Appendix 3.4-2

Preliminary Aquatic Resources Delineation Report

BERKELEY SPACE CENTER AT NASA RESEARCH PARK

AQUATIC RESOURCES DELINEATION REPORT

PREPARED FOR:

University of California, Berkeley

National Aeronautics and Space Administration
Ames Research Center

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April 2026

ICF. 2026. *Berkeley Space Center at NASA Research Park Preliminary Aquatic Resources Delineation Report*. April. (ICF 104894.0.001.) San Francisco, CA. Prepared for University of California, Berkeley, Berkeley, CA, and National Aeronautics and Space Administration.

Contents

Acronyms and Abbreviations

Acronym	Definition
°F	Fahrenheit
ARDR	aquatic resources delineation report
Army	United States Army
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CWA	Clean Water Act
EPA	Environmental Protection Agency
GPS	Global Positioning System
HUC	Hydrologic Unit Code
NASA	National Aeronautics and Space Administration
NEPA	National Environmental Policy Act
NRCS	National Resources Conservation Service
NRP	National Aeronautics and Space Administration Research Park
PEM	Palustrine – Emergent
Porter-Cologne Act	Porter-Cologne Water Quality Act
Procedures	Procedures for Discharges of Dredged or Fill Material to Waters of the State
Project Proponent	Moffett Partners, LLC
proposed project/proposed action	Berkeley Space Center at the National Aeronautics and Space Administration Research Park
Regional Water Boards	Regional Water Quality Control Boards
State Water Board	State Water Resources Control Board
UC Regents	Regents of the University of California
USACE	U.S. Army Corps of Engineers
USGS	U.S. Geological Survey
WOTUS	Waters of the United States

Chapter 1
Executive Summary

Moffett Partners, LLC (Project Proponent), a joint venture of The Regents of the University of California (UC Regents) and SKSP NRP, LLC, is proposing a master-planned mixed-use academic and research project, referred to as the Berkeley Space Center at the National Aeronautics and Space Administration (NASA) Research Park (NRP) (proposed project/proposed action).[1] The Project Proponent will require authorization from the UC Regents to proceed with the proposed project under the California Environmental Quality Act (CEQA), and NASA's approval to proceed with the proposed action under the National Environmental Policy Act (NEPA). NASA is the NEPA Lead Agency for the proposed action and, as the Authority Having Jurisdiction, NASA would issue building permits and monitor applicable mitigation measures related to development and operation of the proposed project. The UC Regents is the CEQA Lead Agency for the proposed project and would provide authorization before the proposed action is submitted for NASA's approval.[2]

This report documents the extent of mapped aquatic resources within an approximately 81.786-acre study area in Santa Clara County for the proposed project. The study area is defined as the Limits of Work plus a 50-foot buffer to encompass all areas in which temporary or permanent impacts could occur for construction of the project components and in which indirect effects on biological resources could result.[3]

The purpose of this document is to identify aquatic resources within the study area and to provide the background information needed to support permitting efforts for the proposed project.

A total of 0.014 acre (589 square feet) of aquatic resources were delineated within the study area, consisting of a palustrine emergent wetland associated with an isolated stormwater retention pond.

All conclusions presented should be considered preliminary and subject to change pending an official review and verification in writing by the U.S. Army Corps of Engineers (USACE).

1 Throughout this report, *proposed project* refers to both the proposed project (under the California Environmental Quality Act) and the proposed action (under the National Environmental Policy Act).

2 UC Regents is a legal entity that includes all of the University of California campuses.

3 The study area includes a 50-foot buffer around the Limits of Work as of April 2025. Minor revisions to the Limits of Work were subsequently made in October 2025. These minor revisions are captured within the study area and, thus, the study area was not revised as a result of the minor revisions to the Limits of Work.

Chapter 2
Introduction

2.1 Site Location and Driving Directions

The study area encompasses 81.786 acres, is in Santa Clara County, and falls within the U.S. Geological Survey (USGS) Mountain View 7.5-minute quadrangle (Appendix A, *Figures*, Figure A-1). The approximate centroid of the study area is 37.41058968, -122.05584308. The study area is defined as the Limits of Work plus a 50-foot buffer to encompass all areas in which temporary or permanent impacts could occur for construction of the project components and in which indirect effects on biological resources could result. Thus, the study area encompasses an area greater than the anticipated Limits of Work for the proposed project.[4]

The study area is primarily located on federal land within NASA ARC, an approximately 2,000-acre facility located in unincorporated Santa Clara County, California between U.S. 101 and the southwestern edge of San Francisco Bay. A small portion of the study area is on federal land owned by the United States Army (Army). Most of the study area is outside of any city's jurisdictional limits with the exception of the northern portion and the southwestern portion, which are within the City of Mountain View. The City of Mountain View borders NASA ARC to the north and southwest, and the City of Sunnyvale borders NASA ARC to the southeast and east. NASA ARC is located approximately 33 miles south of the City of San Francisco and 8 miles north of the City of San José.

Advanced coordination is needed for onsite access. Driving directions from San Francisco to the entrance to the study area are as follows:

- Head south on U.S. 101.
- Take exit 398A for Moffett Boulevard toward NASA Parkway.
- Turn right onto Moffett Boulevard.

2.2 Hydrology

The study area is within the Saratoga Creek-Frontal San Francisco Bay Estuaries watershed hydrologic unit (Hydrologic Unit Code [HUC] 1805000304) (USGS 2025). Hydrologic inputs to the study area are from precipitation, irrigation, and groundwater. Stormwater drains occurring throughout the study area drain precipitation and irrigation water; these drains are situated in low lying areas such that they drain both impervious and pervious areas. These stormwater drains drain water into a stormwater retention pond (SWRP) in the northern portion of the study area. The SWRP has no outlet. Groundwater in the study area is approximately 2 to 3 feet in elevation (NASA 2005). During very wet years in the past, beyond typical conditions, storm water runoff from the site has occasionally exceeded the capacity of the SWRP and, to avoid overflows, NASA has had to install temporary pumps to remove water from the SWRP and pump it directly to Stevens Creek. However, this does not occur in a typical year.

[4] The study area includes a 50-foot buffer around the Limits of Work as of April 2025. Minor revisions to the Limits of Work were subsequently made in October 2025. These minor revisions are captured within the study area and, thus, the study area was not revised as a result of the minor revisions to the Limits of Work.

2.3 Soils

There are three mapped soil units in the study area, all of which are listed as hydric by the National Resources Conservation Service (NRCS) (NRCS 2025a). Appendix C, *Soils Map*, contains a full soils report and associated map. Sampled soils during the delineation field work are discussed more in Chapter 4, *Results*.

2.4 Climate and Weather

The study area is in the Central Coast subregion of the California Floristic Province (Baldwin et al. 2012). This region of California generally experiences wet, cool winters and dry, warm summers with consistent offshore weather influence. Data from the nearby San Jose weather station was reviewed for temperature and precipitation averages (NRCS 2025b). The average high temperatures range from 81.3 degrees Fahrenheit (°F) in August to 59.9°F in December, and the average low temperatures range from 42.2°F in January to 59.1°F in July. The total average annual precipitation is 12.13 inches, with precipitation falling as rain. A detailed climate summary is provided in Appendix B, *WETS Table*. There was no rainfall recorded two weeks prior to the field survey on August 28, 2025. There was 9.32 inches of rainfall in the wet season prior to the field survey, approximately 77.8 percent of the study area's average annual rainfall.

2.5 Vegetation

This section discusses upland vegetation communities. Land use consists primarily of developed land, but also includes ruderal and disturbed areas. The one vegetation community associated with aquatic features is discussed in Chapter 4, *Results*.

2.5.1 Developed

Most of the study area is made up of developed land. Developed land cover consists of areas with high anthropogenic modification, including structures, roads, other hard surfaces, and associated landscaping. Vegetation includes lawns as well as ornamental trees and shrubs. The majority of trees and shrubs in the study area are mature; these include conifers, such as coast redwood (*Sequoia sempervirens*), pines (*Pinus* spp.), and Hollywood juniper (*Juniperus chinensis*); broadleaf deciduous hardwoods, such as sweetgum (*Liquidambar styraciflua*), London plane (*Platanus* x *hispanica*), Chinese pistache (*Pistacia chinensis*), weeping willow (*Salix babylonica*), and ash (*Fraxinus* sp.); and broadleaf evergreen hardwoods, such as cork oak (*Quercus suber*) and oleander (*Nerium oleander*).

