable Waters
UPL	Upland Plant
USGS	U.S. Geological Survey
WOTUS	Waters of the United States
WRA	WRA, Inc.

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1.0 INTRODUCTION

This report presents the results of a delineation of potential waters of the U.S. as defined by the Clean Water Act (CWA) and waters of the state as defined by the *State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State* (State Wetland Policy, SWRCB 2019). The Study Area for this delineation includes the proposed site of the Forest Resiliency Program – Lassen Facility (a new wood pallet processing facility) in Nubieber, Lassen County, California (Study Area; Appendix A – Figure 1). The Study Area consists of the southern 167-acre portion of the Dahle property (APN 001-270-26-11).

On April 29-30, 2024, WRA, Inc. (WRA) conducted a delineation within the Study Area to identify wetlands and non-wetland waters potentially subject to jurisdiction by the U.S. Army Corps of Engineers (Corps) under Section 404 of the CWA as well as the California State Water Resources Control Board (SWRCB) and Regional Water Quality Control Board (RWQCB) as defined in the State Wetland Policy (SWRCB 2019). The following sections describe the regulatory background and methods used to guide the delineation and provide a summary of wetlands and non-wetland waters within the Study Area. This delineation is considered "potential" subject to the approval of the Corps and, where appropriate, RWQCB.[1]

[1] *Per the State Wetland Policy (SWRCB 2019), the SWRCB or local RWQCB "shall rely on any wetland area delineation from a final aquatic resource report verified by the Corps for the purposes of determining the extent of wetland waters of the U.S. A delineation of any wetland areas potentially impacted by the project that are not delineated in a final aquatic resource report verified by the Corps shall be performed using the methods described in the ..."1987 Manual and Supplements" to determine whether the area meets the state definition of a wetland."*

2.0 REGULATORY BACKGROUND

2.1 Section 404 of the Clean Water Act

The objective of the CWA is to maintain and restore the chemical, physical, and biological integrity of the waters of the U.S. (33 CFR Part 328 Section 328.4). Waters of the U.S. is the encompassing term for areas that qualify for federal regulation under Section 404 of the CWA. Section 404 of the CWA gives the U.S. Environmental Protection Agency (EPA) and the Corps regulatory and permitting authority regarding discharge of dredged or fill material into "navigable" waters of the U.S. Section 502(7) of the CWA defines navigable waters as "waters of the United States, including territorial seas." Section 328 of Chapter 33 in the Code of Federal Regulations (CFR) defines the term "waters of the United States" as it applies to the jurisdictional limits of the authority of the Corps under the CWA. A summary of this definition of "waters of the United States" in 33 CFG 328.3(a) includes:

> *(1) waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide; the territorial seas; or interstate waters;*
>
> *(2) impoundments of waters otherwise defined as waters of the United States under this definition, other than impoundments of waters identified under paragraph (5) of this section;*
>
> *(3) tributaries of waters identified in paragraph (1) or (2) of this section that are relatively permanent, standing or continuously flowing bodies of water;*
>
> *(4) wetlands adjacent to the following waters: waters identified in paragraph (1) of this section; or relatively permanent, standing or continuously flowing bodies of water identified in paragraph (2) or (3) of this section and with a continuous surface connection to those waters;*
>
> *(5) intrastate lakes and ponds not identified in paragraphs (1) through (4) of this section that are relatively permanent, standing or continuously flowing bodies of water with a continuous surface connection to the waters identified in paragraph (1) or (3) of this section.*

The definitions of wetlands and non-wetland waters, as well as areas exempt from jurisdiction, are discussed in more detail below.

2.1.1 Wetlands

Wetlands are defined in 33 CFR 328.3(c) as:

> *... those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.*

The basis for determining whether a given area is a wetland for the purposes of Section 404 of the CWA is outlined in the *U.S. Army Corps of Engineers Wetlands Delineation Manual* (Corps Manual; Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Delineation Manual* for the respective region (Arid West or Western Mountains, Valleys, and Coast

for California). As defined in 33 CFR 328.4(c), the extent of federal jurisdiction within wetlands is defined as extending to the limit of the wetland as determined using the methods outlined in the manuals.

2.1.2 Non-Wetland Waters

The limit of federal jurisdiction in non-tidal non-wetland waters extends to the ordinary high water mark (OHWM) which is defined in 33 CFR 328.3(c) as:

> *... that line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the characteristics of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.*

2.1.3 Areas Exempt from Section 404 Jurisdiction

Some areas that meet the technical criteria for wetlands or waters may not be jurisdictional under the CWA per Section 404 regulations and the Corps Manual. As defined in 33 CFR 328.3(b), the following features are exempt from Section 404 Jurisdiction:

> *(1) Waste treatment systems, including treatment ponds or lagoons, designed to meet the requirements of the Clean Water Act;*
>
> *(2) Prior converted cropland designated by the Secretary of Agriculture. The exclusion would cease upon a change of use, which means that the area is no longer available for the production of agricultural commodities. Notwithstanding the determination of an area's status as prior converted cropland by any other Federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with EPA;*
>
> *(3) Ditches (including roadside ditches) excavated wholly in and draining only dry land and that do not carry a relatively permanent flow of water;*
>
> *(4) Artificially irrigated areas that would revert to dry land if the irrigation ceased;*
>
> *(5) Artificial lakes or ponds created by excavating or diking dry land to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing;*
>
> *(6) Artificial reflecting or swimming pools or other small ornamental bodies of water created by excavating or diking dry land to retain water for primarily aesthetic reasons;*
>
> *(7) Waterfilled depressions created in dry land incidental to construction activity and pits excavated in dry land for the purpose of obtaining fill, sand, or gravel unless and until the construction or excavation operation is abandoned and the resulting body water meets the definition of waters of the United States; and*
>
> *(8) Swales and erosional features (e.g., gullies, small washes) characterized by low volume, infrequent, or short duration flow.*

2.2 Waters of the State

The Porter-Cologne Water Quality Control Act gives the SWRCB authority to regulate discharge of dredged or fill material that may affect the quality of "waters of the state." "Waters of the state" are defined broadly as (SWRCB 2019):

> *... any surface water or groundwater, including saline waters, within the boundaries of the state.*

In April 2019, the SWRCB adopted the State Wetland Policy, which provides a state wetland definition, procedures, and requirements for regulation of the discharge of dredge or fill material to wetlands and non-wetland waters of the state. The State Wetland Policy also includes exemptions from regulation of dredge and fill discharges for certain types of wetland and non-wetland waters features, as well as for certain classes of activities, such as activities covered by an existing RWQCB or SWRCB Order. The state wetland definition (SWRCB 2019), is similar to, but slightly different from that used by the Corps:

> *An area is wetland if, under normal circumstances, (1) the area has continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both; (2) the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and (3) the area's vegetation is dominated by hydrophytes or the area lacks vegetation.*

The State Wetland Policy utilizes existing Corps delineation procedures (Environmental Laboratory 1987; Corps 2008, 2010). According to the State Wetland Policy, the SWRCB and RWQCBs generally rely on the Corps for verification of wetland and non-wetland waters as part of an aquatic resource report. Any potential wetland area not identified in a report verified by the Corps is required to be delineated using Corps methods for consideration as a state wetland and verification by SWRCB or RWQCB staff. This report includes wetlands and non-wetland waters meeting both the Corps and state wetland definitions. Some features mapped as non-wetland waters under the Corps wetland definition may be considered wetlands under the state definition.

This report identifies wetlands and non-wetland waters according to the Corps definitions and criteria, consistent with the State Wetland Policy's reliance of these criteria. This report also recognizes that some non-wetland waters features may meet the wetland definition of the State Wetland Policy. The State Wetland Policy regulates wetlands and non-wetland waters equivalently; therefore, the classification of an unvegetated feature as a wetland or non-wetland water does not affect the scope of State regulation of that feature. In contrast, feature classification for purposes of Corps jurisdiction can affect some regulatory permitting decisions, such as determining the applicability of Nationwide Permit Program thresholds; therefore, the Corps definitions are relied upon for feature classifications in this report. In some cases, features mapped and classified as non-wetland waters may meet the State Wetland Policy definition of a wetland, where those features contain anaerobic substrates. Regardless of how they are defined, wetlands and non-wetland waters deemed jurisdictional may be regulated by the RWQCB and/or SWRCB under the State Wetland Policy.

3.0 STUDY AREA DESCRIPTION

The approximately 167-acre Study Area is located in Nubieber, Lassen County, California (Appendix A – Figure 1). The Study Area can be reached from San Francisco by way of I-80 East, I-505 North, and then I-5 North to Exit 680 for CA-299/Lake Boulevard, then following CA-299 East for approximately 85 miles to Babcock Road/Kramer Road. The Study Area is bounded by a railyard, railway lines, and the community of Nubieber to the north; a railway line and slough complex to the east; and undeveloped open space to the west and south. Land uses within the Study Area include undeveloped open space.

Habitat conditions within the Study Area are generally undisturbed, apart from large piles of ash along the south border. A layer of black ash is also present on the soil surface throughout much of the Study Area, particularly along the western border and southeast corner. Aerial photography of the Study Area shows the aerial signature of deposited ash within and adjacent to the Study Area (Appendix C).

3.1 Vegetation

Vegetation communities within the Study Area consist of common sagebrush (*Artemesia tridentata*) shrubland, perennial grasslands, seasonal wetlands, and seasonal wetland swales. Vegetation within sagebrush shrubland is composed of a sparse cover of common sagebrush (10–25% absolute cover) in the shrub layer, with an herbaceous understory dominated by slender-fruited lomatium (*Lomatium bicolor* var. *leptocarpum*, FACU), Medusa head (*Elymus caput-medusae*, NL) and bulbous bluegrass (*Poa bulbosa*, FACU). The perennial grasslands are dominated by native and non-native grasses and forbs, including slender-fruited lomatium, Medusa head, pine bluegrass (*Poa secunda*, FACU), bulbous bluegrass, and meadow foxtail (*Alopecurus pratensis*, FACW).

Dominant vegetation within seasonal wetlands included small camas (*Camassia quamash*, FACW), spike rush (*Eleocharis macrostachya*, OBL), and Mexican rush (*Juncus mexicanus*, FACW), with some western buttercup (*Ranunculus occidentalis*, FAC) and hairy whitetop (*Lepidium appelianum*, UPL). Two linear seasonal wetland swales are present in the southern parcel. These are dominated by slender phlox (*Microsteris gracilis*, FACU) and little mousetail (*Myosurus minimus*, OBL).

3.2 Soils

Web Soil Survey (USDA 2024a) and SoilWeb (CSRL 2024) list three (3) soil mapping units within the Study Area: *Bieber-Modoc complex, 0 to 5 percent slopes; Cupvar silty clay, 0 to 2 percent slopes; and Pit silty clay, drained, 0 to 2 percent slopes*. Descriptions of the soil series that comprise the soil mapping units are provided below. The distribution of these soil mapping units within the Study Area is depicted in Appendix A – Figure 2.

> **Bieber Series:** Soils in the Bieber series consist of very shallow, well drained or moderately drained soils formed in alluvium derived from volcanic rocks. These soils occur on stream terraces and fan remnants, have very high runoff, and very low permeability. The Bieber-Modoc complex, 0 to 2 percent slopes soil mapping unit is not considered hydric (USDA 2024b).

Bieber series soils have a grayish brown (10YR 5/2) gravelly loam surface horizon with common very fine roots and 15 percent gravel from 0 to 6 inches below the soil surface, underlain by a very dark grayish brown (10YR 4/2) gravelly clay loam subsurface horizon with no redoximorphic features from 6 to 13 cm inches below the soil surface.

Modoc Series: Soils in the Modoc series consist of moderately deep, well-drained soils formed in volcanic ash over lacustrine deposits or alluvium. These soils occur on lake terraces and fan remnants, have medium runoff, and very low permeability. The Bieber-Modoc complex, 0 to 2 percent slopes soil mapping unit is not considered hydric (USDA 2024b).

Modoc series soils have a grayish brown (10YR 5/2) ashy loam surface horizon without redoximorphic features or gravel from 0 to 12 inches below the soil surface. This is underlain by a light brownish gray (10YR 6/2) loam without redoximorphic features or gravel.

Cupvar Series: Soils in the Cupvar series consist of moderately deep, moderately well drained soils formed in alluvium from extrusive igneous rock. These soils occur in basins, have medium runoff, and very low permeability. The Cupvar silty clay, 0 to 2 percent slopes soil mapping unit is not considered hydric (USDA 2024b).

Cupvar series soils have a surface horizon 0 to 3 inches below the soil surface consisting of dark grayish brown (10YR 4/2) silty clay without redoximorphic features, underlain by dark grayish brown (10YR 4/2) silty clay to 21 inches, then light yellowish brown (10YR 6/4) strongly cemented duripan to 25 inches. Cracks range from 0.5-1.5 inches wide.

Pit Series: Soils in the Pit series consist of very deep, poorly drained soils that formed in fine-textured alluvium weathered from extrusive and basic igneous rocks. These soils occur on flood plains and in basins, have medium runoff, and moderately low to moderately high permeability. The Pit silty clay, drained, 0 to 2 percent slopes soil mapping unit is considered hydric (USDA 2024b).

Pit series soils have a dark gray (10YR 4/1) silty clay surface horizon with cracks 1.5 inches wide between 0 to 4 inches from the soil surface, underlain with dark gray (10YR 4/2) clay to 40 inches and light brownish clay (10YR 6/2) to 45 inches with lime in seams and soft masses.

3.3 Hydrology

The Study Area is located in the Widow Valley Creek-Pit River region, within the Upper Pit Hydrologic Unit Code (HUC)-8 watershed (NRCS 2024). Annual rainfall within this watershed averages 17.5 inches, with most rain falling between November and May (PRISM 2024). Other hydrological sources for the Study Area include surface flow from the Big Valley Mountains to the east and high water from the slough complex to the west.

