Mattole Road P.M. 5.25 Storm Damage Repair Project

Public Circulation Draft Initial Study & Proposed Mitigated Negative Declaration

Humboldt County

January 17, 2023

Public Circulation Draft Initial Study & Proposed Mitigated Negative Declaration

Mattole Road P.M. 5.25 Storm Damage Repair Project

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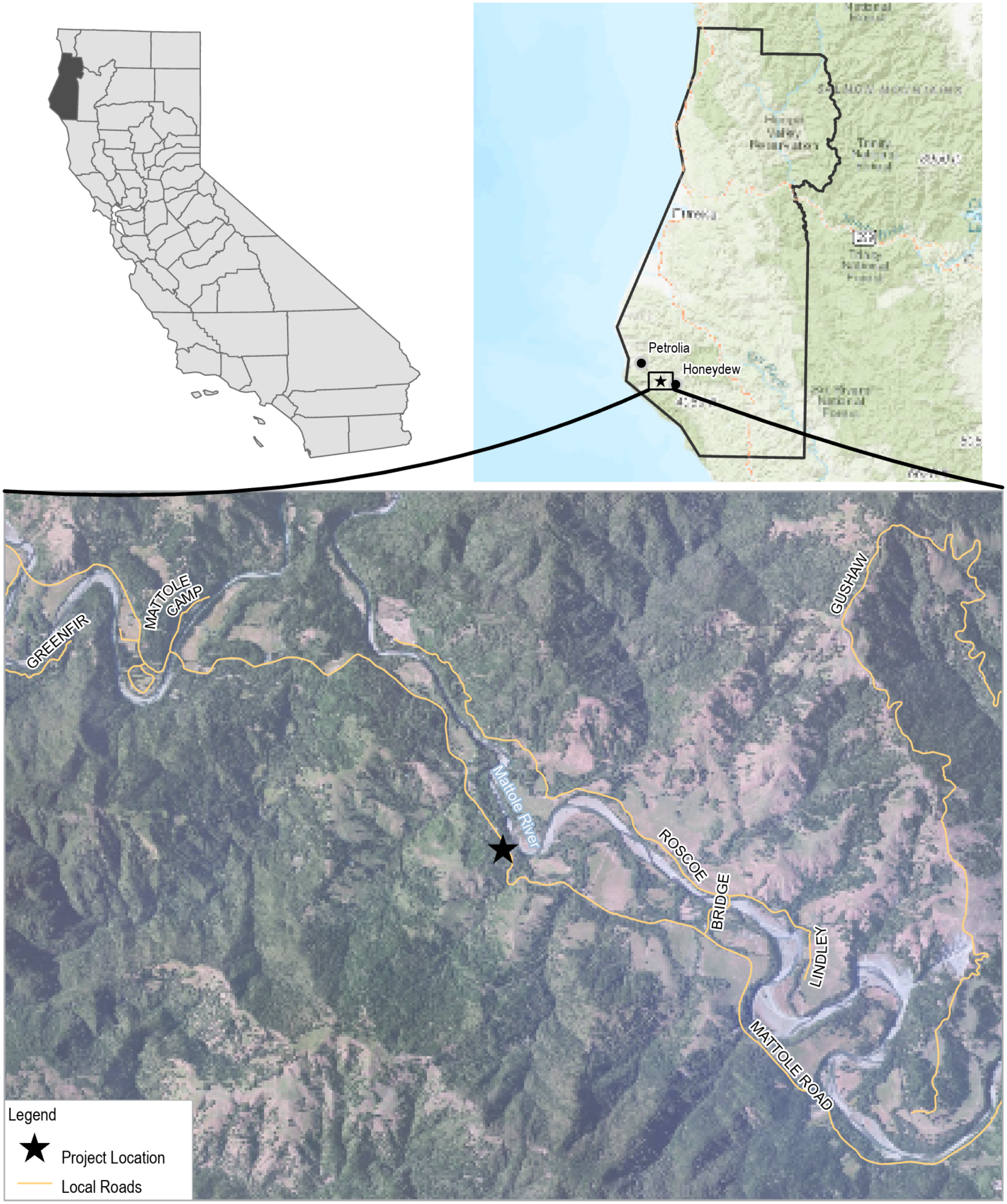