2.5.2 Ruderal

Ruderal land cover consists of areas of managed herbaceous vegetation. These areas are dominated by introduced annual grasses and forbs. Typical species include nonnative annual grasses and forbs, such as soft chess (*Bromus hordeaceous*), ripgut brome (*Bromus diandrus*), foxtail brome (*Bromus madritensis*), bird's foot trefoil (*Lotus corniculatus*), bur clover (*Medicago polymorpha*), wildoats (*Avena fatua*), perennial ryegrass (*Festuca perennis*), alkali mallow (*Malvella leprosa*), mustard (*Hirshfeldia incana*), wild parsley (*Torilis nodosa*), and Italian thistle (*Carduus pycnocephalus*). The

northern areas also include Bermuda grass (*Cynodon dactylon*), ribwort (*Plantago lanceolata*), rattail sixweeks grass (*Festuca myuros*), wild teasel (*Dipsacus fullonum*), and scattered, mowed coyote brush (*Baccharis pilularis*). These areas are subject to mowing.

2.5.3 Disturbed

Disturbed land cover consists of vacant lots and road fringes with bare soil or low vegetation cover due to management (spraying) or excessive anthropogenic disturbance. Typical species include mustard, coastal heron's bill (*Erodium cicutarium*), fluellin (*Kickxia spuria*), stinkwort (*Dittrichia graveolens*), prostrate sandmat (*Euphorbia prostrata*), wall bedstraw (*Galium parisiense*), bur clover, and wild radish (*Raphanus sativus*).

Chapter 3

Delineation Methods and Regulatory Background

3.1 Delineation Methods

3.1.1 Review of Existing Information

The following sources were reviewed prior to conducting fieldwork and during preparation of this report:

- Delineation verification of a study area that slightly overlaps with this study area (USACE 2009)
- Mountain View USGS 7.5-minute topographic quadrangle maps
- NRCS Soil Survey Geographic Database (NRCS 2025a) (Appendix C)
- Climate Analysis for Wetlands Tables (NRCS 2025b) (Appendix B)
- National Wetlands Inventory maps (USFWS 2025)
- Elevation data captured in 2020 by OCM Partners of Santa Clara County (OCM Partners 2020)
- Historical aerial imagery from Google Earth (Google Earth 2025)

3.1.2 Field Investigation and Mapping

Delineation field work was conducted on August 28, 2025, by ICF senior wetland ecologist, Joe Sanders. The study area was walked and driven such that visual coverage was 100%. The primary focus of investigation was placed on pervious surfaces where vegetation occurs as much of the study area is paved and impervious. The delineation field work and mapping were consistent the "Routine Determination Method" described in the *1987 Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987), due to the low technical complexity of the study area, as well as the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Arid West Region* (Version 2.0) (USACE 2008). Vascular plants were identified using the *Jepson Manual: Vascular Plants of California* (Baldwin et al. 2012), and nomenclature and associated wetland ratings follow the National Wetland Plant List (USACE 2022).

Features, including data points and aquatic feature extents, were recorded using a Global Positioning System (GPS) unit (EOS Arrow 100) with real-time differential correction and an instrument-rated mapping accuracy of less than 1 meter. In addition, existing elevations at the study area captured in 2020 (OCM Partners. 2020) were also used to map aquatic resources boundaries in conjunction with field data where access was difficult. Acreages of aquatic features were calculated using ArcGIS.

3.2 Regulatory Background

3.2.1 U.S. Army Corps of Engineers

3.2.1.1 Section 10 of the Rivers and Harbors Act of 1899

Section 10 of the Rivers and Harbors Act regulates work, structures, obstructions, or alterations occurring within navigable Waters of the U.S. (WoUS) which is defined as those waters subject to the ebb and flow of the tide shoreward to the MHW mark and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.

3.2.1.2 Section 404 of the CWA

The regulation defining the extent of Waters of the United States (WOTUS) has changed several times since the enactment of the Clean Water Act (CWA). On January 18, 2023, the U.S. Environmental Protection Agency (EPA) and USACE published the final rule with a revised definition of WOTUS in the Federal Register (2022-28595), which became effective March 20, 2023. This Rule replaced the pre-2015 definition of waters of WOTUS, which was recently in effect starting on September 2, 2021.

On May 25, 2023, the U.S. Supreme Court decided *Sackett v. Environmental Protection Agency*, which considered the jurisdictional extent of WOTUS. On August 29, 2023, the Agencies issued a final rule to conform the definition of "waters of the United States" to the court's decision in *Sackett v. Environmental Protection Agency*. This definition established the scope of USACE and EPA authority under the CWA. The conforming rule, *Revised Definition of "Waters of the United States"; Conforming* (33 Code of Federal Regulations [CFR] 328.3(a)(1)–(5)), became effective September 8, 2023, and states the following:

a.) Waters of the United States means:

1) Waters which are:

i) 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;

ii) The territorial seas; or

iii) 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 (a)(5) of this section;

3) Tributaries of waters identified in paragraph (a)(1) or (2) of this section that are relatively permanent, standing or continuously flowing bodies of water;

4) Wetlands adjacent to the following waters:

i) Waters identified in paragraph (a)(1) of this section; or

ii) Relatively permanent, standing or continuously flowing bodies of water identified in paragraph (a)(2) or (a)(3) of this section and with a continuous surface connection to those waters;

5) Intrastate lakes and ponds not identified in paragraphs (a)(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 (a)(1) or (a)(3) of this section.

The categories of exclusions, or non-jurisdictional aquatic features, are listed in paragraph (b) of the new Rule. Under the Rule, where a feature satisfies the terms of an exclusion, it is excluded from jurisdiction even where the feature would otherwise be jurisdictional under paragraphs (a)(2) through (5) of the Rule. Paragraph (a)(1) waters are not subject to the exclusions. The exclusions, or non-jurisdictional waters, include:

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 of water meets the definition of WOTUS; and
8. Swales and erosional features (e.g., gullies, small washes) characterized by low volume, infrequent, or short duration flow.

Wetlands are defined in 33 CFR 328.I(1) as follows:

- The term "wetlands" means those areas that are inundated or saturated by surface or ground water 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.

Adjacent is defined in 33 CFR 328.3(c)(2) as having a "continuous surface connection."

3.2.2 State and Regional Water Quality Control Board

In California, the State Water Resources Control Board (SWRCB) and nine Regional Water Quality Control Boards regulate activities within WoUS under Section 401 of the CWA and within Waters of the State (WoS) under the Porter-Cologne Act. The SWRCB defines WoS broadly to include "any surface water or groundwater, including saline waters, within the boundaries of the state."

The state wetland definition is as follows:

> 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 following wetlands are considered WoS:

9. Natural wetlands;
10. Wetlands created by modification of a surface water of the state; and
11. Artificial wetlands that meet any of the following criteria:
    a. Approved by an agency as compensatory mitigation for impacts to other WoS except where the approving agency explicitly identifies the mitigation as being of limited duration;
    b. Specifically identified in a water quality control plan as a wetland or other water of the state;
    c. Resulted from historic human activity, is not subject to ongoing operation and maintenance, and has become a relatively permanent part of the natural landscape; or
    d. Greater than or equal to 1 acre in size, unless the artificial wetland was constructed, and is currently used and maintained, primarily for one or more of the following purposes (i.e., the following artificial wetlands are not WoS unless they also satisfy the criteria set forth in 2, 3a, or 3b):
        1) Industrial or municipal wastewater treatment or disposal;
        2) Settling of sediment;
        3) Detention, retention, infiltration, or treatment of stormwater runoff and other pollutants or runoff subject to regulation under a municipal, construction, or industrial stormwater permitting program;
        4) Treatment of surface waters;
        5) Agricultural crop irrigation or stock watering;
        6) Fire suppression;
        7) Industrial processing or cooling;
        8) Active surface mining, even if the site is managed for interim wetlands functions and values;
        9) Log storage;
        10) Treatment, storage, or distribution of recycled water;

11) Maximizing groundwater recharge (this does not include wetlands that have incidental groundwater recharge benefits); or

12) Fields flooded for rice growing.