The natural hydrology of the site is relatively intact. A roadside ditch is located just outside the eastern border of the Study Area, adjacent to Babcock Road. This ditch is connected hydrologically by a series of culverts under Babcock Road and under the railway line that flow to Bull Run Slough to the east of the Study Area (Appendix A – Figure 3).

The Bieber U.S. Geological Survey (USGS) quadrangle (USGS 2021) shows perennial and intermittent tributaries of Bull Run Slough flowing adjacent to the eastern Study Area boundary.

The Bull Run Slough flows to the Pit River, which eventually flows into Shasta Lake. Shasta Lake is classified as a Traditional Navigable Water (TNW) by the Sacramento District (Corps 2024).

4.0 METHODS

WRA biologists performed a delineation of aquatic resources within the Study Area on April 29-30, 2024. Prior to conducting the evaluation, WRA reviewed a range of background materials including the Web Soil Survey (USDA 2024a), SoilWeb (CSRL 2024), the National Wetlands Inventory (NWI; USFWS 2024), the California Aquatic Resource Inventory (SFEI 2023), and the USGS Bieber 7.5-minute quadrangle map (USGS 2021). WRA also reviewed current and historic aerial imagery (Google Earth 2024, NETR 2024). In addition, the previous wetland delineation on of the northern Lassen Parcel was reviewed to plan the site visit and as a reference during the site visit.

4.1 Wetlands

WRA followed the Routine Method to evaluate the Study Area for the presence or absence of indicators of the three wetland parameters described in the Corps Manual (Environmental Laboratory 1987) and Arid West Supplement (Corps 2008). Data on vegetation, hydrology, and soils were collected at sample points within potential wetland communities and adjacent upland areas. Sample points that contained positive indicators for hydrophytic vegetation, hydric soils, and wetland hydrology were considered to be wetland. Except in cases of atypical or problematic wetland situations (i.e., difficult wetland situations, as described below), sample points that lacked one or more indicators were considered to be upland. Sample point data were reported on Arid West Supplement data forms. Sample point locations were recorded using a handheld GPS unit with mapping grade accuracy.

4.1.1 Vegetation

Plant species observed in the Study Area were identified using the Jepson eFlora (Jepson Flora Project 2024). Plants were assigned a wetland indicator status according to the National Wetland Plant List (NWPL; Corps 2022a). Wetland indicator statuses listed in the NWPL are based on the expected frequency of occurrence in wetlands, as follows in Table 1:

Table 1. Explanation of the Wetland Indicator Statuses in the National Wetland Plant List

CLASSIFICATION (ABBREVIATION)	DEFINITION	HYDROPHYTIC SPECIES? (Y/N)
Obligate (OBL)	Almost always is a hydrophyte, rarely in uplands	Y
Facultative Wetland (FACW)	Usually is a hydrophyte but occasionally found in uplands	Y
Facultative (FAC)	Commonly occurs as either a hydrophyte or non-hydrophyte	Y
Facultative Upland (FACU)	Occasionally is a hydrophyte but usually occurs in uplands	N
Upland / Not Listed (UPL / NL)	Rarely is a hydrophyte, almost always in uplands	N

The presence of hydrophytic vegetation was then determined based on indicator tests described in the Arid West Supplement. The Arid West Supplement requires that a three-step process be conducted to determine if hydrophytic vegetation is present. The procedure first requires the delineator to apply the "50/20 rule" (Indicator 1; Dominance Test) described in the manual. To apply the "50/20 rule," dominant species are chosen independently from each stratum of the community. Dominant species are determined for each vegetation stratum from a sampling plot of an appropriate size surrounding the sample point. Dominants are the most abundant species that individually or collectively account for more than 50 percent of the total vegetative cover in the stratum, plus any other species that, by itself, accounts for at least 20 percent of the total vegetative cover. If more than 50 percent of the dominant species has an OBL, FACW, or FAC status, the sample point meets the hydrophytic vegetation criterion.

If the sample point fails Indicator 1 and both hydric soils and wetland hydrology are not present, then the sample point does not meet the hydrophytic vegetation criterion, unless the site is a problematic wetland situation; however, if the sample point fails Indicator 1 but hydric soils and wetland hydrology are both present, the delineator must apply Indicator 2.

Indicator 2 is known as the Prevalence Index. The Prevalence Index is a weighted average of the wetland indicator status for all plant species within the sampling plot. Each indicator status is given a numeric code (OBL = 1, FACW = 2, FAC = 3, FACU = 4, and UPL = 5). Indicator 2 requires the delineator to estimate the percent cover of each species in every stratum of the community and sum the cover estimates for any species that is present in more than one stratum. The delineator must then organize all species into groups according to their wetland indicator status and calculate the Prevalence Index using the following formula, where A equals total percent cover:

$$PI = \frac{A_{OBL} + 2A_{FACW} + 3A_{FAC} + 4A_{FACU} + 5A_{UPL}}{A_{OBL} + A_{FACW} + A_{FAC} + A_{FACU} + A_{UPL}}$$

The Prevalence Index will yield a number between 1 and 5. If the Prevalence Index is equal to or less than 3, the sample point meets the hydrophytic vegetation criterion; however, if the community fails Indicator 2, the delineator must proceed to Indicator 3.

Indicator 3 is known as Morphological Adaptations. If more than 50 percent of the individuals of a FACU species have morphological adaptations for life in wetlands, that species is considered a hydrophyte and its indicator status should be reassigned to FAC. If such observations are made, the delineator must recalculate Indicators 1 and 2 using a FAC indicator status for this species. The sample point meets the hydrophytic vegetation criterion if either test is satisfied.

4.1.2 Soils

The Natural Resource Conservation Service (NRCS) defines a hydric soil as follows:

> *A hydric soil is a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part.*
>
> Federal Register July 13, 1994,
> U.S. Department of Agriculture, NRCS

Soils formed over long periods of time under wetland (anaerobic) conditions often possess characteristics that indicate they meet the definition of hydric soils. Hydric soils can have a hydrogen sulfide (rotten egg) odor, low chroma matrix color, designation of 0, 1, or 2 (used to identify them as hydric), presence of redox concentrations, gleyed or depleted matrix, or high organic matter content.

Specific indicators used to determine whether a soil is hydric for the purposes of wetland delineation are provided in the NRCS *Field Indicators of Hydric Soils in the U.S.* (USDA 2018). Soil samples were collected and described according to the methodology provided in the Arid West Supplement. Soil chroma and values were determined by utilizing a standard Munsell soil color chart (Munsell Color 2009).

Hydric soils were determined to be present if any of the soil samples met one or more of the hydric soil indicators described in *Field Indicators of Hydric Soils in the U.S.* (USDA 2018) that occur in the Arid West region.

4.1.3 Hydrology

The Corps jurisdictional wetland hydrology criterion is satisfied if an area is inundated or saturated for a period sufficient to create anoxic soil conditions during the growing season (a minimum of 14 consecutive days in the Arid West region). Evidence of wetland hydrology can include primary indicators, such as visible inundation or saturation, drift deposits, oxidized root channels, and salt crusts, or secondary indicators such as the FAC-Neutral Test, presence of a shallow aquitard, or crayfish burrows. The Arid West Supplement contains primary and secondary hydrology indicators. Only one primary indicator is required to meet the wetland hydrology criterion; however, if secondary indicators are used, at least two secondary indicators must be present to conclude that an area has wetland hydrology.

The presence or absence of the primary or secondary indicators described in the Arid West Supplement was utilized to determine if sample points within the Study Area met the wetland hydrology criterion.

A hydrologic analysis using the Antecedent Precipitation Tool (Deters 2023) was conducted to determine whether precipitation levels during the 3 months prior to the site visits were above, below, or within the 30-year average for the region, as well as to determine if the region was experiencing long-term drought conditions. Long-term precipitation data were obtained from weather stations in the vicinity of the Study Area. Drought condition data were obtained from monthly Palmer Drought Severity Index dataset published by the National Ocean and Atmospheric Administration (NOAA 2024).

During the 3-month period prior to the site visit, precipitation was above normal, and at the time of the site visit, the region was experiencing incipient wetness. The full results of the Antecedent Precipitation Tool analysis are provided as Appendix E.

4.1.4 Boundary Determinations

Wetland boundaries were identified using a combination of indicators observed on the ground, most often corresponding to changes in topography and dominant vegetation, in addition to other indicators. Where wetland boundaries were difficult to determine, wetland signatures visible in recent and historical aerial imagery from Google Earth March 2020 and July 2014 were

used to determine wetland boundaries. Based on a hydrologic analysis, WRA determined that the aerial photographs represent periods with normal to below-normal precipitation levels. Using imagery from normal periods allowed WRA to identify the normal extent of wetland conditions across the site. Using imagery from drier-than-normal periods allowed WRA to visualize trends in vegetation and soil conditions more easily due to the strong comparison of wet and dry areas.

4.1.5 5.Difficult Wetland Situations

The Arid West Supplement (Corps 2008) includes recommended procedures for completing wetland delineations in areas of "difficult wetland situations" in which wetlands may lack one or more indicators due to natural or anthropogenic factors; these are discussed as atypical or problematic wetland conditions in the Corps Manual (Environmental Laboratory 1987). Although the Corps Manual and Arid West Supplement (Corps 2008) were utilized in the wetland determination, they do not provide exhaustive lists of the difficult situations and problem areas that can arise during delineations in the Arid West. In these situations, the Corps Manual and Regional Supplements stress the importance of using best professional judgment and knowledge of the ecology of the wetlands in the region during the collection and interpretation of data in difficult sites.

Naturally problematic soils are present within the Study Area. The soil series description for the Cupvar Series, which is the soil series mapped within the eastern portion of the Study Area (Appendix A – Figure 2), includes cracks ranging from 0.5-1.5 inches wide. These cracks were confirmed at sample points taken within upland and wetland areas within the Study Area (See Photo 9, Appendix C).

Additionally, there were no redoximorphic (redox) features observed in any of the soils within the Study Area. The volcanic parent material of the soils may lack iron and/or manganese, which are necessary for the chemical reactions producing redox features. The lack of redox features was confirmed at delineation point SP-05, which displayed strongly hydrophytic emergent vegetation and hydrology indicators including surface water (A1) (Appendix A – Figure 3). The extent of hydrophytic vegetation and hydrology indicators were primarily used to determine the wetland boundaries.

Finally, as mentioned in Section 3.0, a layer of ash covered the soil surface to a depth of 0.5–1.5 inches throughout much of the Study Area. Aerial photography shows that the ash was deposited prior to 2017, with another deposit prior to 2023 (Appendix C).

4.2 Non-Wetland Waters

This study also evaluated the presence of non-wetland waters using Corps manuals and guidance for the identification of OHWM indicators (Corps 2005, Lichvar and McColley 2008). Examples of non-wetland waters include lakes, rivers, and streams. Non-wetland water types potentially subject to both Corps and RWQCB/SWRCB jurisdiction were investigated and identified in the field and as part of this report.

5.0 RESULTS

A map showing the location and extent of potential jurisdictional waters mapped within the Study Area is provided in **Appendix A – Figure 3**. As discussed above, the features are classified according to definitions relied upon by the Corps, which in some cases may differ from

classification under the State Wetland Policy. A summary of acreages of potential Corps jurisdiction under Section 404 of the CWA and potential state jurisdiction under Section 401 of the CWA and the Porter-Cologne Water Quality Control Act is provided in Table 2. Wetland Determination Data Forms are provided as Appendix B. Photographs of the Study Area are provided as Appendix C. A list of all plant species observed during the delineation site visits is included as Appendix D. The results of a precipitation and hydrological analysis are included as Appendix E.

Table 2. Summary of Wetlands and Non-Wetland Waters Mapped within the Study Area

FEATURE TYPE	CLASSIFICATION[1]	POTENTIAL WATERS OF THE U.S.		POTENTIAL WATERS OF THE STATE	
		ACRES	LINEAR FEET	ACRES	LINEAR FEET
Wetlands					
Seasonal Wetlands	PEM2	2.50	-	2.69	-
Seasonal Wetland Swales	PEM2	-	-	0.17	-
Wetland Ditches	R4SB7	-	-	0.22	2,032
	TOTAL:	**2.50**	**-**	**3.08**	**2,032**

[1]FGDC 2013

5.1 Wetland Types

5.1.1 Seasonal Wetlands

A total of 2.69 acres of seasonal wetlands were mapped within the Study Area. Seasonal wetlands are closed depressions which retain water and remain inundated or saturated for a portion of the year before drying completely for the remainder of the year. Seasonal wetlands are differentiated from seasonal wetland swales because they are closed depressions rather than linear features.

Seasonal wetlands within the Study Area (SW-01 through SW-10) were dominated by hydrophytic vegetation, including small camas (FACW), spike rush (OBL), Mexican rush (FACW), bulbous bluegrass (FACU), and immature dock (*Rumex* sp., FAC). Additional common species included western buttercup (FAC), hairy whitetop (UPL), and meadow foxtail (FACW). A distinct vegetation shift marked the boundary with the adjacent uplands, which were dominated by common sagebrush in the shrub layer and Medusa head (NL) in the herbaceous layer.

Soils within seasonal wetlands were composed of a surface layer of deposited black ash (7.5YR 2.1/1), underlain by dark brown (7.5YR 3/2-3/3) clay with no redox features or mottling. The surface layer of black ash ranged from 1 to 3 inches. As with all other soils on the site, there were no hydric soil indicators observed, therefore, the extent of seasonal wetlands was determined based on the extent of hydrophytic vegetation and hydrology indicators. Hydrology indicators included saturation (A3), and high water table (A2), as indicated in Sample Points SP-07 and SP-09.