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Humboldt County Dept. of Public Works
Mattole Road PM 5.25 Storm Damage Repair
Project Description

Project No. **11222901**
Revision No. **-**
Date **7/25/2022**

Project Vicinity Map

FIGURE 1

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Data source: World Imagery (Clarity): Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
World Topographic Map: Esri, HERE, Garmin, FAO, USGS, EPA, NPS
World_Transportation: Esri, HERE. Created by: jlopez4

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
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Humboldt County Dept. of Public Works
Mattole Road PM 5.25
Storm Damage Repair

Project Construction Limits

Project No.	**11222901**
Revision No.	**-**
Date	**8/20/2021**

FIGURE 2

N:\US\Santa Rosa\Projects\561\11222901\GIS\Maps\Deliverables\11222901_Mattole_Road_BA\11222901_Mattole_Road_BA.aprx - 11222901_002_Project_Construction_Limits
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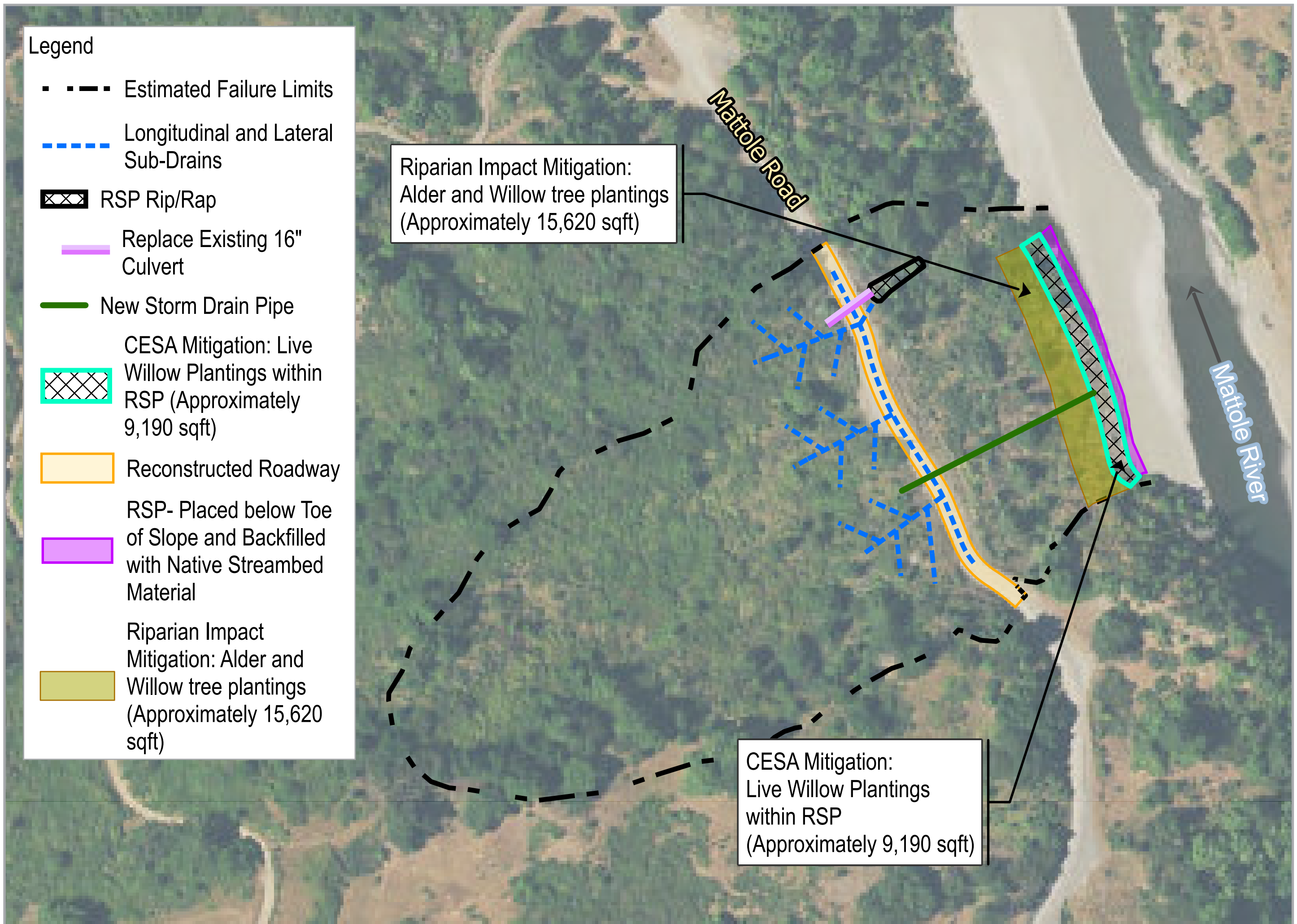