All artificial wetlands that are less than an acre in size and do not satisfy the criteria set forth in 2, 3.a, 3.b, or 3.c are not WoS. If an aquatic feature meets the wetland definition, the burden is on the applicant to demonstrate that the wetland is not a water of the state.

3.2.3 California Department of Fish and Wildlife

Pursuant to Sections 1600 et. al. of the California Fish and Game Code, California Department of Fish and Wildlife (CDFW) regulates any activity that would substantially divert or obstruct the natural flow—or substantially change or use any material from the bed, channel, or bank—of any river, stream, or lake. CDFW jurisdiction relies on the presence of a lake and/or streambed and associated riparian habitat. CDFW regulation under California Fish and Game Code Section 1602 requires that all lakes and streams on a project site are identified in order to assess the proposed activity's potential impacts on these aquatic resources.

CDFW defines lakes as "natural lakes or man-made reservoirs" (14 California Code of Regulations [CCR] Section 1.56). The historic hydrologic regime is defined as circa 1800 to the present. In addition, streams are a "body of water that flows at least periodically or intermittently through a bed or channel having banks and that supports fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation" (14 CCR Section 1.72). Riparian habitat refers to vegetation and habitat associated with a stream. CDFW-jurisdictional habitat includes all riparian shrub or tree canopy that may extend beyond the banks of a stream. Isolated riparian habitat (i.e., where riparian vegetation does not appear associated with channel) is not considered CDFW-jurisdictional.

Historical court cases have further extended CDFW jurisdiction to include watercourses that seemingly disappear but re-emerge elsewhere. Under the CDFW definition, a watercourse need not exhibit evidence of an ordinary high water mark to be claimed as jurisdictional. Water features, such as vernal pools and other seasonal swales (where the defined bed and bank are absent and the feature is not contiguous or closely adjacent to other jurisdictional features) are generally not asserted to fall within CDFW jurisdiction under Section 1600. CDFW generally does not assert jurisdiction over human-made water bodies unless they are located where such natural features were previously located or where they are contiguous with existing or prior natural jurisdictional areas.

Based on these definitions, potential CDFW-jurisdictional aquatic resources include lakes and/or streambeds and their associated riparian habitats. The lateral extent of potential CDFW jurisdiction is interpreted to be "bank to bank" for a streambed or to the "dripline" of riparian habitat and/or wetland boundary if present.

Chapter 4
Results

A total of 0.014 acre (589 square feet) of aquatic resources occur in the 81.786-acre study area consisting of one mapped palustrine emergent wetland. Appendix A, Figures, Figure A-2, shows a detailed map depicting this aquatic feature. Appendices B through E provide supporting information, including climate and rainfall data, a soils report, photographs, and data forms.

There was an area occurring in a linear depression (i.e., swale formation) where a nearby storm drain occurs (see data point 001 and photo P001) that was investigated, but is not discussed further since it was not determined to be an aquatic feature based on field sampling.

4.1 Palustrine Emergent Wetland

There is one mapped palustrine emergent wetland in the study area that encompasses 0.014 acre (589 square feet) (see Figure A-2 in Appendix A, *Figures*). This feature can be classified as *Palustrine – Emergent (PEM)* according to the Cowardin classification system (Cowardin et al 1979). This feature is dominated by creeping wildrye (*Elymus triticoides*; FAC) and Himalayan blackberry (*Rubus armeniacus*; FAC), and the soil profile starting at 6 inches contains depletions associated with anaerobic conditions (see data point 002 in Appendix E, *Data Forms*). While no primary signs of hydrology were observed at the time of the August 28, 2025, survey, it is expected that primary hydrology signs would be observable earlier in the growing season. The site visit occurred during the normal "dry season" for this location, consequently the soil moisture was likely depleted, and the water table was likely at low levels. The Arid West Regional Supplement (USACE 2008) guides surveyors to sometimes consider aquatic features a wetland even when hydrology indicators are absent when the site visit occurred during the dry season on a site that contains hydric soils and hydrophytic vegetation. This wetland feature was mapped based on the presence of uplands (see data point 003 in Appendix E a paired upland data point).

Chapter 5
Jurisdictional Analysis

The sections below describe the anticipated agency jurisdiction for aquatic resources mapped within the study area. A final determination on the regulation of delineated aquatic resources may be verified by each agency.

5.1 U. S. Army Corps of Engineers

The mapped palustrine emergent wetland is not a water subject to the ebb and flow of the tide and is not presently used, or has been used in the past, or may be susceptible for use to transport interstate or foreign commerce and therefore likely not subject to Section 10 of the Rivers and Harbors Act.

The mapped palustrine emergent wetland is part of a larger stormwater retention pond which does not share any surface connection with any other body of water (NASA 2005). There is no continuous surface connection from this mapped palustrine emergent wetland to the waters that the USACE would take jurisdiction over. Based on the above, it is likely that the USACE would not take jurisdiction over the mapped palustrine emergent wetland within the study area. The analysis presented in this paragraph should be considered preliminary and subject to change pending an official review and verification in writing by the USACE.

5.2 State Water Resources Control Board/Regional Water Quality Control Board

The mapped palustrine emergent wetland meets the state's wetland definition. In addition, this mapped feature occurs within federally owned property that is within the City of Mountain View's boundary. Based on the above, it is likely that the State Water Resources Control Board/Regional Water Quality Control Board would take jurisdiction over the mapped palustrine emergent wetland feature within the study area.

5.3 California Department of Fish and Wildlife

CDFW regulates activities that substantially affect the bed and bank of a stream, lake, or river. The mapped palustrine emergent wetland is not a stream, lake or river and, therefore, would likely not be regulated by CDFW under Section 1600 et. seq. of the Fish and Game Code.

Chapter 6
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Appendix A

Figures

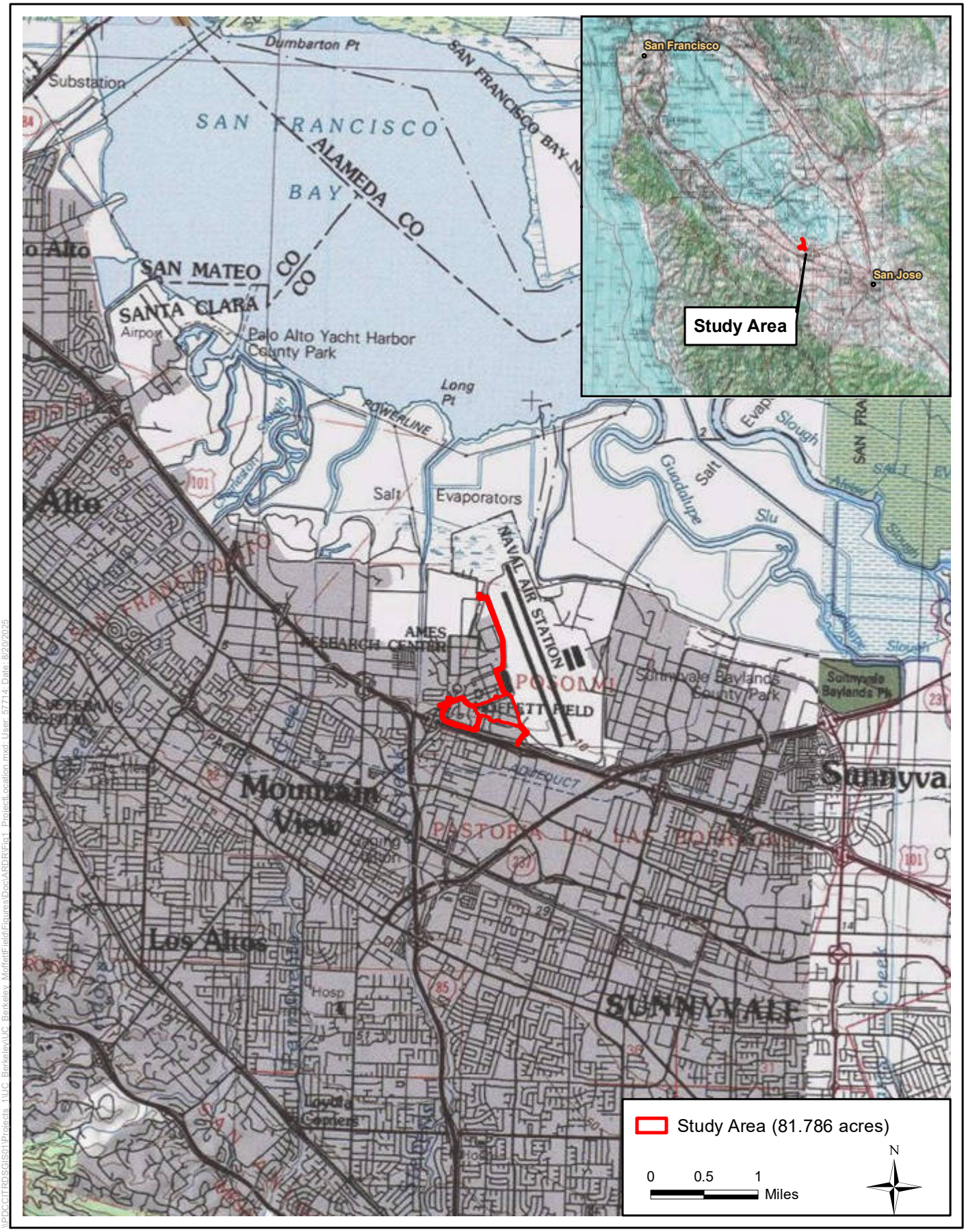
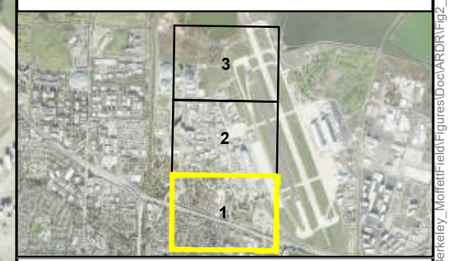