The seasonal wetlands were classified as PEM2: Palustrine (P), emergent (EM), and non-persistent (2).

5.1.2 Seasonal Wetland Swales

Two seasonal wetland swales were delineated in the Study Area, totaling 0.17 acre. Seasonal wetland swales are linear depressions which have a limited amount of hydrological flow which transitions into surface flow. Unlike streams and drainages, seasonal wetland swales do not have a defined bed-and-bank topography, which would require a stronger or more sustained flow of water. Seasonal wetland swales differ from the seasonal wetlands described above because they are linear features rather than closed depressions.

Seasonal wetland swales (SWS-01 and SWS-02) were dominated by hydrophytic vegetation, including slender phlox (FACU) and little mousetail (OBL). Additional species included spike rush (OBL), and pine bluegrass (*Poa secunda*, FACU). The vegetation passed the prevalence index test, as demonstrated by delineation point SP-01. A distinct vegetation transition was observed between seasonal wetland swales and the surrounding uplands. Adjacent uplands were dominated by pine bluegrass (FACU) and bulbous bluegrass (FACU), with Chinese houses (*Collinsia heterophylla*, NL), whitlow grass (*Draba verna*, NL), and Great Basin violet (*Viola beckwithii*, NL) also common in adjacent uplands.

Soils within seasonal wetland swales were composed of a thin (0.5-inch) surface layer of black (10YR 2/1) deposited ash with abundant fine roots, underlain with dark brown (7.5YR 3/3) clay loam (to 6 inches) and dark brown (7.5YR 3/3) sand (to 12 inches). As with all other soils on the site, there were no hydric soil indicators observed. Adjacent upland soils were composed of very dark brown (7.5YR 2.1/2) clay loam without redox features, and without an ash deposit layer on the surface. The original ash deposit was placed west of the seasonal wetland swales, and the hydrological flow of the swales distributed ash within the swales but not in the adjacent uplands. Hydrology indicators within seasonal wetland swales included saturation (A3) at a depth of 3 inches, as displayed in sample point SP-01. Algal matting was also present.

The seasonal wetland swales were classified as PEM2: Palustrine (P), emergent (EM), and non-persistent (2).

5.1.3 Wetland Ditches

A total of 0.22 acre (2,032 linear feet) of wetland ditches were delineated within the western portion of the Study Area. Ditches are anthropogenic (man-made) linear features which convey flows from one area to another. Ditches differ from seasonal wetland swales because they are anthropogenic and highly linear. Wetland ditches contained over 5% absolute cover of emergent vegetation. Wetland ditches within the Study Area are located along the western border and appear to accept high flows from the adjacent parcel.

Sample point SP-05 is located within a representative wetland ditch immediately outside of the Study Area boundary. This sample point was investigated to confirm that hydric soil indicators were absent despite clear indicators of hydrophytic vegetation and wetland hydrology. As discussed in Section 4.1.4, there were no redox or other hydric soil indicators observed, despite the presence of obligate wetland vegetation and multiple indicators of hydrology.

Wetland ditches supported wetland vegetation dominated by spike rush (OBL). Other common species included immature dock (FAC), coyote thistle (*Eryngium* sp., FACW), little mousetail (OBL), Beckwith's clover (*Trifolium beckwithii*, FAC), and small camas (FACW).

Soils within wetland ditches were composed of a thin (0.5-inch) surface layer of black (10YR 2/1) deposited ash, underlain by dark brown (10YR 3/2) clay without redox features, as displayed in delineation point SP-05. Hydrology indicators included surface water (A1) and aquatic invertebrates (B13).

Wetland ditches are classified as R4SB7: riverine (R), intermittent (4), stream bed (SB), and vegetated (7).

6.0 CONCLUSION AND JURISDICTIONAL ANALYSIS

The results of this delineation of aquatic resources were based on conditions observed during the time of the assessment and background information provided to WRA by Kimley-Horn. The delineation uses the federal methodology to determine the potential boundaries of wetlands and non-wetland features and is consistent with the approach used by the RWQCB to determine wetlands subject to the State Wetland Policy.

Below we discuss which features are subject to Section 404 jurisdiction pursuant to the "Amended 2023 Rule" based on the revised definition for "waters of the United States" (WOTUS), which was originally published in the Federal Register on January 18, to reflect the U.S. Supreme Court in *Sackett v. US*. Pursuant to the Amended 2023 Rule, aquatic features that appear to have a continuous surface connection to a relatively permanent tributary that flows to Shasta Lake would potentially be subject to Section 404 jurisdiction, while aquatic features that lack a continuous surface connection to a WOTUS would not be subject to Section 404 jurisdiction (see Section 2.1.3). Shasta Lake has been classified as a "traditional navigable water" (TNW) by the Sacramento District (Corps 2024).

6.1 Potential Waters of the U.S. and State

Based on the findings of the delineation, the Study Area contains approximately 2.5 acres of seasonal wetlands that would be subject to Corps/federal jurisdiction and RWQCB/State jurisdiction pursuant to Sections 404 and 401 of the CWA, respectively. These features have a continuous hydrological surface connection via Bull Run Slough and the Pit River to Shasta Lake.

Off-site ditches along Babcock Road and the railway lines flow to Bull Run Slough via culverts under Babcock Road and the railway line. These off-site ditches provide a hydrological connection for seasonal wetlands SW-01, SW-02, SW-04, and SW-09 (Appendix A – Figure 3).

6.2 Potential Waters of the State (Excluded from Federal Jurisdiction)

Based on the findings of the delineation, the Study Area contains approximately 0.18 acre of seasonal wetlands, 0.17 acre of seasonal wetland swales, and 0.22 acre (2,032 linear feet) of wetland ditches that would likely be subject to State jurisdiction under the Porter-Cologne Act; however, these features would likely be excluded from federal jurisdiction as they lack a continuous surface connection to TNW or WOTUS.

Seasonal wetland swales SWS-01 and SWS-02 do not have a continuous surface connection to a TNW, as they transition to surface flow at their eastern limits. Ditches D-01 and D-02, along the Study Area's western border, collect surface flow from the adjacent western property and do not have a continuous surface connection to other aquatic features. Seasonal wetlands SW-03, SW-05, SW-06, SW-07, SW-08, and SW-10 also lack a continuous surface connection to TNW and would be excluded from federal jurisdiction as well.

All wetlands and non-wetland waters within the Study Area would be waters of the State since they satisfy the definition of a wetland per the State Wetland Policy (SWRCB 2019) and would be subject to regulation pursuant to the Porter-Cologne Water Quality Control Act.

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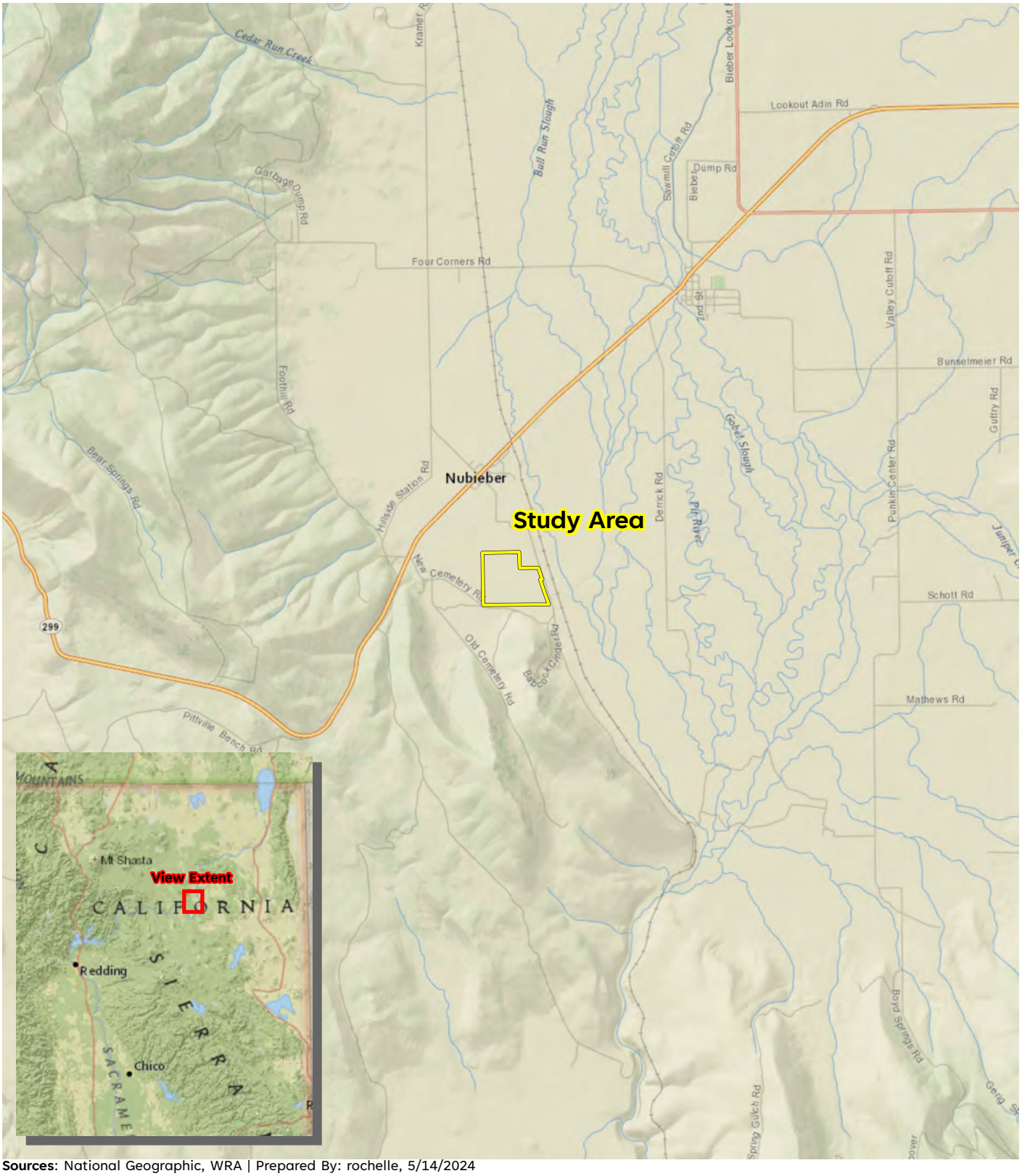
APPENDIX A. FIGURES



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Sources: National Geographic, WRA | Prepared By: rochelle, 5/14/2024

Figure 1. Study Area Regional Location Map

Lassen Facilities
Lassen County, California

0 1 2 Miles

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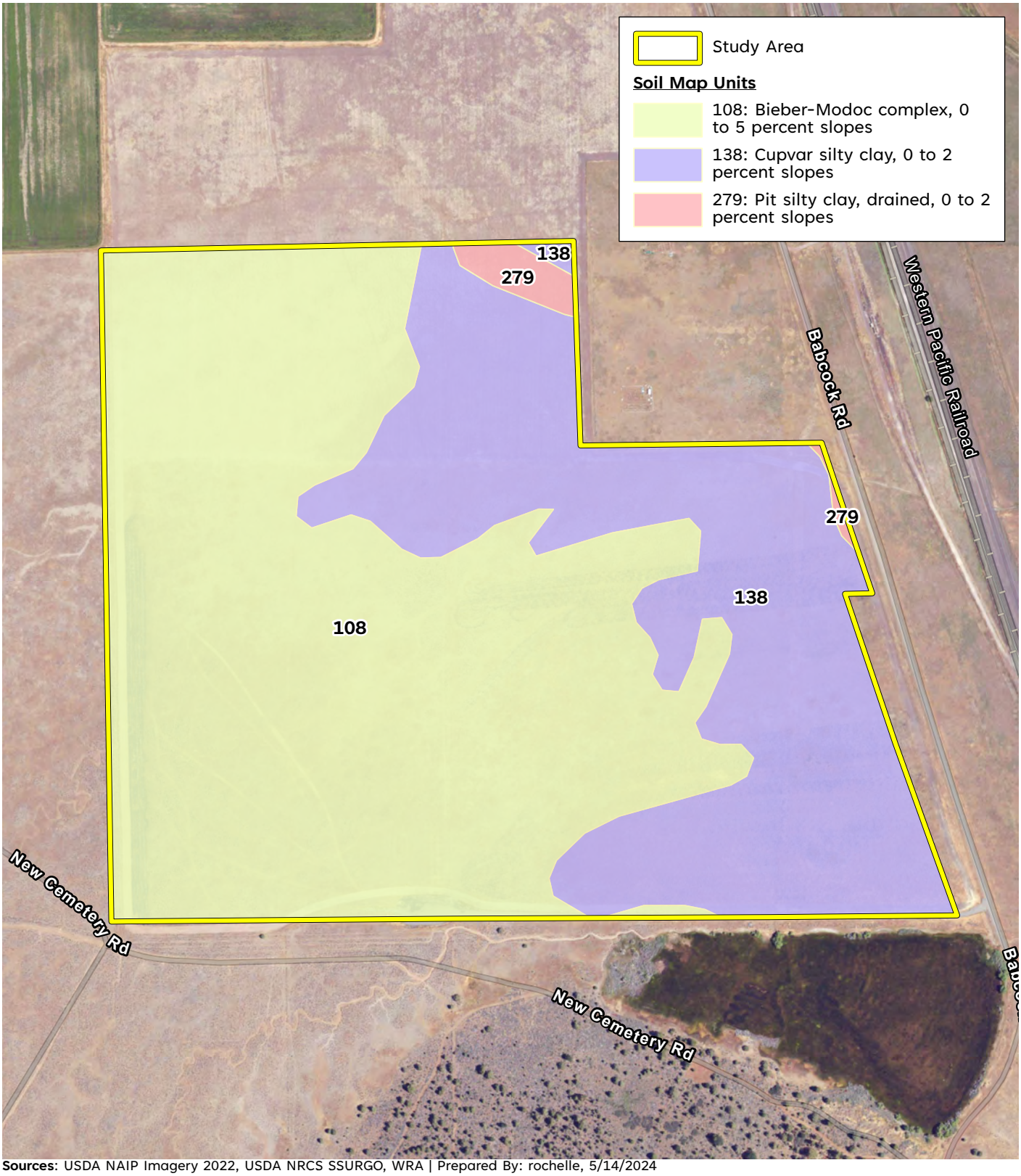
wra Environmental Consultants