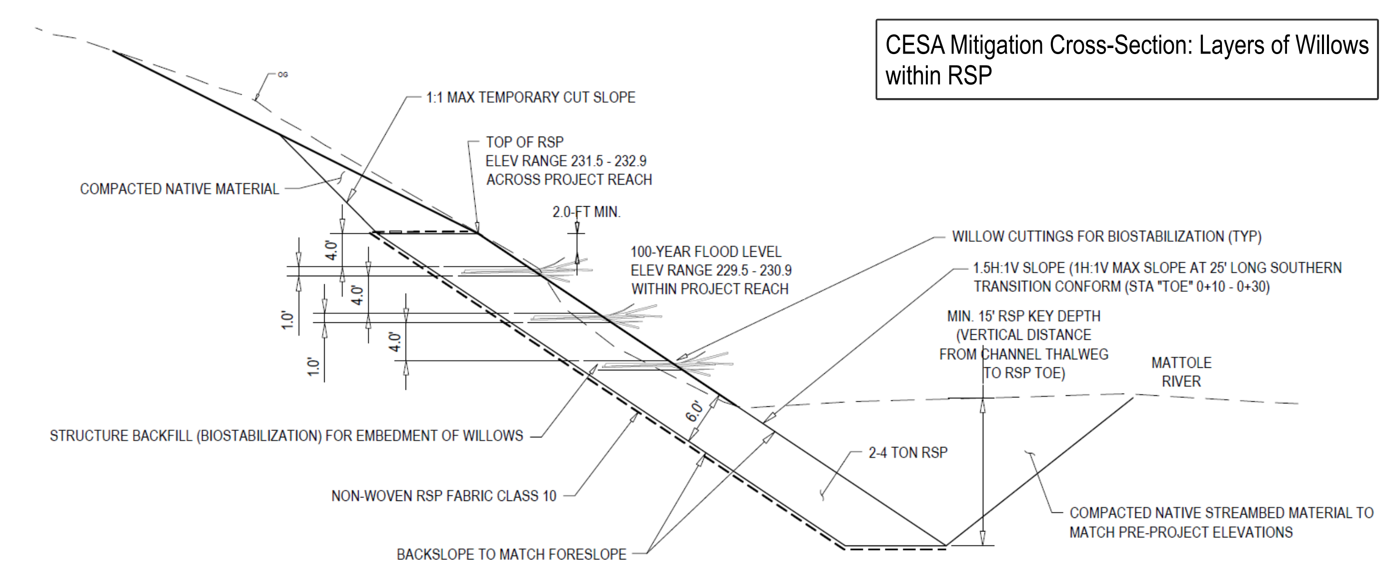

TYPICAL SECTION STREAMBANK BIOSTABILIZATION SECTION

NOT TO SCALE

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