Figure A-1
Study Area USGS Map
Berkeley Space Center at NASA Research Park

Berkeley Space Center at
NASA Research Park

Reference Points

Study Area (81.786 acres)



0 125 250 500
Feet
1 inch = 350 feet

Source: ICF 2025
Imagery Source: Santa Clara County, 01/07/2024
Datum/Projection: California State Plane III US Ft
Page: 1 of 3

Delineated By: J. Sanders
Delineation Date: Augut 28, 2025

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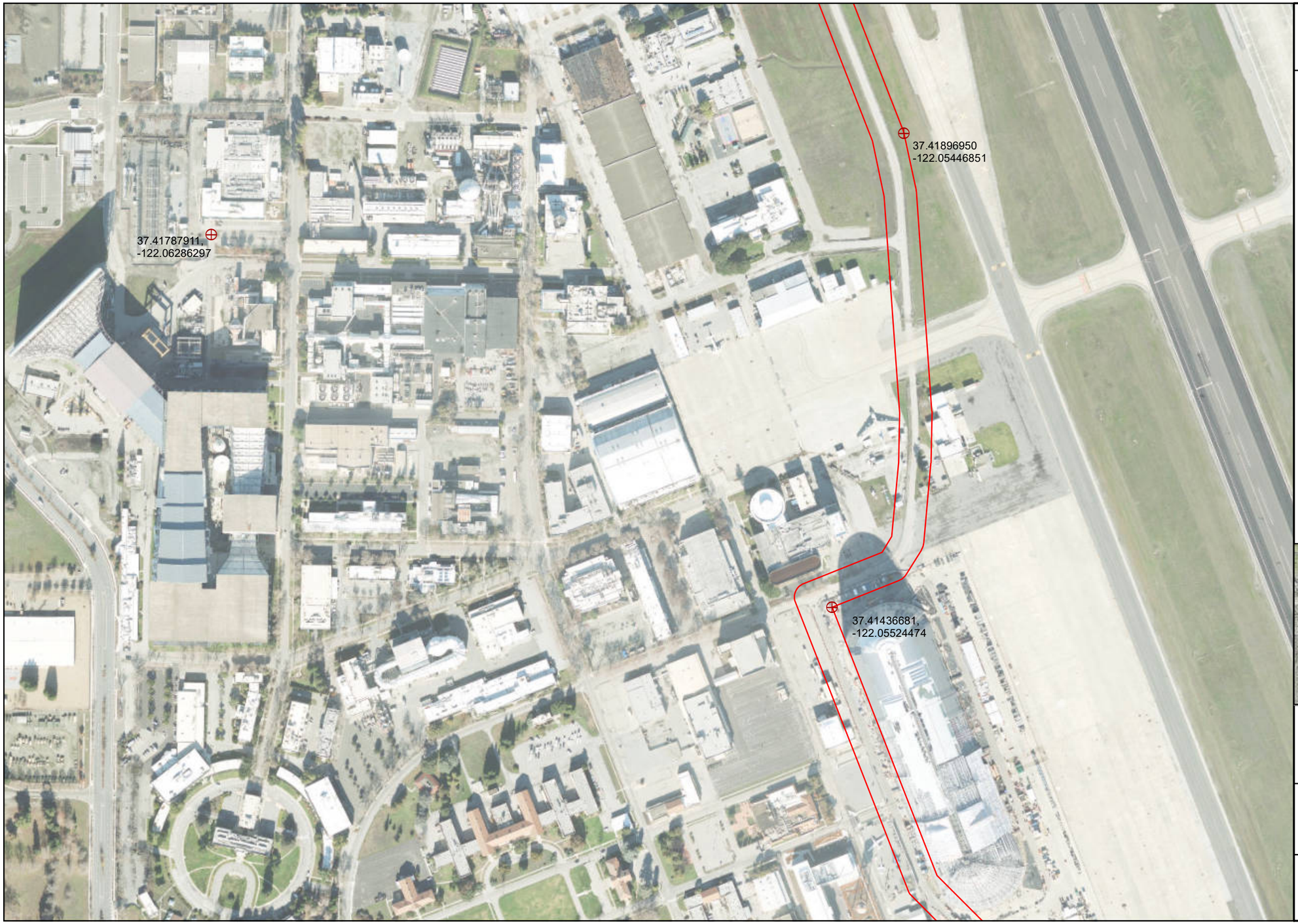
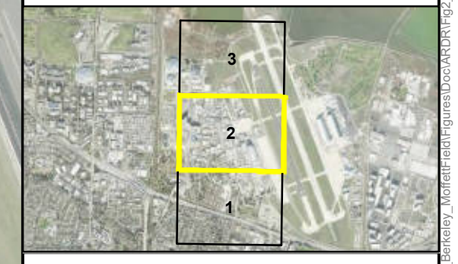
Figure A-2
Aquatic Resources Delineation Map
Berkeley Space Center at NASA Research Park



Berkeley Space Center at
NASA Research Park

Reference Points

Study Area (81.786 acres)



0 125 250 500
Feet

1 inch = 350 feet

Source: ICF 2025
Imagery Source: Santa Clara County, 01/07/2024
Datum/Projection: California State Plane III US Ft
Page: 2 of 3

Delineated By: J. Sanders
Delineation Date: Augut 28, 2025

Path: \\PDCCTRDSISb01\Projects_1\UC_Berkeley\UC_Berkeley_MoffettField\Figures\Doc\ARDR\Fig2_AquaticResourceDelineationMap (1).mxd; Author: ; Date: 9/15/2025

ICF

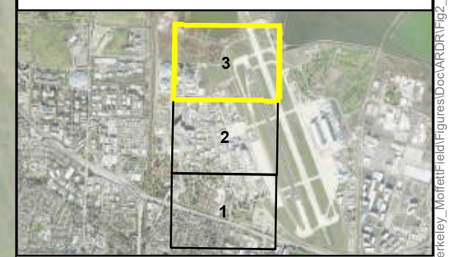
Figure A-2
Aquatic Resources Delineation Map

Berkeley Space Center at
NASA Research Park

- Reference Points
- Study Area (81.786 acres)
- Photopoints
- Non-Wetland Data Point
- Wetland Data Point