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Sources: USDA NAIP Imagery 2022, USDA NRCS SSURGO, WRA | Prepared By: rochelle, 5/14/2024

Figure 2. Soil Types within the Study Area

Lassen Facilities
Lassen County, California

0 500 1,000 US Feet

N

wra Environmental Consultants

Figure 3.
Draft Aquatics Delineation (Overview)

Lassen Facilities
Lassen County, California

Potential Waters of the U.S.				
Type	**Label**	**Acre**	**Sq.Ft.**	**Linear Ft.**
Seasonal Wetland	SW-01	0.56	24,466	n/a
Seasonal Wetland	SW-02	1.76	76,562	n/a
Seasonal Wetland	SW-04	0.17	7,383	n/a
Seasonal Wetland	SW-09	0.01	380	n/a

Potential Waters of the State				
Type	**Label**	**Acre**	**Sq.Ft.**	**Linear Ft.**
Seasonal Wetland	SW-01	0.56	24,466	n/a
Seasonal Wetland	SW-02	1.76	76,562	n/a
Seasonal Wetland	SW-03	0.04	1,672	n/a
Seasonal Wetland	SW-04	0.17	7,383	n/a
Seasonal Wetland	SW-05	0.03	1,100	n/a
Seasonal Wetland	SW-06	0.06	2,489	n/a
Seasonal Wetland	SW-07	0.02	700	n/a
Seasonal Wetland	SW-08	<0.01	151	n/a
Seasonal Wetland	SW-09	0.01	380	n/a
Seasonal Wetland	SW-10	0.04	1,824	n/a
Seasonal Wetland Swale	SWS-01	0.09	3,957	n/a
Seasonal Wetland Swale	SWS-02	0.08	3,503	n/a
Wetland Ditch	D-01	0.11	4,681	1,136
Wetland Ditch	D-02	0.11	4,827	896

- Study Area - 165.18 ac.
- Sheet Grid
- Contours - 1' interval
- Culverts
- Sample Points

Potential Waters of the U.S.

- Seasonal Wetland (SW) - 2.50 ac.

Potential Waters of the State

- Seasonal Wetland (SW) - 2.69 ac.
- Seasonal Wetland Swale (SWS) - 0.17 ac.
- Wetland Ditch (D) - 0.22 ac.\2,032 LF

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0 200 400
Feet

wra
Environmental Consultants

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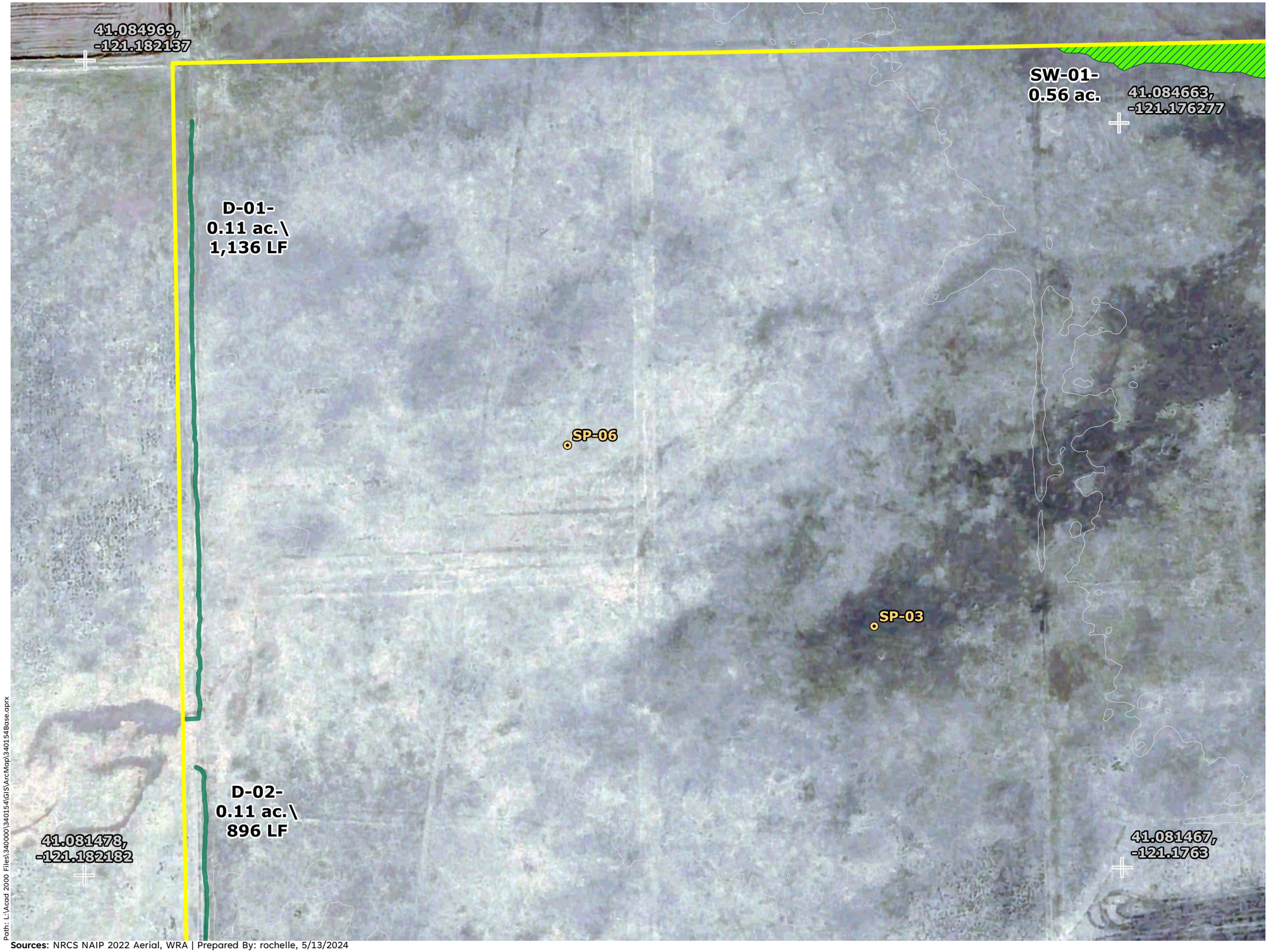
Sources: Google Earth Oct 2019 Aerial, WRA | Prepared By: rochelle, 5/16/2024

Figure 3-1.
Draft Aquatics Delineation (Sheet 1)

Lassen Facilities
Lassen County, California



Study Area - 165.18 ac.

Contours - 1' interval

Control Points

Culverts

Sample Points

Potential Waters of the U.S.

Seasonal Wetland (SW) - 2.50 ac.

Potential Waters of the State

Seasonal Wetland (SW) - 2.69 ac.

Seasonal Wetland Swale (SWS) - 0.17 ac.

Wetland Ditch (D) - 0.22 ac.\2,032 LF

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Environmental Consultants

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Sources: NRCS NAIP 2022 Aerial, WRA | Prepared By: rochelle, 5/13/2024

Figure 3-2.
Draft Aquatics Delineation (Sheet 2)

Lassen Facilities
Lassen County, California

- Study Area - 165.18 ac.
- Contours - 1' interval
- Control Points
- Culverts
- Sample Points

Potential Waters of the U.S.

- Seasonal Wetland (SW) - 2.50 ac.

Potential Waters of the State

- Seasonal Wetland (SW) - 2.69 ac.
- Seasonal Wetland Swale (SWS) - 0.17 ac.
- Wetland Ditch (D) - 0.22 ac.\2,032 LF

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Feet

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Environmental Consultants

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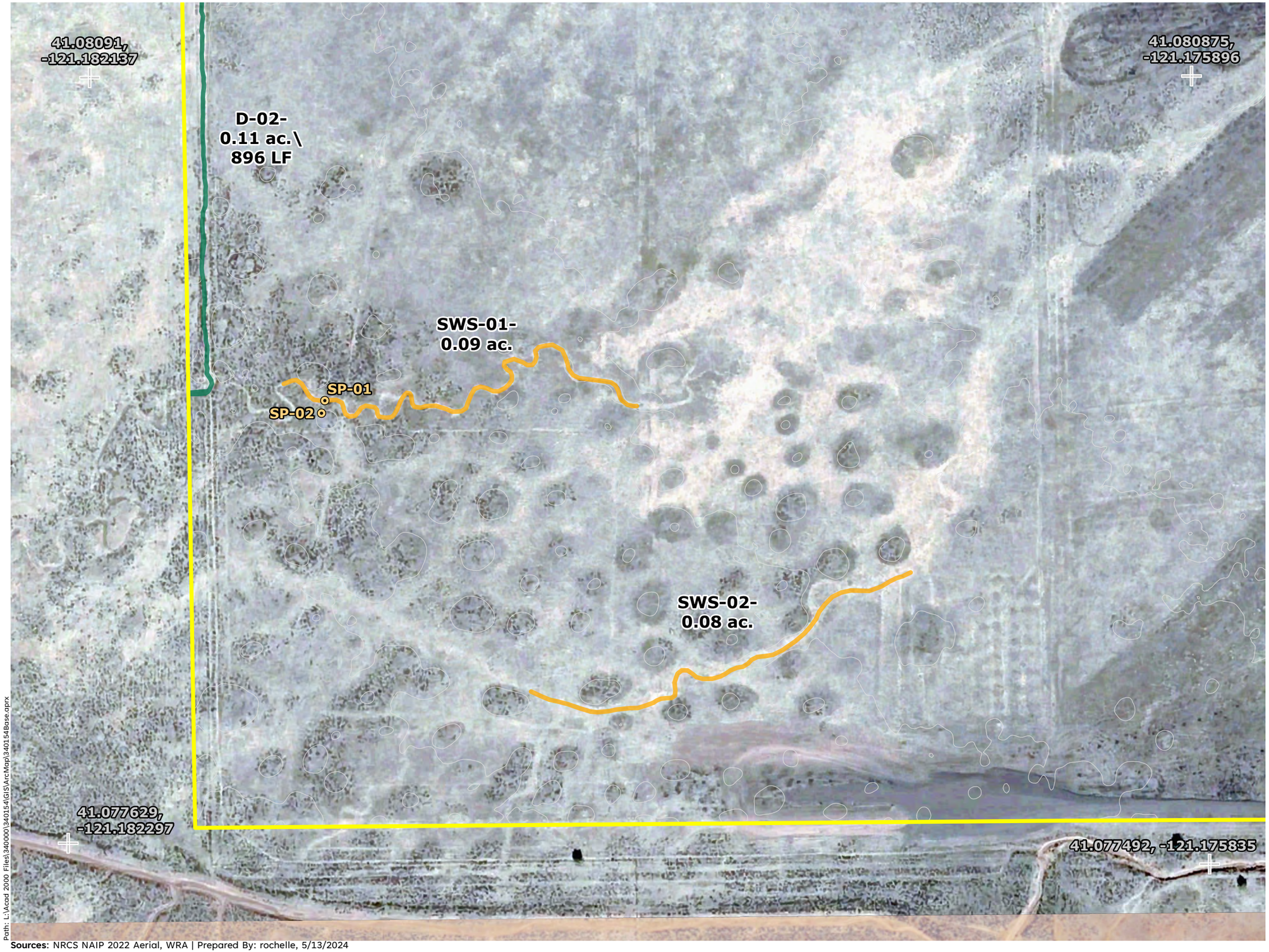
Sources: NRCS NAIP 2022 Aerial, WRA | Prepared By: rochelle, 5/13/2024

Figure 3-3.
Draft Aquatics Delineation (Sheet 3)

Lassen Facilities
Lassen County, California



Study Area - 165.18 ac.

Contours - 1' interval

Control Points

Culverts

Sample Points

Potential Waters of the U.S.

Seasonal Wetland (SW) - 2.50 ac.

Potential Waters of the State

Seasonal Wetland (SW) - 2.69 ac.

Seasonal Wetland Swale (SWS) - 0.17 ac.

Wetland Ditch (D) - 0.22 ac.\2,032 LF

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Environmental Consultants

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Sources: NRCS NAIP 2022 Aerial, WRA | Prepared By: rochelle, 5/13/2024

Figure 3-4.
Draft Aquatics Delineation (Sheet 4)

Lassen Facilities
Lassen County, California

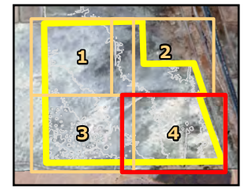
- Study Area - 165.18 ac.
- Contours - 1' interval
- Control Points
- Culverts
- Sample Points

Potential Waters of the U.S.

- Seasonal Wetland (SW) - 2.50 ac.

Potential Waters of the State

- Seasonal Wetland (SW) - 2.69 ac.
- Seasonal Wetland Swale (SWS) - 0.17 ac.
- Wetland Ditch (D) - 0.22 ac.\2,032 LF



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Sources: NRCS NAIP 2022 Aerial, WRA | Prepared By: rochelle, 5/13/2024

APPENDIX B. WETLAND DETERMINATION DATA FORMS

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site:	Lassen Co Facility	City/County:	Nubieber, Lassen County	Sampling Date:	4/29/2024
Applicant/Owner:	Golden State Natural Resources	State:	CA	Sampling Point:	SP-01
Investigator(s):	Rhiannon Korhummel, Rachel Miller	Section, Township, Range:	M, 37N 07E, 4		
Landform (hillslope, terrac	terrace	Local relief (concave, convex, none):	none	Slope (%):	0-2
Subregion (LRR):	C	Lat: 41.079496	Long: -121.180839	Datum:	WGS84
Soil Map Unit Name:	Bieber-Modoc complex, 0 to 5 percent slopes			NWI classification:	

Are climate / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed?