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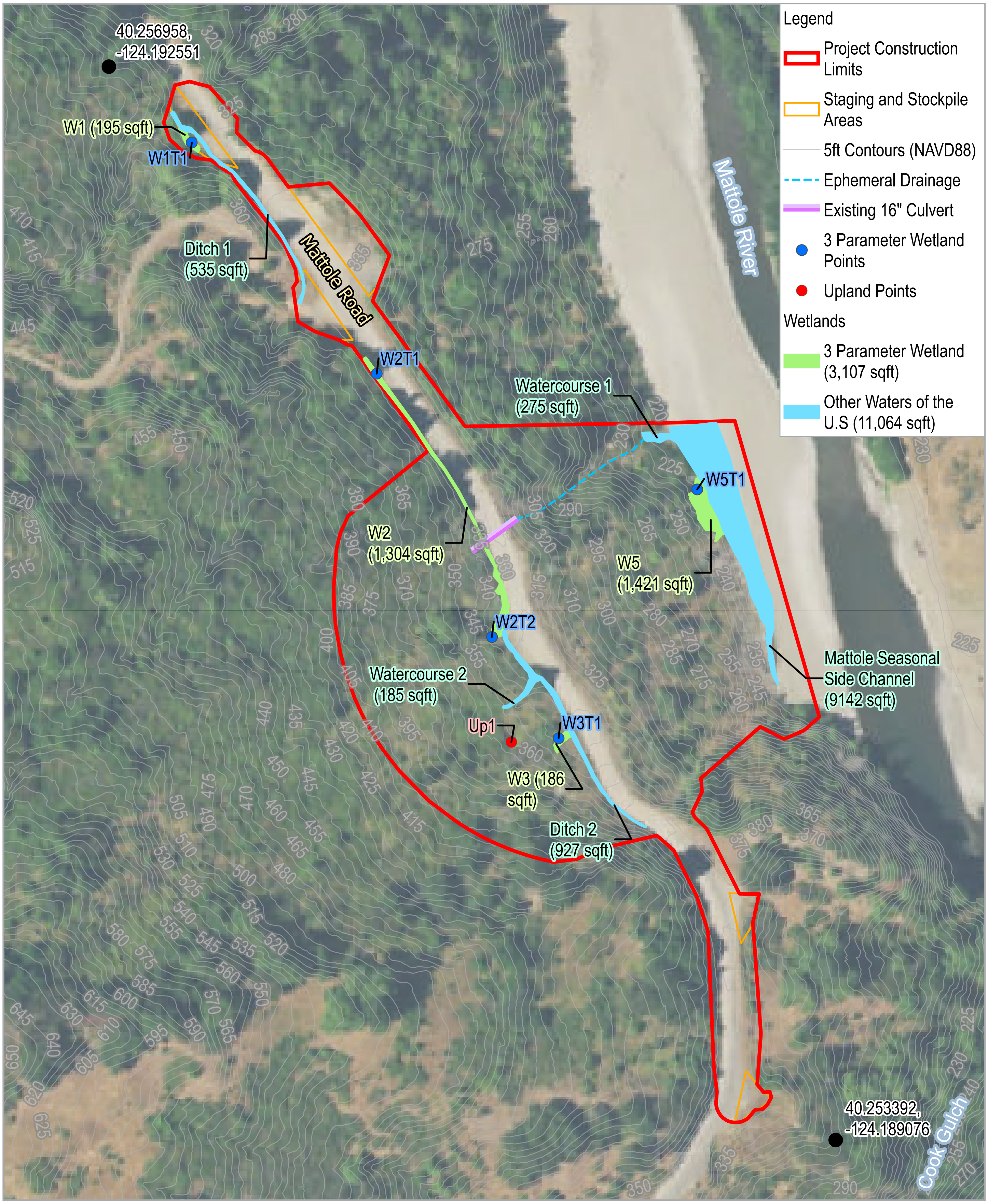
Humboldt County Dept. of Public Works
Mattole Road PM 5.25
Storm Damage Repair