Aquatic Resources within the Study Area

- Palustrine Emergent (PEM; 0.014 acre; 589 sq ft)



0 125 250 500
Feet
1 inch = 350 feet

Source: ICF 2025
Imagery Source: Santa Clara County, 01/07/2024
Datum/Projection: California State Plane III US Ft
Page: 3 of 3

Delineated By: J. Sanders
Delineation Date: August 28, 2025

Path: W:\DOCH1RD\GIS\01\Projects_1\UC_Berkeley\UC_Berkeley_MoffettField\Figures\Doc\ARDR\Fig2_AquaticResourceDelineationMap_page3.mxd; Author: ; Date: 9/15/2025

ICF

Figure A-2
Aquatic Resources Delineation Map

Appendix B

WETS Table

WETS Table

WETS Station: SAN JOSE, CA								
Requested years: 1971 - 2025								
Month	Avg Max Temp	Avg Min Temp	Avg Mean Temp	Avg Precip	30% chance precip less than	30% chance precip more than	Avg number days precip 0.10 or more	Avg Snowfall
Jan	60.3	42.2	51.2	2.31	0.85	2.71	5	-
Feb	62.6	43.5	53.1	2.36	0.97	2.80	5	-
Mar	65.7	46.0	55.9	1.89	0.98	2.31	6	-
Apr	69.2	48.4	58.8	0.96	0.38	1.16	3	-
May	73.8	52.4	63.1	0.28	0.10	0.27	1	-
Jun	79.0	56.1	67.5	0.09	0.00	0.05	0	-
Jul	80.9	58.4	69.6	0.00	0.00	0.00	0	-
Aug	81.3	59.1	70.2	0.00	0.00	0.00	0	-
Sep	81.0	57.7	69.4	0.09	0.00	0.07	0	-
Oct	75.9	53.1	64.5	0.56	0.09	0.50	1	-
Nov	66.4	46.1	56.2	1.19	0.67	1.45	3	-
Dec	59.9	42.3	51.1	2.38	0.92	2.88	6	-
Annual:					9.90	14.02		
Average	71.3	50.4	60.9	-	-	-	-	-
Total	-	-	-	12.13			30	-

GROWING SEASON DATES

Years with missing data:	24 deg = 28	28 deg = 28	32 deg = 29
Years with no occurrence:	24 deg = 27	28 deg = 26	32 deg = 11
Data years used:	24 deg = 27	28 deg = 27	32 deg = 26
Probability	24 F or higher	28 F or higher	32 F or higher
50 percent *	No occurrence	No occurrence	12/19 to 1/16: 393 days
70 percent *	No occurrence	No occurrence	No occurrence
* Percent chance of the growing season occurring between the Beginning and Ending dates.			

STATS TABLE - total precipitation (inches)

Yr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annl
1897	1.68	3.43	2.64	0.91	0.16	0.42	0.00	0.00		1.01	0.37		10.62
1898	0.93	1.93	0.52	0.20	0.44	0.01	0.00	0.00	1.13	0.61	0.45		6.22
1899	1.78	0.21	4.17	0.48	0.65	0.05	0.00	0.00	0.00	3.26	2.70		13.30
1900	2.05	0.44	1.36	1.66	0.96	0.02	0.02	0.00	0.17		4.36		11.04
1901	3.98	5.47	0.75	2.37	0.82	T	0.00	T	0.44	1.00	1.06		15.89
1902	0.81	4.42	2.65	1.29	0.88	0.06	0.00	0.00	0.00	0.95	2.18		13.24
1903	2.74	1.27	4.99	0.84	0.00	T	0.00	0.00	0.00	0.12	0.99		10.95
1904	1.28	3.01	2.73	1.74	0.26	0.01	0.00	0.25	1.94	1.43	1.20		13.85
1905	2.70	2.65	2.73	1.01	1.77	T	0.00	0.00	T	0.00	2.17		13.03
1906	2.86	2.31	4.47			0.00	0.00	0.00	0.13	0.01	0.98		10.76

1907	4.61	1.88	7.75	0.46	0.08	0.42	T	0.00	0.06	0.98	0.13		16.37
1908	2.63	2.46	1.14	0.23	0.67	0.01	0.00	0.00	0.09	0.19	1.11		8.53
1909	7.69	4.87	2.77	0.00	0.00	0.05	0.00	0.00	0.75	0.72	1.27		18.12
1910	2.31	0.83	2.84	0.41	T	0.02	T	0.00	0.09	0.20	0.28		6.98
1911	12.38	2.03	6.26	0.45	0.21	0.07	0.00	0.00	0.00	0.81	0.18	2.03	24.42
1912	1.36	0.30	2.80	1.95	0.70	0.46	T	0.00	0.71	0.21	0.29	0.43	9.21
1913	2.29	0.09	1.17	0.38	0.77	0.01	0.09	0.08	T	0.02	4.10	3.00	12.00
1914	6.23	3.94	0.90	0.65	0.19	0.25	0.00	0.00	0.00	0.50	1.36	3.73	17.75
1915	4.85	7.02	1.49	1.07	2.69	0.00	0.00	0.04	0.00	0.00	0.19	4.37	21.72
1916	8.71	1.83	1.10	0.06	0.01	T	T	0.01	0.78	0.84	0.41	3.48	17.23
1917	0.98	4.88	0.77	0.26	0.22	0.00	T	0.00	0.01	0.00	0.54	0.55	8.21
1918	0.70	2.63	4.48	0.45	T	0.00	0.00	0.00	6.33	0.15	2.24	1.28	18.26
1919	1.06	4.87	2.87	0.06	0.01	T	T	0.01	0.25	0.28	0.09	2.48	11.98
1920	0.10	1.04	3.43	0.92	T	0.21	0.00	0.00	0.02	1.71	1.84	3.58	12.85
1921	4.75	1.10	0.80	0.40	0.82	T	0.00	0.00	0.21	0.21	1.65	4.66	14.60
1922	2.46	3.01	1.74	0.32	0.50	0.01	T	T	0.00	1.55	2.72	4.68	16.99
1923	1.93	1.02	0.31	1.52	0.02	0.10	0.00	0.01	0.62	0.29	0.30	0.71	6.83
1924	1.70	0.62	1.87	0.38	0.05	0.00	0.00	T	T	1.72	1.25	1.92	9.51
1925	0.86	3.09	1.88	1.55	1.96	0.01	0.02	0.00	0.01	0.48	0.96	1.33	12.15
1926	3.11	5.35	0.12	2.88	0.21	0.00	0.00	T	0.00	0.31	3.44	1.17	16.59
1927	2.07	4.01	1.58	1.03	0.08	0.19	T	T	0.02	0.83	1.25	2.01	13.07
1928	0.98	1.78	2.12	0.96	0.15	0.01	0.00	0.00	0.00	0.01	2.47	2.40	10.88
1929	0.86	0.61	1.31	0.92	0.11	1.45	0.00	0.00	0.00	T	0.00	0.78	6.04
1930	3.49	1.86	2.93	0.76	1.01	T	0.00	0.01	0.05	0.23	0.73	0.49	11.56
1931													
1932													
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1997													
1998								M0.00	0.00	0.05	0.55	1.84	0.27	2.71
1999	2.77	2.60	1.63	1.45	0.02	0.08	0.00	0.06	0.05	0.06	1.13	0.45	10.30	
2000	4.79	4.56	1.60	0.63	0.29	M0.26	0.04	0.01	0.10	2.14	0.45	0.27	15.14	
2001	2.57	3.98	1.37	1.17	0.00	0.13	0.00	T	0.18	0.10	2.21	2.96	14.67	