Are Vegetation ____, Soil X, or Hydrology ____ naturally problematic?

Are "Normal Circumstances present? Yes X No ____ (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 X	No ____	**Is the Samped Area within a Wetland?**
Hydric Soil Present?	Yes ____	No X	**Yes x No ____**
Wetland Hydrology Present?	Yes X	No ____	

Remarks:

Topographic swale with obvious vegetation shift to Myosurus minimus dominance; very sinuous swale feature.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: ____)		Absolute % Cover	Dominant Species?	Indicator Status
1.				
2.				
3.				
4.				
			= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)				
1.				
2.				
3.				
4.				
5.				
			= Total Cover	
Herb Stratum (Plot size: 5' radius)				
1.	Microsteris gracilis	18	Yes	FACU
2.	Myosurus minimus	18	Yes	OBL
3.	Poa secunda	2	No	FACU
4.	Eleocharis macrostachya	1	No	OBL
5.				
6.				
7.				
8.				
		39	= Total Cover	
Woody Vine Stratum (Plot size: ____)				
1.				
2.				
			= Total Cover	

% Bare Ground in Herb Stratum 61 % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	19	x1	19
FACW species	0	x2	0
FAC species	0	x3	0
FACU species	20	x4	80
UPL species		x5	0
Column Totals:	39 (A)		99 (B)

Prevalence Index = B/A = 2.54

Hydrophytic Vegetation Indicators:

____ Dominance Test is >50%

x Prevalence Index is ≤3.0

____ Morphological Adaptations* (Provide supporting data in Remarks)

____ Problematic Hydrophytic Vegetation* (Explain)

*Requires indicators of hydric soil and wetland hydrology.

Hydrophytic Vegetation Present?

Yes X No ____

Unknown geophyte present which was too immature to identify (trace amounts).

SOIL

Sampling Point: SP-01

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

Depth (inches)	Matrix		Redox Features					
	Color (moist)	%	Color (moist)	%	Type	Loc	Texture	Remarks
0-0.5	10YR 2/1	100					Clay	abundant fine roots
0.5-6	7.5YR 3/3	100					Clay	no redox features
6-12	7.5YR 3/3	100					Sand	no redox features

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

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

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

Indicators for Problematic Hydric Soils*:

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

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless distrubed or problematic.

Restrictive Layer (if present):

Type: N/A

Depth (inches):

Hydric Soil Present? **Yes** **No** X

Remarks:

No hydric soil indicators present; naturally problematic soils through all of Study Area. Top 0.5" very dark deposit from nearby ash piles.

HYDROLOGY

Wetland Hydrology Indicators:

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

	Surface Water (A1)		Salt Crust (B11)
	High Water Table (A2)	X	Biotic Crust (B12)
X	Saturation (A3)		Aquatic Invertebrates (B13)
	Water Marks (B1) (Nonriverine)		Hydrogen Sulflide Odor (C1)
	Sediment Deposits (B2) (Nonriverine)		Oxidized Rhizospheres along Living Roots (C3)
	Drift Deposits (B3) (Nonriverine)		Presence of Reduced Iron (C4)
	Surface Soil Cracks (B6)		Recent Iron Reduction in Tilled Soils (C6)
	Inundation Visible on Aerial (B7)		Thin Muck Surface (C7)
	Water Stained Leaves (B9)		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 (C9)
	Shallow Aquitard (D3)
	FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes		No	X	Depth (inches):
Water Table Present?	Yes		No	X	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	X	No		Depth (inches): 3

Wetland Hydrology Present? **Yes** X **No**

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

N/A

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site:	Lassen Co Facility	City/County:	Nubieber, Lassen County	Sampling Date:	4/29/2024
Applicant/Owner:	Golden State Natural Resources	State:	CA	Sampling Point:	SP-02
Investigator(s):	Rhiannon Korhummel, Rachel Miller	Section, Township, Range:	M, 37N 07E, 4		
Landform (hillslope, terrace, etc.):	terrace	Local relief (concave, convex, none):	convex	Slope (%):	2-3
Subregion (LRR):	C	Lat: 41.079468	Long: -121.180844	Datum:	WGS84
Soil Map Unit Name:	Bieber-Modoc complex, 0 to 5 percent slopes			NWI classification:	

Are climate / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed?

Are Vegetation ____, Soil X, or Hydrology ____ naturally problematic?

Are "Normal Circumstances present? Yes X No ____ (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 X	**Is the Samped Area within a Wetland?**
Hydric Soil Present?	Yes ____	No X	**Yes** ____ **No X**
Wetland Hydrology Present?	Yes ____	No X	

Remarks:

Upland delineation point paired with SP-01.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: ____)		Absolute % Cover	Dominant Species?	Indicator Status
1.				
2.				
3.				
4.				
			= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)				
1.				
2.				
3.				
4.				
5.				
			= Total Cover	
Herb Stratum (Plot size: 5' radius)				
1.	Poa secunda	15	Yes	FACU
2.	Poa bulbosa	15	Yes	FACU
3.	Collinsia heterophylla	5	No	FACU
4.	Draba verna	5	No	NL
5.	Elymus elymoides	t	No	NL
6.	Epilobium sp.	t	No	NL
7.	Holosteum umbellatum ssp. umbellatum	t	No	NL
8.	Viola beckwithii	t	No	NL
		40	= Total Cover	
Woody Vine Stratum (Plot size: ____)				
1.				
2.				
			= Total Cover	

% Bare Ground in Herb Stratum 60 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x1	0
FACW species	0	x2	0
FAC species	0	x3	0
FACU species	35	x4	140
UPL species	0	x5	0
Column Totals:	35 (A)		140 (B)

Prevalence Index = B/A = 4.00

Hydrophytic Vegetation Indicators:

____ Dominance Test is >50%

____ Prevalence Index is ≤3.0

____ Morphological Adaptations* (Provide supporting data in Remarks)

____ Problematic Hydrophytic Vegetation* (Explain)

*Requires indicators of hydric soil and wetland hydrology.

Hydrophytic Vegetation Present?

Yes ____ **No X**

Remarks:

Upland vegetation present above distinct vegetation boundary. Dead Artemisia tridentata woody debris in uplands.

SOIL

Sampling Point: SP-02

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

Depth (inches)	Matrix		Redox Features					
	Color (moist)	%	Color (moist)	%	Type	Loc	Texture	Remarks
0-12	7.5YR 2.5/2	100					Clay Loam	no redox features

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

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

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

Indicators for Problematic Hydric Soils*:

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

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless distrubed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? **Yes** **No** **X**

Remarks:

No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:

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

	Surface Water (A1)		Salt Crust (B11)		Water Marks (B1) (Riverine)
	High Water Table (A2)		Biotic Crust (B12)		Sediment Deposits (B2) (Riverine)
	Saturation (A3)		Aquatic Invertebrates (B13)		Drift Deposits (B3) (Riverine)
	Water Marks (B1) (Nonriverine)		Hydrogen Sulflide Odor (C1)		Drainage Patterns (B10)
	Sediment Deposits (B2) (Nonriverine)		Oxidized Rhizospheres along Living Roots (C3)		Dry-Season Water Table (C2)
	Drift Deposits (B3) (Nonriverine)		Presence of Reduced Iron (C4)		Crayfish Burrows (C8)
	Surface Soil Cracks (B6)		Recent Iron Reduction in Tilled Soils (C6)		Saturation Visible on Aerial (C9)
	Inundation Visible on Aerial (B7)		Thin Muck Surface (C7)		Shallow Aquitard (D3)
	Water Stained Leaves (B9)		Other (Explain in Remarks)		FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes		No	X	Depth (inches):
Water Table Present?	Yes		No	X	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes		No	X	Depth (inches):

Wetland Hydrology Present? **Yes** **No** **X**

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

N/A

Remarks:

No hydrology indicators observed.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site:	Lassen Co Facility	City/County:	Nubieber, Lassen County	Sampling Date:	4/29/2024
Applicant/Owner:	Golden State Natural Resources	State:	CA	Sampling Point:	SP-03
Investigator(s):	Rhiannon Korhummel, Rachel Miller	Section, Township, Range:	M, 38N 07E, 33		
Landform (hillslope, terrace, etc.):	terrace	Local relief (concave, convex, none):	none	Slope (%):	0-1
Subregion (LRR):	C	Lat: 41.082519	Long: -121.177709	Datum:	WGS84
Soil Map Unit Name:	Cupvar silty clay, 0 to 2 percent slopes			NWI classification:	

Are climate / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed?

Are Vegetation ____, Soil X, or Hydrology ____ naturally problematic?

Are "Normal Circumstances present? Yes X No ____ (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 X	**Is the Samped Area within a Wetland?**
Hydric Soil Present?	Yes ____	No X	**Yes** ____ **No X**
Wetland Hydrology Present?	Yes X	No ____	

Remarks:

Investigation delineation point in perennial grassland. Plant hummocks prevalent, especially around perennial species. Soil cracks prominent, but vegetation is not hydrophytic and no other hydrology indicators are present. Soil cracks indicative of Cupvar series soils and do not correlate with hydrology indicators.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: ____)		Absolute % Cover	Dominant Species?	Indicator Status
1.				
2.				
3.				
4.				
			= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)				
1.				
2.				
3.				
4.				
5.				
			= Total Cover	
Herb Stratum (Plot size: 5' radius)				
1.	Lomatium bicolor var. leptocarpum	50	Yes	FACU
2.	Trifolium beckwithii	5	No	FAC
3.	Poa bulbosa	1	No	FACU
4.	Microsteris gracilis	1	No	FACU
5.	Epilobium sp.	1	No	-
6.				
7.				
8.				
		60	= Total Cover	
Woody Vine Stratum (Plot size: ____)				
1.				
2.				
			= Total Cover	

% Bare Ground in Herb Stratum 40 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x1	0
FACW species	0	x2	0
FAC species	5	x3	15
FACU species	52	x4	208
UPL species	1	x5	5
Column Totals:	58		228
	(A)		(B)

Prevalence Index = B/A = 3.93

Hydrophytic Vegetation Indicators:

____ Dominance Test is >50%

____ Prevalence Index is ≤3.0

____ Morphological Adaptations* (Provide supporting data in Remarks)

____ Problematic Hydrophytic Vegetation* (Explain)

*Requires indicators of hydric soil and wetland hydrology.

Hydrophytic Vegetation Present?

Yes ____ **No X**

Remarks:

Aster sp. present but too immature to ID (2% absolute cover).

SOIL

Sampling Point: SP-03

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

Depth (inches)	Matrix		Redox Features					
	Color (moist)	%	Color (moist)	%	Type	Loc	Texture	Remarks
0-12	5YR 3/2	100					Clay	no redox features

Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

Location: PL=Pore Lining, M=Matrix.

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

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

Indicators for Problematic Hydric Soils*:

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

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless distrubed or problematic.

Restrictive Layer (if present):

Type: N/A

Depth (inches):

Hydric Soil Present? **Yes** **No** **X**

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

	Surface Water (A1)		Salt Crust (B11)		Water Marks (B1) (Riverine)
	High Water Table (A2)		Biotic Crust (B12)		Sediment Deposits (B2) (Riverine)
	Saturation (A3)		Aquatic Invertebrates (B13)		Drift Deposits (B3) (Riverine)
	Water Marks (B1) (Nonriverine)		Hydrogen Sulflide Odor (C1)		Drainage Patterns (B10)
	Sediment Deposits (B2) (Nonriverine)		Oxidized Rhizospheres along Living Roots (C3)		Dry-Season Water Table (C2)
	Drift Deposits (B3) (Nonriverine)		Presence of Reduced Iron (C4)		Crayfish Burrows (C8)
X	Surface Soil Cracks (B6)		Recent Iron Reduction in Tilled Soils (C6)		Saturation Visible on Aerial (C9)
	Inundation Visible on Aerial (B7)		Thin Muck Surface (C7)		Shallow Aquitard (D3)
	Water Stained Leaves (B9)		Other (Explain in Remarks)		FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes		No	x	Depth (inches):
Water Table Present?	Yes		No	x	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes		No	x	Depth (inches):

Wetland Hydrology Present? **Yes** **X** **No**

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

Remarks:

Surface soil cracks present, but no hydrophytic vegetation or hydric soil indicators. Soil cracks indicative of Cupvar series soil rather than hydrology.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site:	Lassen Co Facility	City/County:	Nubieber, Lassen County	Sampling Date:	4/29/2024
Applicant/Owner:	Golden State Natural Resources	State:	CA	Sampling Point:	SP-04
Investigator(s):	Rhiannon Korhummel, Rachel Miller	Section, Township, Range:	M, 38N 07E, 33		
Landform (hillslope, terrace, etc.):	terrace	Local relief (concave, convex, none):	none	Slope (%):	0-2
Subregion (LRR):	C	Lat: 41.082406	Long: -121.174946	Datum:	WGS84
Soil Map Unit Name:	Cupvar silty clay, 0 to 2 percent slopes			NWI classification:	

Are climate / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed?

Are Vegetation ____, Soil X, or Hydrology ____ naturally problematic?