Project Overview

Project No. **11222901**
Revision No. **-**
Date **9/23/2022**

FIGURE 3



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Map Projection: Lambert Conformal Conic
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Humboldt County Dept. of Public Works
Mattole Road PM 5.25 Storm Damage Repair

Project No. **11222901**
Revision No. **-**
Date **7/25/2022**

Aquatic Resources Delineation Map

FIGURE 4

Data source: NAIP 2020 . Created by: jlopez4

\\ghdnet\ghd\US\Santa Rosa\Projects\561\11222901\GIS\Maps\Deliverables\11222901_CEQA_ISMND\11222901_CEQA_ISMND.aprx - 11222901_004_Wetland_Delineation
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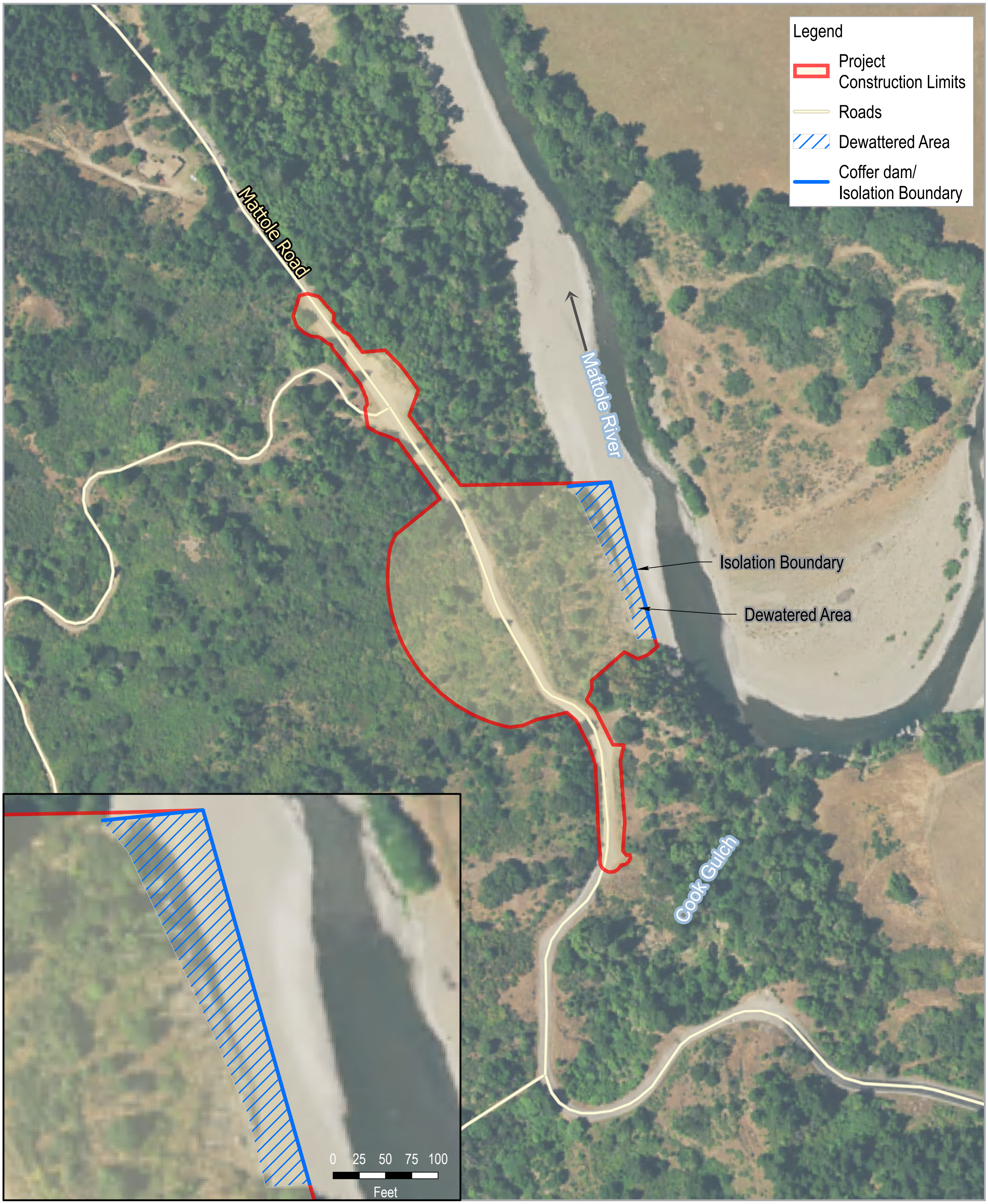