2002	0.69	0.77	1.55	0.41	0.44	0.00	0.00	0.00	0.00	T	1.84	6.37	12.07
2003	0.61	1.53	0.68	2.77	0.67	0.00	T	T	0.02	0.01	1.83	3.69	11.81
2004	1.51	2.92	0.35	0.27	0.07	0.00	0.00	0.00	0.06	1.89	0.44	3.11	10.62
2005	2.57	3.63	2.46	1.69	1.02	0.15	T	0.00	0.02	0.10	0.36	3.03	15.03
2006	2.35	1.56	4.55	2.14	0.45	T	T	0.00	0.00	0.31	1.04	1.54	13.94
2007	0.84	3.04	0.46	0.74	0.09	0.00	0.01	0.00	T	1.28	0.55	1.29	8.30
2008	5.60	1.81	0.15	0.03	0.00	0.00	0.00	T	T	0.19	1.05	1.53	10.36
2009	1.30	5.16	1.89	0.30	0.09	0.01	T	0.02	0.21	2.41	0.28	2.16	13.83
2010	4.58	2.12	2.05	2.99	0.35	0.00	0.00	T	T	0.25	1.76	3.05	17.15
2011	0.96	3.15	4.32	0.20	0.40	1.51	T	0.00	T	0.77	0.70	0.08	12.09
2012	0.90	0.67	1.98	1.88	T	0.15	0.00	0.00	0.01	0.35	2.58	4.24	12.76
2013	0.69	0.37	0.87	0.26	0.01	0.04	T	0.00	0.66	0.00	0.77	0.13	3.80
2014	0.12	2.65	1.35	0.64	T	0.01	T	T	0.36	0.62	1.57	7.74	15.06
2015	0.01	1.74	0.19	0.88	0.50	0.10	T	0.02	0.01	0.05	2.42	2.23	8.15
2016	4.09	0.31	3.96	1.53	0.32	0.00	0.00	T	T	1.56	1.31	1.51	14.59
2017	5.61	5.27	1.46	1.68	T	0.02	0.00	T	0.04	0.22	1.28	0.07	15.65
2018	3.20	0.40	2.71	1.23	T	0.00	T	0.00	0.00	0.03	1.92	1.53	11.02
2019	2.89	5.61	2.81	0.20	1.44	0.00	0.00	0.00	0.13	0.01	0.99	2.02	16.10
2020	0.80	0.00	2.06	1.20	0.13	T	0.00	0.01	0.00	0.00	0.13	0.84	5.17
2021	2.83	0.32	1.15	0.05	0.00	0.00	0.00	0.00	0.00	2.16	0.13	4.35	10.99
2022	T	0.01	0.35	0.29	MT	0.01	T	T	0.51	0.00	1.71	4.70	7.58
2023	5.52	2.02	4.02	0.11	0.44	0.09	0.00	T	0.08	0.11	0.56	2.76	15.71
2024	4.48	4.54	3.13	0.81	0.67	T	T	T	0.00	0.01	1.31	2.33	17.28
2025	0.17	3.11	1.97	0.31	0.11	0.00	0.00	M0.00					5.67

Notes: Data missing in any month have an "M" flag. A "T" indicates a trace of precipitation.

Data missing for all days in a month or year is blank.

Creation date: 2025-08-20

Appendix C
Soils Report

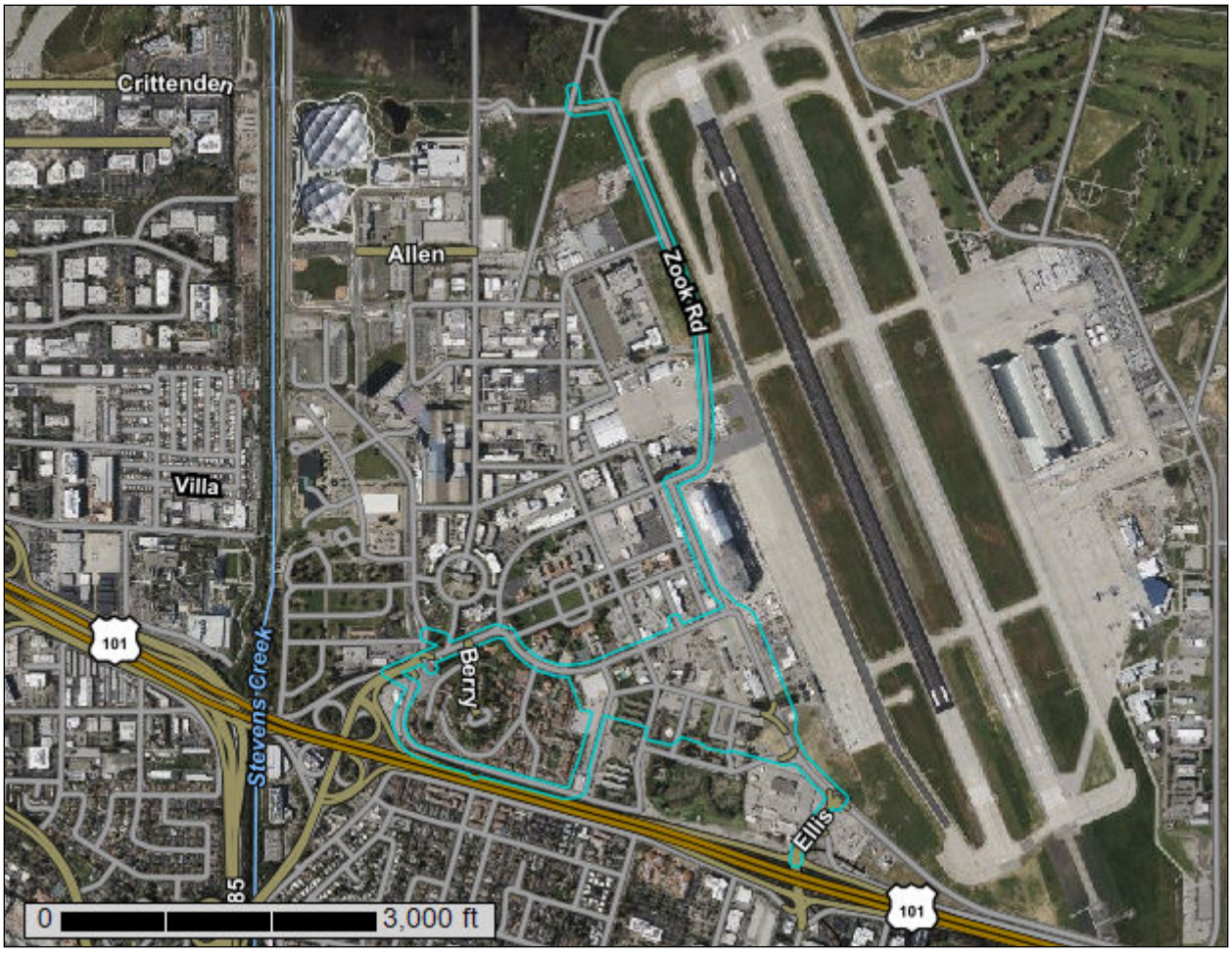
United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Santa Clara Area, California, Western Part