Are "Normal Circumstances present? Yes X No ____ (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 X	**Is the Samped Area within a Wetland?**
Hydric Soil Present?	Yes ____	No X	**Yes** ____ **No X**
Wetland Hydrology Present?	Yes X	No ____	

Remarks:

Investigative pt w/i ARTDOV stand. Less hammocking present than in RK01.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: ____)		Absolute % Cover	Dominant Species?	Indicator Status
1.				
2.				
3.				
4.				
			= Total Cover	
Sapling/Shrub Stratum (Plot size: 10' radius)				
1.	Artemisia tridentata	5		No
2.				
3.				
4.				
5.				
		5	= Total Cover	
Herb Stratum (Plot size: 5' radius)				
1.	Lomatium bicolor var. leptocarpum	20	Yes	FACU
2.	Elymus caput-medusae	10	Yes	NL
3.	Poa bulbosa	5	No	-
4.	Trifolium beckwithii	2	No	NL
5.	Collinsia heterophylla	2	No	
6.	Artemisia tridentata	1	No	No
7.	Epilobium sp.	1	No	-
8.	Elymus triticoides	1	No	FAC
		50	= Total Cover	
Woody Vine Stratum (Plot size: ____)				
1.				
2.				
			= Total Cover	

% Bare Ground in Herb Stratum 50 % Cover of Biotic Crust

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: ____ (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x1	0
FACW species	0	x2	0
FAC species	1	x3	3
FACU species	20	x4	80
UPL species	6	x5	30
Column Totals:	27 (A)		113 (B)

Prevalence Index = B/A = 4.19

Hydrophytic Vegetation Indicators:

____ Dominance Test is >50%

____ Prevalence Index is ≤3.0

____ Morphological Adaptations* (Provide supporting data in Remarks)

____ Problematic Hydrophytic Vegetation* (Explain)

*Requires indicators of hydric soil and wetland hydrology.

Hydrophytic Vegetation Present?

Yes ____ **No X**

Remarks:

Aster sp. (too immature to identify - basal leaves only) 5%
Asteraceae sp. NIF 2%
Holocarpha sp. NIF 1%

SOIL

Sampling Point: SP-04

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

Depth (inches)	Matrix		Redox Features					
	Color (moist)	%	Color (moist)	%	Type	Loc	Texture	Remarks
0-12	10YR 3/2	100					Clay	no redox features

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

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

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

Indicators for Problematic Hydric Soils*:

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

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless distrubed or problematic.

Restrictive Layer (if present):

Type: N/A

Depth (inches):

Hydric Soil Present? **Yes** **No** **X**

Remarks:

Roots in top 6".

HYDROLOGY

Wetland Hydrology Indicators:

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

	Surface Water (A1)		Salt Crust (B11)
	High Water Table (A2)		Biotic Crust (B12)
	Saturation (A3)		Aquatic Invertebrates (B13)
	Water Marks (B1) (Nonriverine)		Hydrogen Sulflide Odor (C1)
	Sediment Deposits (B2) (Nonriverine)		Oxidized Rhizospheres along Living Roots (C3)
	Drift Deposits (B3) (Nonriverine)		Presence of Reduced Iron (C4)
X	Surface Soil Cracks (B6)		Recent Iron Reduction in Tilled Soils (C6)
	Inundation Visible on Aerial (B7)		Thin Muck Surface (C7)
	Water Stained Leaves (B9)		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 (C9)
	Shallow Aquitard (D3)
	FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes		No	X	Depth (inches):
Water Table Present?	Yes		No	X	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes		No	X	Depth (inches):

Wetland Hydrology Present? **Yes** **X** **No**

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

Remarks:

Soil surface cracks as in SP-03, indicative of Cupvar series soils only. No other hydrology indicators present.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site:	Lassen Co Facility	City/County:	Nubieber, Lassen County	Sampling Date:	4/29/24
Applicant/Owner:	Golden State Natural Resources	State:	CA	Sampling Point:	SP-05
Investigator(s):	Rhiannon Korhummel, Rachel Miller	Section, Township, Range:	M, 38N 07E, 33		
Landform (hillslope, terrace, etc.):	terrace	Local relief (concave, convex, none):	concave	Slope (%):	0-2
Subregion (LRR):	C	Lat: 41.08467	Long: -121.174695	Datum:	WGS84
Soil Map Unit Name:	Cupvar silty clay, 0 to 2 percent slopes			NWI classification:	

Are climate / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed?

Are Vegetation ____, Soil X, or Hydrology ____ naturally problematic?

Are "Normal Circumstances present? Yes X No ____ (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 X	No ____	**Is the Samped Area within a Wetland?**
Hydric Soil Present?	Yes ____	No X	**Yes X** **No ____**
Wetland Hydrology Present?	Yes X	No ____	

Remarks:

Investigative delineation point within obvious wetland ditch. Hydrologically connected to Bull Run Slough to east. No hydric soil indicators observed despite emergent hydrophytic vegetation and surface water presence.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: ____)		Absolute % Cover	Dominant Species?	Indicator Status
1.				
2.				
3.				
4.				
			= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)				
1.				
2.				
3.				
4.				
5.				
			= Total Cover	
Herb Stratum (Plot size: 5' radius)				
1.	Eleocharis macrostachya	20	Yes	OBL
2.	Rumex sp.	2	No	-
3.	Eryngium sp.	2	No	-
4.	Myosurus minimus	1	No	OBL
5.	Camassia quamash ssp. breviflora	t	No	FACW
6.	Trifolium beckwithii	t	No	FAC
7.				
8.				
		50	= Total Cover	
Woody Vine Stratum (Plot size: ____)				
1.				
2.				
			= Total Cover	

% Bare Ground in Herb Stratum 50 % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	21	x1	21
FACW species	0	x2	0
FAC species	0	x3	0
FACU species	0	x4	0
UPL species	4	x5	20
Column Totals:	25 (A)		41 (B)

Prevalence Index = B/A = 1.64

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0

____ Morphological Adaptations* (Provide supporting data in Remarks)

____ Problematic Hydrophytic Vegetation* (Explain)

*Requires indicators of hydric soil and wetland hydrology.

Hydrophytic Vegetation Present?

Yes X **No ____**

Remarks:

Many young shoots too small to ID (20%) and Rumex sp. NIF (5%).

SOIL Sampling Point: SP-05

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

Depth (inches)	Matrix		Redox Features					
	Color (moist)	%	Color (moist)	%	Type	Loc	Texture	Remarks
0-0.5	10YR 2/1	100					Clay	black surface layer
0.5-6	10YR 3/2	100					Clay	no redox features

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

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

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

Indicators for Problematic Hydric Soils*:

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

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless distrubed or problematic.

Restrictive Layer (if present):

Type: N/A

Depth (inches):

Hydric Soil Present? **Yes** **No** x

Remarks:

Black surface layer of deposited black ash dumped on site. No redox features or other hydric soil indicators, despite obvious hydrophytic vegetation and hydrology indicators.

HYDROLOGY

Wetland Hydrology Indicators:

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

				Secondary Indicators (2 or more required)	
X	Surface Water (A1)		Salt Crust (B11)		Water Marks (B1) (Riverine)
X	High Water Table (A2)		Biotic Crust (B12)		Sediment Deposits (B2) (Riverine)
X	Saturation (A3)	X	Aquatic Invertebrates (B13)		Drift Deposits (B3) (Riverine)
	Water Marks (B1) (Nonriverine)		Hydrogen Sulflide Odor (C1)		Drainage Patterns (B10)
	Sediment Deposits (B2) (Nonriverine)		Oxidized Rhizospheres along Living Roots (C3)		Dry-Season Water Table (C2)
	Drift Deposits (B3) (Nonriverine)		Presence of Reduced Iron (C4)		Crayfish Burrows (C8)
	Surface Soil Cracks (B6)		Recent Iron Reduction in Tilled Soils (C6)		Saturation Visible on Aerial (C9)
	Inundation Visible on Aerial (B7)		Thin Muck Surface (C7)		Shallow Aquitard (D3)
	Water Stained Leaves (B9)		Other (Explain in Remarks)		FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	X	No		Depth (inches):	0
Water Table Present?	Yes	X	No		Depth (inches):	5
Saturation Present? (includes capillary fringe)	Yes	X	No		Depth (inches):	0

Wetland Hydrology Present? **Yes** X **No**

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

N/A

Remarks:

Aquatic inverts swimming in surface water.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site:	Lassen Co Facility	City/County:	Nubieber, Lassen County	Sampling Date:	4/28/2024
Applicant/Owner:	Golden State Natural Resources	State:	CA	Sampling Point:	SP-06
Investigator(s):	Rhiannon Korhummel	Section, Township, Range:	M, 38N 07E, 33		
Landform (hillslope, terrace, etc.):		Local relief (concave, convex, none):		Slope (%):	
Subregion (LRR):	C	Lat: 41.083307	Long: 121.179437	Datum:	WGS84
Soil Map Unit Name:	Bieber-Modoc complex, 0 to 5 percent slopes			NWI classification:	

Are climate / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed?

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic?

Are "Normal Circumstances present? Yes ____ No ____ (if needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ____	**Is the Samped Area within a Wetland?**
Hydric Soil Present?	Yes ____	No ____	**Yes** ____ **No** X
Wetland Hydrology Present?	Yes X	No ____	

Remarks:

Area where grass hummocks present. Smooth sediment on surface of soil. Bare/low vegetation present between grass hummocks.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: ____)		Absolute % Cover	Dominant Species?	Indicator Status
1.				
2.				
3.				
4.				
			= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)				
1.				
2.				
3.				
4.				
5.				
			= Total Cover	
Herb Stratum (Plot size: 5')				
1.	Poa bulbosa	25	Yes	FACU
2.				
3.	Microsteris gracilis	10	Yes	FACU
4.	Collinsia heterophylla	1	No	-
5.	Draba verna	1	No	-
6.		1	No	
7.				
8.				
		38	= Total Cover	
Woody Vine Stratum (Plot size: ____)				
1.				
2.				
			= Total Cover	

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x1	0
FACW species	0	x2	0
FAC species	0	x3	0
FACU species	35	x4	140
UPL species	2	x5	10
Column Totals:	37 (A)		150 (B)

Prevalence Index = B/A = 4.05

Hydrophytic Vegetation Indicators:

____ Dominance Test is >50%

____ Prevalence Index is ≤3.0

____ Morphological Adaptations* (Provide supporting data in Remarks)

____ Problematic Hydrophytic Vegetation* (Explain)

*Requires indicators of hydric soil and wetland hydrology.

Hydrophytic Vegetation Present?

Yes ____ **No** X

Remarks:

SOIL Sampling Point: SP-06

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

Depth (inches)	Matrix		Redox Features					
	Color (moist)	%	Color (moist)	%	Type	Loc	Texture	Remarks
0-8	10YR 3/2	100					Silty Clay	no redox features
12-Aug	7.5YR 3/3	100					Clay	no redox features

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

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

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

Indicators for Problematic Hydric Soils*:

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

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless distrubed or problematic.

Restrictive Layer (if present):

Type: NA

Depth (inches):

Hydric Soil Present? **Yes** **No** **X**

Remarks:

No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:

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

				Secondary Indicators (2 or more required)	
	Surface Water (A1)		Salt Crust (B11)		Water Marks (B1) (Riverine)
	High Water Table (A2)		Biotic Crust (B12)		Sediment Deposits (B2) (Riverine)
	Saturation (A3)		Aquatic Invertebrates (B13)		Drift Deposits (B3) (Riverine)
	Water Marks (B1) (Nonriverine)		Hydrogen Sulflide Odor (C1)		Drainage Patterns (B10)
X	Sediment Deposits (B2) (Nonriverine)		Oxidized Rhizospheres along Living Roots (C3)		Dry-Season Water Table (C2)
	Drift Deposits (B3) (Nonriverine)		Presence of Reduced Iron (C4)		Crayfish Burrows (C8)
X	Surface Soil Cracks (B6)		Recent Iron Reduction in Tilled Soils (C6)		Saturation Visible on Aerial (C9)
	Inundation Visible on Aerial (B7)		Thin Muck Surface (C7)		Shallow Aquitard (D3)
	Water Stained Leaves (B9)		Other (Explain in Remarks)		FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes		No	X	Depth (inches):
Water Table Present?	Yes		No	X	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes		No	X	Depth (inches):

Wetland Hydrology Present? **Yes** **X** **No**

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

N/A

Remarks:

Soil cracks present, indicative of Cupvar series soils and not indicative of hydrology. No layering on top surface.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site:	Lassen Co Facility	City/County:	Nubieber, Lassen County	Sampling Date:	4/1/2924
Applicant/Owner:	Golden State Natural Resources	State:	CA	Sampling Point:	SP-07
Investigator(s):	Rachel Miller	Section, Township, Range:	M, 37N 07E, 4		
Landform (hillslope, terrace, etc.):	terrace	Local relief (concave, convex, none):	none	Slope (%):	0-2
Subregion (LRR):	C	Lat: 41.079396	Long: -121.169964	Datum:	WGS84
Soil Map Unit Name:	Cupvar silty clay, 0 to 2 percent slopes			NWI classification:	

Are climate / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____ , Soil ____ , or Hydrology ____ significantly disturbed?

Are Vegetation ____ , Soil X , or Hydrology ____ naturally problematic?