Paper Size ANSI A

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Feet

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Humboldt County Dept. of Public Works
Mattole Road PM 5.25
Storm Damage Repair

Dewatering Plan

Project No. **11222901**
Revision No. **-**
Date **12/3/2021**

FIGURE 5

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Appendix B

Mitigation, Monitoring, and Reporting Program

Mitigation Monitoring and Reporting Program

Humboldt County Department of Public Works- Mattole Road P.M. 5.25 Storm Damage Repair Project

SCH No. To be assigned

Environmental Protections Actions (EPA) and Mitigation Measures (MM)	Monitoring Responsibility	Monitoring/Reporting Action & Schedule	Verification (Initials/Date)
EPA 1 – Stormwater Pollution Prevention Plan (SWPPP) The Project will seek coverage under State Water Resources Control Board (Regional Board) Order No. 2009-0009-DWQ, Waste Discharge Requirements for Discharges of Storm Water Runoff Associated with Construction and Land Disturbance Activities. The County will submit permit registration documents (notice of intent, risk assessment, site maps, Storm Water Pollution Prevention Plan (SWPPP), annual fee, and certifications) to the Water Board. The SWPPP will address pollutant sources, best management practices, and other requirements specified in the Order. The SWPPP will include erosion and sediment control measures, and dust control practices to prevent wind erosion, sediment tracking, and dust generation by construction equipment. A Qualified SWPPP Practitioner will oversee implementation of the Project SWPPP, including visual inspections, sampling and analysis, and ensuring overall compliance.	County's contractor, to be verified by a SWPPP practitioner	Performance criteria – North Coast Regional Water Quality Control Board and County standards Reporting actions – As required by the state permit Schedule - During project construction activities, including work and non-work times	
Air Quality			
MM AQ-1: BMPs to Reduce Air Pollution The contractor shall implement the following BMPs during construction: – Disturbed surfaces (e.g., staging areas, soil piles, active graded areas, excavations, and unpaved access roads) shall be watered at least once per day or as needed for dust suppression. – All visible mud or dirt track-out onto adjacent public roads shall be removed using street sweepers at least once per day, or as needed to alleviate dust and debris on the roadway. – All vehicle speeds on unpaved roads shall be limited to 15 miles per hour, unless the unpaved road surface has been treated for dust suppression with water, rock, wood chip mulch, or other dust prevention measures. – All areas to be paved shall be completed as soon as practical. – Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to five minutes.	County and County's contractor	Performance criteria – North Coast Unified Air Quality Management District standards Reporting actions – Verify requirements are included in final plans and specifications Schedule – During construction, check jobsite compliance as necessary	