August 19, 2025

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

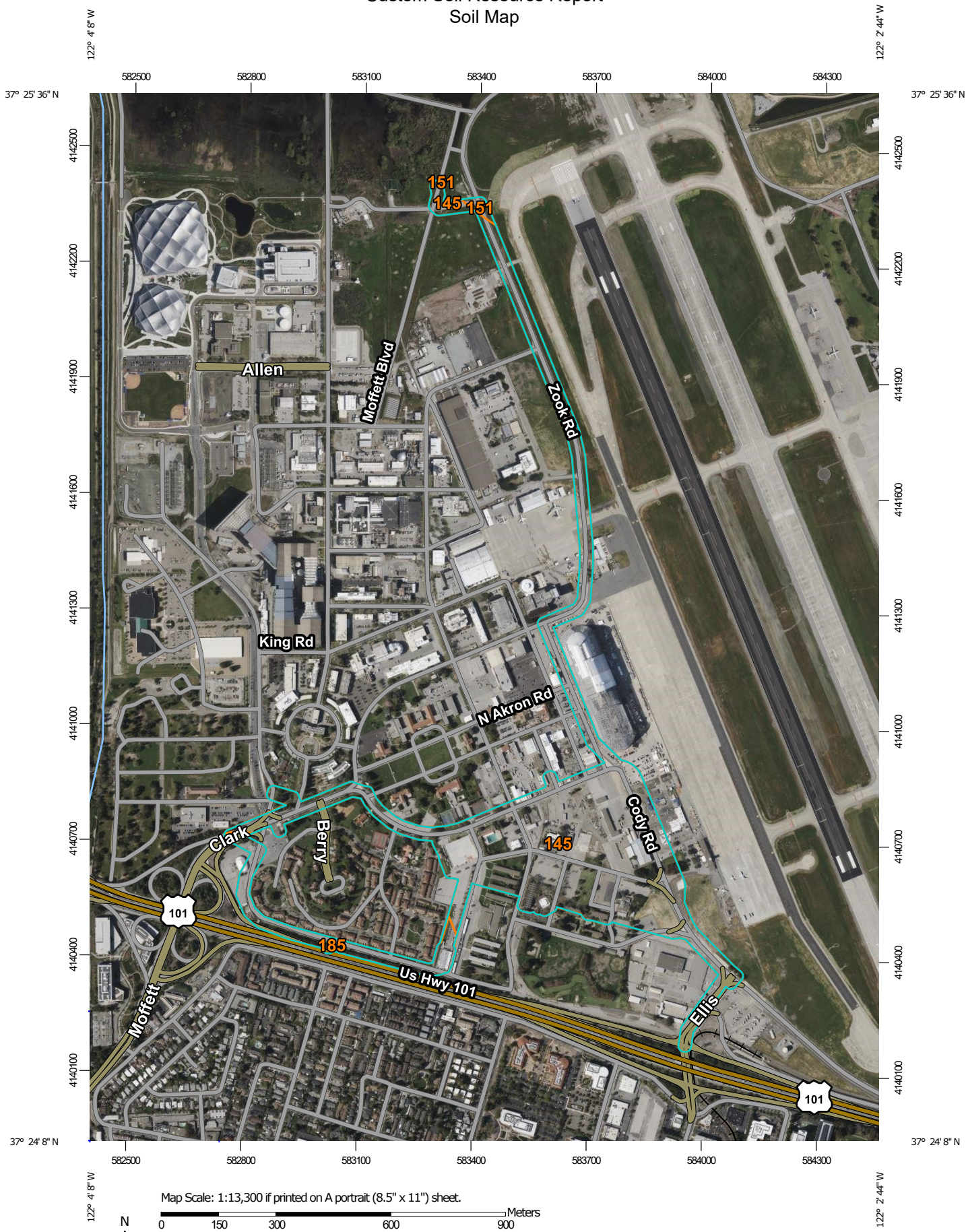
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Santa Clara Area, California, Western Part
Survey Area Data: Version 13, Sep 8, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 1, 2023—Sep 1, 2023

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
145	Urbanland-Hangerone complex, 0 to 2 percent slopes, drained	73.3	89.6%
151	Embarcadero silty clay loam, drained, 0 to 2 percent slopes	0.6	0.8%
185	Urban Land - Bayshore complex, 0 to 2 percent slopes, drained	7.8	9.6%
Totals for Area of Interest		**81.8**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or

landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Santa Clara Area, California, Western Part

145—Urbanland-Hangerone complex, 0 to 2 percent slopes, drained

Map Unit Setting

National map unit symbol: 1nszw
Elevation: 0 to 220 feet
Mean annual precipitation: 14 to 24 inches
Mean annual air temperature: 57 to 61 degrees F
Frost-free period: 275 to 325 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 70 percent
Hangerone, drained, and similar soils: 25 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Landform: Basin floors
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Disturbed and human-transported material

Description of Hangerone, Drained

Setting

Landform: Basin floors
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear, convex
Parent material: Alluvium derived from metamorphic and sedimentary rock and/or alluvium derived from metavolcanics

Typical profile

A1 - 0 to 9 inches: clay
A2 - 9 to 17 inches: clay
Bw - 17 to 27 inches: clay
Bk - 27 to 35 inches: clay
Ck - 35 to 45 inches: clay loam
C - 45 to 72 inches: gravelly loam
2Ab - 72 to 89 inches: clay

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None

Frequency of ponding: None
Calcium carbonate, maximum content: 25 percent
Gypsum, maximum content: 2 percent
Maximum salinity: Nonsaline to slightly saline (0.2 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water supply, 0 to 60 inches: Moderate (about 8.3 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: C
Ecological site: R014XG904CA - Dry Clayey Bottom
Hydric soil rating: Yes

Minor Components

Clear lake

Percent of map unit: 2 percent
Landform: Basin floors
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Bayshore

Percent of map unit: 2 percent
Landform: Basin floors
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Embarcadero

Percent of map unit: 1 percent
Landform: Basin floors
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

151—Embarcadero silty clay loam, drained, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 1qsvk
Elevation: 0 to 20 feet
Mean annual precipitation: 14 to 20 inches
Mean annual air temperature: 57 to 61 degrees F
Frost-free period: 275 to 325 days
Farmland classification: Not prime farmland

Map Unit Composition

Embarcadero and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Embarcadero

Setting

Landform: Basin floors
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from metamorphic and sedimentary rock and/or alluvium derived from metavolcanics

Typical profile

An - 0 to 7 inches: clay loam
Bkn1 - 7 to 16 inches: clay
Bkn2 - 16 to 26 inches: silty clay
Bkn3 - 26 to 37 inches: silty clay
Bkn4 - 37 to 47 inches: silty clay
Bkn5 - 47 to 61 inches: clay loam
Bkn6 - 61 to 65 inches: silty clay
BC - 65 to 98 inches: silty clay

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 0 to 20 inches to natric
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 35 percent
Gypsum, maximum content: 5 percent
Maximum salinity: Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum: 125.0
Available water supply, 0 to 60 inches: Very low (about 0.0 inches)

Interpretive groups

Land capability classification (irrigated): 4s
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: C
Ecological site: R014XG906CA - Dry Loamy Bottom
Hydric soil rating: Yes

Minor Components

Urban land

Percent of map unit: 5 percent
Landform: Basin floors
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear

Hydric soil rating: Unranked

Hangerone

Percent of map unit: 5 percent
Landform: Basin floors
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

185—Urban Land - Bayshore complex, 0 to 2 percent slopes, drained

Map Unit Setting

National map unit symbol: 2mfbq
Elevation: 10 to 90 feet
Mean annual precipitation: 14 to 24 inches
Mean annual air temperature: 57 to 61 degrees F
Frost-free period: 275 to 325 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 70 percent
Bayshore and similar soils: 20 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Landform: Alluvial fans
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Disturbed and human transported material

Description of Bayshore

Setting

Landform: Basin floors
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from metamorphic and sedimentary rock and/or alluvium derived from metavolcanics

Typical profile

A1 - 0 to 3 inches: loam
A2 - 3 to 12 inches: loam
ABt - 12 to 26 inches: loam
ABtk - 26 to 38 inches: sandy clay loam
Ck - 38 to 51 inches: sandy clay loam

C - 51 to 61 inches: gravelly sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 20 percent
Maximum salinity: Nonsaline (0.1 to 0.3 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water supply, 0 to 60 inches: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: C
Ecological site: R014XG907CA - Loamy Bottom
Hydric soil rating: Yes

Minor Components

Hangerone, drained

Percent of map unit: 10 percent
Landform: Basin floors
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