Are "Normal Circumstances present? Yes X No ____ (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 X	No ____	**Is the Samped Area within a Wetland?**
Hydric Soil Present?	Yes ____	No X	**Yes X** **No ____**
Wetland Hydrology Present?	Yes X	No ____	

Remarks:

Wetland delineation point, taken within slight depression dominated by facultative hydrophytic vegetation. Naturally problematic soils are present within seasonal wetland, as on the remainder of the site. See report section 4.1.5.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: ____)		Absolute % Cover	Dominant Species?	Indicator Status
1.				
2.				
3.				
4.				
			= Total Cover	
Sapling/Shrub Stratum (Plot size: 10')				
1.	Artemisia tridentata	4	Yes	NL
2.				
3.				
4.				
5.				
		4	= Total Cover	
Herb Stratum (Plot size: 5')				
1.	Rumex crispus	10	Yes	FAC
2.	Poa bulbosa	10	Yes	FACU
3.	Alopecurus pratensis	7	Yes	FACW
4.	Lepidium appelianum	3	No	UPL
5.	Lomatium bicolor var. leptocarpum	3	No	FACU
6.	Ranunculus occidentalis	3	No	FAC
7.	Microsteris gracilis	2	No	FACU
8.	Lactuca serriola	2	No	FACU
		40	= Total Cover	
Woody Vine Stratum (Plot size: 10' radius)				
1.				
2.				
			= Total Cover	

% Bare Ground in Herb Stratum % Cover of Biotic Crust

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x1	0
FACW species	7	x2	14
FAC species	13	x3	39
FACU species	17	x4	68
UPL species	3	x5	15
Column Totals:	40 (A)		136 (B)

Prevalence Index = B/A = 3.40

Hydrophytic Vegetation Indicators:

- ____ Dominance Test is >50%
- ____ Prevalence Index is ≤3.0
- ____ Morphological Adaptations* (Provide supporting data in Remarks)
- X Problematic Hydrophytic Vegetation* (Explain)

*Requires indicators of hydric soil and wetland hydrology.

Hydrophytic Vegetation Present?

Yes X **No ____**

Remarks:

Marginal FAC vegetation dominated by immature and small Rumex (likely R. crispus) within slight depression in otherwise flat terrace. As early-season vegetation matures, the Rumex cover is expected to increase.

SOIL

Sampling Point: SP-07

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type	Loc	Texture	Remarks
0-1	7.5YR 2.1/1	100					Clay	deposited ash
1-12	7.5YR 3/2	100					Clay	no redox features

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

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

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

Indicators for Problematic Hydric Soils*:

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

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless distrubed or problematic.

Restrictive Layer (if present):

Type: N/A

Depth (inches):

Hydric Soil Present? **Yes** **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

	Surface Water (A1)		Salt Crust (B11)		Water Marks (B1) (Riverine)
	High Water Table (A2)		Biotic Crust (B12)		Sediment Deposits (B2) (Riverine)
X	Saturation (A3)		Aquatic Invertebrates (B13)		Drift Deposits (B3) (Riverine)
	Water Marks (B1) (Nonriverine)		Hydrogen Sulflide Odor (C1)		Drainage Patterns (B10)
	Sediment Deposits (B2) (Nonriverine)		Oxidized Rhizospheres along Living Roots (C3)		Dry-Season Water Table (C2)
	Drift Deposits (B3) (Nonriverine)		Presence of Reduced Iron (C4)		Crayfish Burrows (C8)
	Surface Soil Cracks (B6)		Recent Iron Reduction in Tilled Soils (C6)		Saturation Visible on Aerial (C9)
	Inundation Visible on Aerial (B7)		Thin Muck Surface (C7)		Shallow Aquitard (D3)
	Water Stained Leaves (B9)		Other (Explain in Remarks)		FAC-Neutral Test (D5)

Secondary Indicators (2 or more required)

Field Observations:

Surface Water Present?	Yes		No	X	Depth (inches):
Water Table Present?	Yes		No	X	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	X	No		Depth (inches): 8

Wetland Hydrology Present? **Yes** X **No**

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

Remarks:

Slight depression likely accepts surface flow and ground flow from field to west and drains into ditch to the east.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site:	Lassen Co Facility	City/County:	Nubieber, Lassen County	Sampling Date:	4/29/2024
Applicant/Owner:	Golden State Natural Resources	State:	CA	Sampling Point:	SP-08
Investigator(s):	Rachel Miller	Section, Township, Range:	M, 37N 07E, 4		
Landform (hillslope, terrace, etc.):	terrace	Local relief (concave, convex, none):	convex	Slope (%):	0-2
Subregion (LRR):	C	Lat: 41.078331	Long: -121.169967	Datum:	WGS84
Soil Map Unit Name:	Cupvar silty clay, 0 to 2 percent slopes			NWI classification:	

Are climate / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed?

Are Vegetation ____, Soil X, or Hydrology ____ naturally problematic?

Are "Normal Circumstances present? Yes X No ____ (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 x	**Is the Samped Area within a Wetland?**
Hydric Soil Present?	Yes ____	No x	**Yes** ____ **No X**
Wetland Hydrology Present?	Yes ____	No x	

Remarks:

Ash deposit as top layer of soil. Upland species (Artemisia tridentata, Elymus caput-medusae) more prevalent than in adjacent wetland.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: ____)		Absolute % Cover	Dominant Species?	Indicator Status
1.				
2.				
3.				
4.				
			= Total Cover	
Sapling/Shrub Stratum (Plot size: 10' radius)				
1.	Artemisia tridentata	20	Yes	NL
2.				
3.				
4.				
5.				
		20	= Total Cover	
Herb Stratum (Plot size: 5' radius)				
1.	Elymus caput-medusae	40	Yes	NL
2.	Poa bulbosa	5	No	FACU
3.	Lepidium appelianum	2	No	UPL
4.	Trifolium beckwithii	2	No	FAC
5.	Rumex sp.	1	No	FAC
6.	Acmispon sp.	t	No	-
7.				
8.				
		50	= Total Cover	
Woody Vine Stratum (Plot size: ____)				
1.				
2.				
			= Total Cover	

% Bare Ground in Herb Stratum 30 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x1	0
FACW species	0	x2	0
FAC species	3	x3	9
FACU species	5	x4	20
UPL species	2	x5	10
Column Totals:	10 (A)		39 (B)

Prevalence Index = B/A = 3.90

Hydrophytic Vegetation Indicators:

____ Dominance Test is >50%

____ Prevalence Index is ≤3.0

____ Morphological Adaptations* (Provide supporting data in Remarks)

____ Problematic Hydrophytic Vegetation* (Explain)

*Requires indicators of hydric soil and wetland hydrology.

Hydrophytic Vegetation Present?

Yes ____ **No X**

Remarks:

Dense thatch buildup of Elymus caput-medusae. Rumex sp. and Acmispon sp. too immature to identify to species.

SOIL

Sampling Point: SP-08

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

Depth (inches)	Matrix		Redox Features					
	Color (moist)	%	Color (moist)	%	Type	Loc	Texture	Remarks
0-2	7.5YR 2.1/1	100					Silty Clay	ash debris
2-6	7.5YR 2.1/1	50					Silty Clay	ash debris
	7.5YR 3/2	50					Clay	no redox features
6-14	7.5YR 3/2	100					Clay	no redox features

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

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

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

Indicators for Problematic Hydric Soils*:

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

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless distrubed or problematic.

Restrictive Layer (if present):

Type: N/A

Depth (inches):

Hydric Soil Present? **Yes** **No** **X**

Remarks:

Deposited ash debris on top soil layer, slightly mixed (2-6"), then native clay soil below 6". No redox or hydric soil indicators.

HYDROLOGY

Wetland Hydrology Indicators:

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

	Surface Water (A1)		Salt Crust (B11)
	High Water Table (A2)		Biotic Crust (B12)
	Saturation (A3)		Aquatic Invertebrates (B13)
	Water Marks (B1) (Nonriverine)		Hydrogen Sulflide Odor (C1)
	Sediment Deposits (B2) (Nonriverine)		Oxidized Rhizospheres along Living Roots (C3)
	Drift Deposits (B3) (Nonriverine)		Presence of Reduced Iron (C4)
	Surface Soil Cracks (B6)		Recent Iron Reduction in Tilled Soils (C6)
	Inundation Visible on Aerial (B7)		Thin Muck Surface (C7)
	Water Stained Leaves (B9)		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 (C9)
	Shallow Aquitard (D3)
	FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes		No	X	Depth (inches):
Water Table Present?	Yes		No	X	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes		No	X	Depth (inches):

Wetland Hydrology Present? **Yes** **No** **X**

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

N/A

Remarks:

No saturation present.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site:	Lassen Co Facility	City/County:	Nubieber, Lassen County	Sampling Date:	4/29/2024
Applicant/Owner:	Golden State Natural Resources	State:	CA	Sampling Point:	SP-09
Investigator(s):	Rachel Miller	Section, Township, Range:	M, 37N 07E, 4		
Landform (hillslope, terrace, etc.):	terrace	Local relief (concave, convex, none):	none	Slope (%):	0-2
Subregion (LRR):	C	Lat: 41.078258	Long: -121.169887	Datum:	WGS84
Soil Map Unit Name:	Cupvar silty clay, 0 to 2 percent slopes			NWI classification:	

Are climate / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed?

Are Vegetation ____, Soil X, or Hydrology ____ naturally problematic?

Are "Normal Circumstances present? Yes X No ____ (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 X	No ____	**Is the Samped Area within a Wetland?**
Hydric Soil Present?	Yes ____	No X	**Yes X** **No ____**
Wetland Hydrology Present?	Yes X	No ____	

Remarks:

Facultative hydrophytic vegetation dominated by Juncus mexicanus, within slight depression.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: ____)		Absolute % Cover	Dominant Species?	Indicator Status
1.				
2.				
3.				
4.				
			= Total Cover	
Sapling/Shrub Stratum (Plot size: 10' radius)				
1.	Artemisia tridentata	3	No	NL
2.				
3.				
4.				
5.				
		3	= Total Cover	
Herb Stratum (Plot size: 5' radius)				
1.	Juncus mexicanus	30	Yes	FACW
2.	Poa bulbosa	2	No	FACU
3.	Rumex sp.	1	No	-
4.	Lomatium bicolor var. leptocarpum	1	No	FACU
5.	Alopecurus pratensis	1	No	FACW
6.				
7.				
8.				
		35	= Total Cover	
Woody Vine Stratum (Plot size: ____)				
1.				
2.				
			= Total Cover	

% Bare Ground in Herb Stratum 30 % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x1	0
FACW species	31	x2	62
FAC species	0	x3	0
FACU species	3	x4	12
UPL species	1	x5	5
Column Totals:	35 (A)		79 (B)

Prevalence Index = B/A = 2.26

Hydrophytic Vegetation Indicators:

____ Dominance Test is >50%

X Prevalence Index is ≤3.0

____ Morphological Adaptations* (Provide supporting data in Remarks)

____ Problematic Hydrophytic Vegetation* (Explain)

*Requires indicators of hydric soil and wetland hydrology.

Hydrophytic Vegetation Present?

Yes X **No ____**

Remarks:

Very young Poaceae sp. shoots present (5% cover), thatch covers 30% of bare ground

SOIL

Sampling Point: SP-09

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

Depth (inches)	Matrix		Redox Features					
	Color (moist)	%	Color (moist)	%	Type	Loc	Texture	Remarks
0-3	7.5YR 2.1/1	100					Silty Clay	ash debris deposit
3-4	7.5YR 2.1/1	50					Silty Clay	ash debris deposit
	7.5YR 3/2	50					Clay	no redox features
4-14	7.5YR 3/2	100					Clay	no redox features

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

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

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

Indicators for Problematic Hydric Soils*:

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

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless distrubed or problematic.

Restrictive Layer (if present):

Type: N/A

Depth (inches):

Hydric Soil Present? **Yes** **No** X

Remarks:

Deposited ash layer makes up top 3 inches of soil, underlain by mixed ash and native clay to 4 inches, then native clay soils below. No hydric soil indicators despite hydrophytic vegetation and hydrology indicators.

HYDROLOGY

Wetland Hydrology Indicators:

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

				Secondary Indicators (2 or more required)	
	Surface Water (A1)		Salt Crust (B11)		Water Marks (B1) (Riverine)
X	High Water Table (A2)		Biotic Crust (B12)		Sediment Deposits (B2) (Riverine)
X	Saturation (A3)		Aquatic Invertebrates (B13)		Drift Deposits (B3) (Riverine)
	Water Marks (B1) (Nonriverine)		Hydrogen Sulflide Odor (C1)		Drainage Patterns (B10)
	Sediment Deposits (B2) (Nonriverine)		Oxidized Rhizospheres along Living Roots (C3)		Dry-Season Water Table (C2)
	Drift Deposits (B3) (Nonriverine)		Presence of Reduced Iron (C4)		Crayfish Burrows (C8)
	Surface Soil Cracks (B6)		Recent Iron Reduction in Tilled Soils (C6)		Saturation Visible on Aerial (C9)
	Inundation Visible on Aerial (B7)		Thin Muck Surface (C7)		Shallow Aquitard (D3)
	Water Stained Leaves (B9)		Other (Explain in Remarks)		FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes		No	X	Depth (inches):	
Water Table Present?	Yes	X	No		Depth (inches):	14
Saturation Present? (includes capillary fringe)	Yes	X	No		Depth (inches):	12

Wetland Hydrology Present? **Yes** X **No**

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

N/A

Remarks:

Obvious high water table and saturation present.

APPENDIX C. STUDY AREA PHOTOGRAPHS

Attachment C. Study Area Photographs

Photo 1. Overview of the Study Area, showing flat topography and perennial grassland. Facing southeast; photo taken on April 29, 2024.

Photo 2. Black ash deposited along the Study Area western border. A thin surface layer of deposited ash is present throughout much of the Study Area. Facing northwest; photo taken April 29, 2024.

Attachment C. Study Area Photographs

Photo 4. Historical aerial imagery showing black ash deposited within and immediately north of Study Area. Google Earth Aerial Imagery; photo taken August 12, 2023.

Photo 4. Historical aerial imagery showing black ash deposited in southeastern portion of the Study Area and aerial signature of seasonal wetland SW-01 in northern Study Area. Google Earth Aerial Imagery; photo taken July 3, 2014.

Attachment C. Study Area Photographs

Photo 5. Hydrophytic vegetation within seasonal wetland swale SWS-01, at delineation point SP-01, dominated by little mousetail and slender phlox. Photo taken April 29, 2024.