Environmental Protections Actions (EPA) and Mitigation Measures (MM)	Monitoring Responsibility	Monitoring/Reporting Action & Schedule	Verification (Initials/Date)
Biological Resources			
MM BIO-1: Protect Special Status Mammals and Bats – Vegetation immediately outside of the Project Area may serve as roosting habitat for a variety of special status bat species. Should tree removal or limbing occur during the bat maternity season (May 1 through August 30), these trees will be inspected for evidence of roosting bats. If the presence of a maternity roost is confirmed, an appropriate buffer distance will be established in consultation with CDFW to ensure that construction noise will remain below disturbance thresholds for bats until the maternity roost is abandoned. If tree and vegetation removal occur outside of the bat maternity season (September 1 through April 30), no inspection will be required, as no potential impact to maternity colonies will occur. – No nighttime work is currently proposed, however should it occur, Project-related lighting shall be minimized, either contained within structures or limited by appropriate reflectors or shrouds, and focused on areas needed for safety, security or other essential requirements. – Deep steep-sided excavations will be covered or ramped if left overnight, to avoid the risk of a nocturnally dispersing terrestrial mammals (e.g., North American Porcupine, American Badger, or Fisher) becoming trapped. Food waste and other trash shall be removed from the site at the end of each work day to avoid attractants. Pets (e.g., dogs) will not be permitted on the construction site.	County and County's biologist and contractor	Performance criteria – California Department of Fish and Wildlife (CDFW) standards Reporting actions – Completion and documentation of surveys, if necessary Schedule – Pre-construction and during construction; verify applicable disturbance buffers and protection measures are implemented	
MM BIO-2: Protect Migratory, Special Status, and Nesting Birds – No night work (with new, artificial sources of lighting) may occur within the Project Area or BSA. – Contractors shall attempt to remove trees and other vegetation that could potentially contain nesting birds outside the bird nesting season (Feb 1 to September 15). If vegetation removal occurs outside the bird nesting season, no further mitigation is necessary. If vegetation removal or construction work occur adjacent to suitable nesting habitat between February 1 and September 15, a qualified ornithologist shall conduct pre-construction surveys within the vicinity of the Project, to check for nesting activity of native birds and to evaluate the site for presence of raptors and special status bird species. The ornithologist shall conduct at minimum a one-day pre-construction survey within the 7-day period prior to vegetation removal and ground-disturbing activities. If ground disturbance and vegetation removal work lapses for seven days or longer during the breeding season, a qualified ornithologist shall conduct a supplemental avian pre-construction survey before Project work is reinitiated. – If active nests are detected within the construction footprint or up to 500 feet from construction activities, the ornithologist shall flag a buffer around each nest (assuming	County and County's biologist and contractor	Performance criteria – California Department of Fish and Wildlife (CDFW) standards Reporting actions – Verify that protection and avoidance measures are in final specifications; verify completion and documentation of surveys, if necessary Schedule – Pre-construction and during construction; verify applicable disturbance buffers and protection measures are implemented	

Environmental Protections Actions (EPA) and Mitigation Measures (MM)	Monitoring Responsibility	Monitoring/Reporting Action & Schedule	Verification (Initials/Date)
property access). Construction activities shall avoid nest sites until the ornithologist determines that the young have fledged or nesting activity has ceased. If nests are documented outside of the construction (disturbance) footprint, but within 500 feet of the construction area, buffers will be implemented as needed (buffer size dependent on species). In general, the buffer size for common species will be determined on a case-by-case basis in consultation with the CDFW and, if applicable, with USFWS. Buffer sizes will take into account factors such as (1) noise and human disturbance levels at the construction site at the time of the survey and the noise and disturbance expected during the construction activity; (2) distance and amount of vegetation or other screening between the construction site and the nest; and (3) sensitivity of individual nesting species and behaviors of the nesting birds. An absolute minimum buffer size of 30 feet is recommended as a starting point of discussion for common species, with larger buffers expected for special status species and raptors. – If active nests are detected during the survey, the qualified ornithologist shall monitor all nests at least once per week to determine whether birds are being disturbed. Activities that might, in the opinion of the qualified ornithologist, disturb nesting activities (e.g., excessive noise), shall be prohibited within the buffer zone until such a determination is made. If signs of disturbance or distress are observed, the qualified ornithologist shall immediately implement adaptive measures to reduce disturbance. These measures may include, but are not limited to, increasing buffer size, halting disruptive construction activities in the vicinity of the nest until fledging is confirmed or nesting activity has ceased, placement of visual screens or sound dampening structures between the nest and construction activity, reducing speed limits, replacing and updating noisy equipment, queuing trucks to distribute idling noise, locating vehicle access points and loading and shipping facilities away from noise-sensitive receptors, reducing the number of noisy construction activities occurring simultaneously, and/or reorienting and/or relocating construction equipment to minimize noise at noise-sensitive receptors.			
MM BIO-3: Protection of Special Status Amphibian and Reptile Species – Disturbance in proximity to wetlands or aquatic habitat, will be restricted to the minimum area necessary. – Within 24 hours prior to the start of construction, a qualified biologist will conduct a pre-construction survey for special status amphibians and reptiles within the disturbance footprint. Any special status amphibians found will be relocated to nearby suitable habitat outside of the Project Area.	County and County's biologist and contractor	Performance criteria – California Department of Fish and Wildlife (CDFW) standards Reporting actions – Verify requirements are in final specifications; verify completion and documentation of surveys, if necessary Schedule – Pre-construction and during construction; verify	