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Appendix D

Photographs

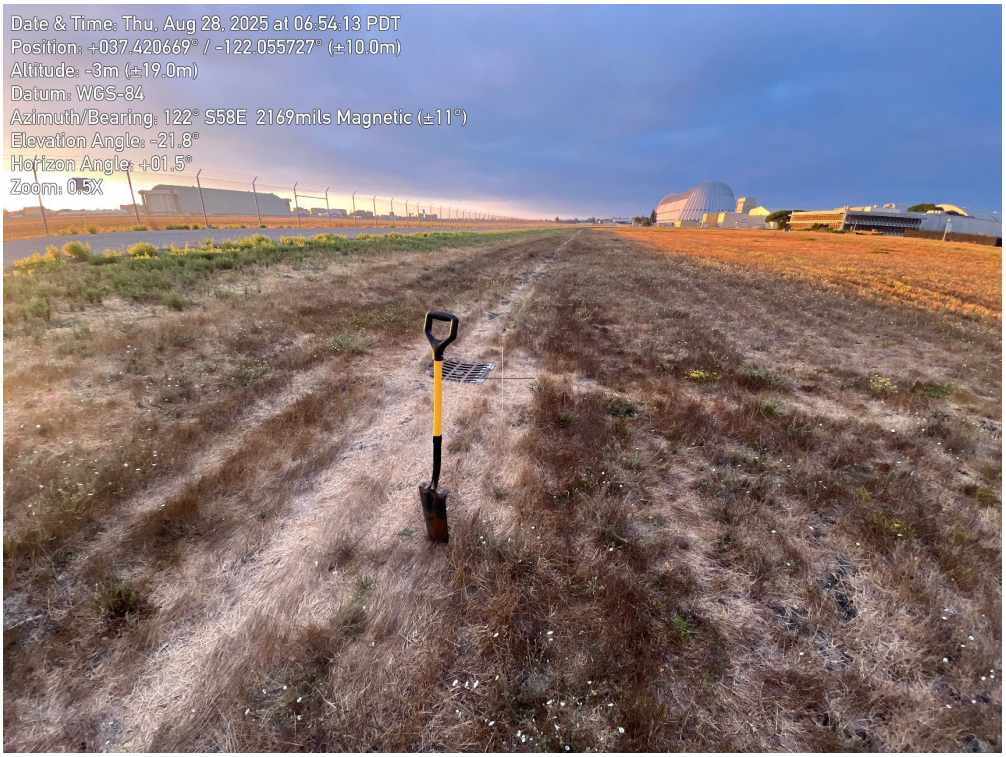

Photo P001. Facing southeast, photo of non-wetland data point 001 within an upland swale and next to a storm drain.

Photo P002. Facing northwest, photo of wetland data point 002 within a palustrine emergent PEM-1.

Photo P003. Facing northwest, photo of non-wetland data point 003 within a mowed ruderal area.

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Appendix E

Data Forms

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Arid West Region
See ERDC/EL TR-08-28; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 9/30/2027
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Berkeley Space Center at NASA Research Park City/County: Santa Clara County Sampling Date: 08/28/2025

Applicant/Owner: UC Berkley and NASA Ames Research Center State: CA Sampling Point: 001

Investigator(s): J. Sanders Section, Township, Range: Rancho Posolmi Land Grant

Landform (hillside, terrace, etc.): swale Local relief (concave, convex, none): concave Slope (%): 0

Subregion (LRR): LRR C Lat: 37.42065455 Long: -122.05569893 Datum: NAD83SPIII

Soil Map Unit Name: Urbanland-Hangerone complex, 0 to 2 percent slopes, drained NWI classification: none

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

Are Vegetation x , Soil ____ , or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ____ No x

Are Vegetation ____ , Soil ____ , or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes ____ No x
Hydric Soil Present? Yes ____ No X
Wetland Hydrology Present? Yes ____ No X

Is the Sampled Area within a Wetland? **Yes** ____ **No** X

Remarks:
Area mowed. Point taken in lowest spot of this area. Storm drain preset at same elevation approximately 1m away

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: 1x1m)			
1. *Hemizonia congesta*	8	Yes	UPL
2. *Festuca perennis*	15	Yes	FAC
3. *Lotus corniculatus*	3	No	FAC
4. *Torilis nodosa*	5	No	UPL
5. *Plantago lanceolata*	1	No	FAC
6.			
7.			
8.			
	32 =Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ =Total Cover		

% Bare Ground in Herb Stratum 68 % 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: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ____ **No** x

Remarks:
area mowed

SOIL

Sampling Point: 001

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[1]	Loc[2]	Texture	Remarks
0-14	10YR 3/2	100					Loamy/Clayey	

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Iron Monosulfide (A18)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Iron-Manganese Masses (F12) **(LRR D)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present? Yes ___ No x Depth (inches): ___

Water Table Present? Yes ___ No x Depth (inches): ___

Saturation Present? Yes ___ No x Depth (inches): ___

(includes capillary fringe)

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

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

Remarks:

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Arid West Region
See ERDC/EL TR-08-28; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 9/30/2027
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Berkeley Space Center at NASA Research Park City/County: Santa Clara County Sampling Date: 08/28/2025

Applicant/Owner: UC Berkley and NASA Ames Research Center State: CA Sampling Point: 002

Investigator(s): J. Sanders Section, Township, Range: Rancho Posolmi Land Grant

Landform (hillside, terrace, etc.): basin Local relief (concave, convex, none): none Slope (%): 1

Subregion (LRR): LRR C Lat: -122.05866900 Long: 37.42480639 Datum: NAD83SPIII

Soil Map Unit Name: Urbanland-Hangerone complex, 0 to 2 percent slopes, drained NWI classification: PEM

Are climatic / 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 "Normal Circumstances" present? Yes x No ____

Are Vegetation ____, Soil ____, or Hydrology x naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes x No ____
Hydric Soil Present? Yes x No ____
Wetland Hydrology Present? Yes x No ____

Is the Sampled Area within a Wetland? **Yes** x **No** ____

Remarks:
see hydrology remarks

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: 1x1m)			
1. *Elymus triticoides*	25	Yes	FAC
2. *Dipsacus fullonum*	5	No	FAC
3. *Vinca major*	8	Yes	FACU
4. *Conium maculatum*	1	No	FACW
5.			
6.			
7.			
8.			
	39	=Total Cover	
Woody Vine Stratum (Plot size: 3x3m)			
1. *Rubus armeniacus*	10	Yes	FAC
2.			
	10	=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: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%
____ Prevalence Index is ≤3.0[1]
____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks:

SOIL

Sampling Point: 002

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[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/2	100					Loamy/Clayey	
6-12	10YR 3/1	90	10YR 8/1	10	D	M	Loamy/Clayey	

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Iron Monosulfide (A18)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- X Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Iron-Manganese Masses (F12) **(LRR D)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present? Yes ___ No x Depth (inches): ___

Water Table Present? Yes ___ No x Depth (inches): ___

Saturation Present? Yes ___ No x Depth (inches): ___

(includes capillary fringe)

Wetland Hydrology Present? **Yes** x **No** ___

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

Remarks:

A2 expected earlier in the year.

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Arid West Region
See ERDC/EL TR-08-28; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 9/30/2027
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Berkeley Space Center at NASA Research Park City/County: Santa Clara County Sampling Date: 08/28/2025

Applicant/Owner: UC Berkley and NASA Ames Research Center State: CA Sampling Point: 003

Investigator(s): J. Sanders Section, Township, Range: Rancho Posolmi Land Grant

Landform (hillside, terrace, etc.): flat Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): LRR C Lat: 37.42476507 Long: -122.05865883 Datum: NAD83SPIII

Soil Map Unit Name: Urbanland-Hangerone complex, 0 to 2 percent slopes, drained NWI classification: PEM

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

Are Vegetation x , Soil ____ , or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ____ No x

Are Vegetation ____ , Soil ____ , or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:
Point taken approximately 6" higher in EL than 002. Area mowed

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: 1x1m)			
1. *Elymus triticoides*	5	Yes	FAC
2. *Helminthotheca echioides*	5	Yes	FAC
3. *Lotus corniculatus*	12	Yes	FAC
4.			
5.			
6.			
7.			
8.			
	22 =Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ =Total Cover		

% Bare Ground in Herb Stratum 78 % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	22	x 3 =	66
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	22 (A)		66 (B)

Prevalence Index = B/A = 3.00

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks:
area mowed so vegetation sampling could be skewed

SOIL

Sampling Point: 003

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[1]	Loc[2]	Texture	Remarks
0-12	10YR 3/2	100					Loamy/Clayey	

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Iron Monosulfide (A18)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Iron-Manganese Masses (F12) **(LRR D)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present? Yes ___ No x Depth (inches): ___

Water Table Present? Yes ___ No x Depth (inches): ___

Saturation Present? Yes ___ No x Depth (inches): ___

(includes capillary fringe)

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

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

Remarks:

Appendix F

ORM Sheet

Waters_Name	State	Cowardin_Code	HGM_Code	Meas_Type	Amount	Units	Waters_Type	Latitude	Longitude	Local_Waterway
PEM-1	CALIFORNIA	PEM		Area	589	SQ_FT		37.42481693	-122.05870323	