Photo 6. Representative soils within seasonal wetland swale, at delineation point SP-01, showing thin surface layer of black deposited ash underlain by dark brown clay with no redox features. Photo taken April 29, 2024.

Photo 7. Delineation point SP-01, within seasonal wetland swale SWS-01, showing linear depression and vegetation boundary. Backpacks on adjacent uplands. Facing east; photo taken April 29, 2024.

Photo 8. Upland delineation point SP-03. Representative upland perennial grassland dominated by slender-fruited lomatium (FACU) with Great Basin violet (NL). Facing south; photo taken April 29, 2024.

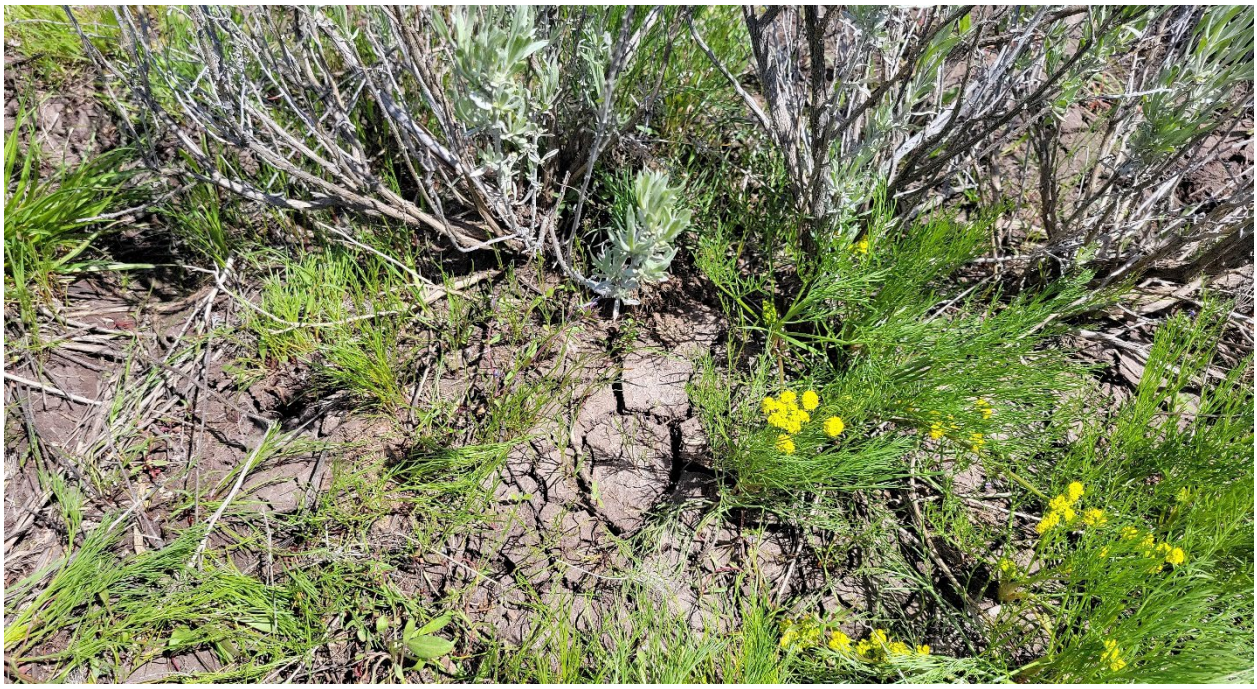


Photo 9. Surface soil cracks within uplands in the *Cupvar series* soil mapping unit. Upland vegetation is present within dry soils, including common sagebrush (NL) and slender-fruited lomatium (NL). Photo taken April 29, 2024.

Photo 10. Delineation point SP-09 within seasonal wetland (SW-07) dominated by Mexican rush within slight depression. Uplands in background with common sagebrush. Facing west; photo taken April 29, 2024.

Photo 11. High water table present in seasonal wetland (SW-07) at delineation point SP-09. Photo taken April 29, 2024.

Photo 12. Delineation point SP-05, within representative wetland ditch dominated by spike rush, with coyote thistle, little mousetail, and small camas. Facing south; photo taken April 29, 2024.

Photo 13. High water table present in wetland ditch at delineation point SP-05. Despite obvious hydrophytic vegetation and hydrology indicators, no hydric soil indicators were observed. Photo taken April 29, 2024.

Photo 14. View from Babcock Road, showing off-site ditch and culvert under railway line, providing hydrological connection to Bull Run Slough, and beyond, to the Pit River and Shasta Lake. Facing east; photo taken April 30, 2024.

APPENDIX D.
PLANT SPECIES OBSERVED WITHIN THE STUDY AREA

Appendix D. Plant Species Observed within the Study Area During the Delineation Survey on April 29-30, 2024

SCIENTIFIC NAME	COMMON NAME	ORIGIN	FORM	RARITY STATUS[1]	CAL-IPC STATUS[2]	WETLAND STATUS[3]
Acmispon sp.	-	-	-	-	-	-
Alopecurus pratensis	Meadow foxtail	non-native	perennial grass	-	Watch	FACW
Artemisia tridentata	Common sagebrush	native	shrub	-	-	-
Balsamorhiza sp.	-	-	-	-	-	-
Camassia quamash ssp. *breviflora*	Small camas	native	perennial herb	-	-	FACW
Collinsia heterophylla	Chinese houses	native	annual herb	-	-	-
Draba verna	Whitlow grass	native	annual herb	-	-	-
Eleocharis macrostachya	Spike rush	native	perennial grasslike herb	-	-	OBL
Elymus caput-medusae	Medusa head	non-native (invasive)	annual grass	-	High	-
Elymus elymoides	Squirrel tail grass	native	perennial grass	-	-	FACU
Elymus triticoides	Beardless wild rye	native	perennial grass	-	-	FAC
Epilobium sp.	-	-	-	-	-	-
Eryngium sp.	-	-	-	-	-	-
Holocarpha sp.	-	-	-	-	-	-
Holosteum umbellatum ssp. *umbellatum*	Jagged chickweed	non-native	annual herb	-	-	-
Juncus mexicanus	Mexican rush	native	perennial grasslike herb	-	-	FACW
Lactuca serriola	Prickly lettuce	non-native	annual herb	-	-	FACU
Lepidium appelianum	Hairy whitetop	non-native (invasive)	perennial herb	-	Limited	UPL
Lomatium bicolor var. *leptocarpum*	Slender fruited lomatium	native	perennial herb	-	-	FACU
Microsteris gracilis	Slender phlox	native	annual herb	-	-	FACU
Montia linearis	Narrow leaved water chickweed	native	annual herb	-	-	FAC
Myosurus minimus	Little mousetail	native	annual herb	-	-	OBL
Poa bulbosa	Bulbous blue grass	non-native	perennial grass	-	-	FACU
Poa secunda	Pine bluegrass	native	perennial grass	-	-	FACU
Ranunculus occidentalis	Western buttercup	native	perennial herb	-	-	FAC
Rumex crispus	Curly dock	non-native (invasive)	perennial herb	-	Limited	FAC
Trifolium beckwithii	Beckwith's clover	native	perennial herb	-	-	FAC
Trifolium macrocephalum	Big headed clover	native	perennial herb	-	-	FACU
Viola beckwithii	Great Basin violet	native	perennial herb	-	-	-

Appendix D. Plant Species Observed within the Study Area During the Delineation Survey on April 29-30, 2024

Note: All species identified using the *Jepson eFlora* [Jepson Flora Project (eds.) 2024]; nomenclature follows *Jepson eFlora* [Jepson Flora Project (eds.) 2024] or Rare Plant Inventory (CNPS 2024). Sp.: "species," intended to indicate that the observer was confident in the identity of the genus but uncertain which species.

[1] **California Native Plant Society. 2024. Rare Plant Inventory (online edition, v9.5). Sacramento, California. Online at: http://rareplants.cnps.org/; most recently accessed: May 2024.**

FE:	Federal Endangered
FT:	Federal Threatened
SE:	State Endangered
ST:	State Threatened
SR:	State Rare
Rank 1A:	Plants presumed extinct in California
Rank 1B:	Plants rare, threatened, or endangered in California and elsewhere
Rank 2:	Plants rare, threatened, or endangered in California, but more common elsewhere
Rank 3:	Plants about which we need more information – a review list
Rank 4:	Plants of limited distribution – a watch list

[2] **California Invasive Plant Council. 2024. California Invasive Plant Inventory Database. California Invasive Plant Council, Berkeley, CA. Online at: http://www.cal-ipc.org/paf/; most recently accessed: April 2024.**

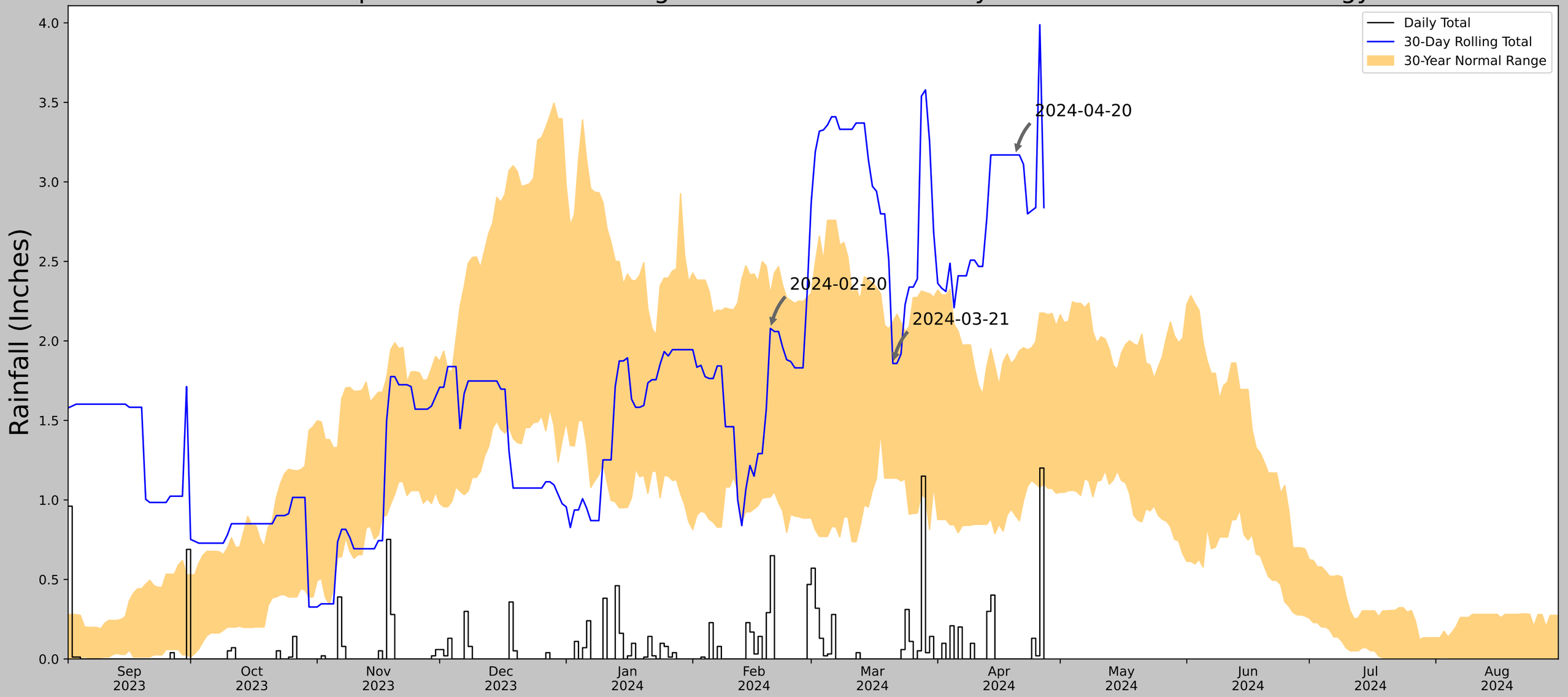
High:	Severe ecological impacts; high rates of dispersal and establishment; most are widely distributed ecologically.
Moderate:	Substantial and apparent ecological impacts; moderate-high rates of dispersal, establishment dependent on disturbance; limited-moderate distribution ecologically
Limited:	Minor or not well documented ecological impacts; low-moderate rate of invasiveness; limited distribution ecologically
Assessed:	Assessed by Cal-IPC and determined to not be an existing current threat

[3] **U.S. Army Corps of Engineers. 2022. National Wetland Plant List, version 3.6. Online at: http://wetland-plants.sec.usace.army.mil/**

OBL:	Almost always found in wetlands
FACW:	Usually found in wetlands
FAC:	Equally found in wetlands and uplands
FACU:	Usually not found in wetlands
UPL:	Almost never found in wetlands
NL:	Not listed, assumed almost never found in wetlands
NI:	No information; not factored during wetland delineation

APPENDIX E. ANTECEDENT PRECIPITATION TOOL ANALYSIS

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



Coordinates	41.085811, -121.173417
Observation Date	2024-04-20
Elevation (ft)	4116.296
Drought Index (PDSI)	Incipient wetness (2024-03)
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30^{th} %ile (in)	70^{th} %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2024-04-20	0.90315	1.886221	3.169291	Wet	3	3	9
2024-03-21	1.137008	2.118504	1.858268	Normal	2	2	4
2024-02-20	1.01811	2.295276	2.07874	Normal	2	1	2
Result							Wetter than Normal - 15

US Army Corps of Engineers

ERDC

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
ADIN RS	41.1933, -120.9444	4202.1	14.042	85.804	7.524	11240	76
CANBY 3 SW	41.4219, -120.9017	4310.04	15.949	107.94	8.899	46	0
Adin Mtn	41.24, -120.79	6189.961	8.649	1987.861	21.085	66	14