Environmental Protections Actions (EPA) and Mitigation Measures (MM)	Monitoring Responsibility	Monitoring/Reporting Action & Schedule	Verification (Initials/Date)
		applicable protection measures are implemented	
MM BIO-4: Protection of Special Status Fish – Caltrans shall initiate formal consultation with NMFS in compliance with Section 7 of the ESA. – All instream work will be completed during the regulated in-water work window, typically mid-June through late October and depending in rainfall. – Fish relocation will comply with all NMFS and CDFW permit conditions. – Equipment shall be cleaned of deleterious materials before being delivered to the job site. – Equipment shall be staged, and materials shall be stockpiled outside riparian habitat, in designated staging and stockpile areas. – Any new or previously excavated gravel material placed in the channel shall meet California Department of Transportation's (Caltrans) Gravel Cleanliness Specification #227 having a value of 85 or higher. – Any construction equipment operating adjacent to a stream shall be inspected daily for leaks. Any oil, fuel, and grease residue that has the potential to fall from machinery shall be removed and properly disposed of. Refueling and equipment maintenance will occur in designated staging and stockpiling areas only. – The awarded contractors shall develop and implement site-specific BMPs, a Water Pollution Control Plan, and emergency spill control plan. The awarded contractor shall be responsible for immediate spill containment and cleanup, as well as proper disposal of hazardous materials and BMPs used during spill recovery. – Light equipment such as generators, welders, or pumps, or any heavy equipment including water drafting trucks, will use drip pans or other devices (i.e., absorbent blankets, sheet barriers, or other materials) to avoid contamination of surface waters or soils located adjacent to waterbodies. – Equipment shall be inspected for leaks before each shift, throughout the shift, and at end-of-shift each day. – All fueling, lubing, and equipment maintenance shall be performed in an environmentally responsible manner at designated upland staging areas only, with all staging locations spatially isolated from watercourses. In the case of equipment has been immobilized due to mechanical failure, every effort shall be made to safeguard against and control the release of contaminants as repairs are being made. – The functional condition of fuel transfer pumps, hose assemblies, and emergency shutoff switches shall be evaluated prior to fueling operations. Personnel tasked with fueling shall	County and County's biologist and contractor	Performance criteria – California Department of Fish and Wildlife (CDFW) standards. National Marine Fisheries Service (NMFS) standards. Reporting actions – Verify that protection and avoidance measures are in final specifications; verify completion and documentation of surveys, if necessary Schedule – Pre-construction and during construction; verify protection measures are implemented. Check jobsite compliance as necessary	

Environmental Protections Actions (EPA) and Mitigation Measures (MM)	Monitoring Responsibility	Monitoring/Reporting Action & Schedule	Verification (Initials/Date)
remain near the fuel pump's emergency shutoff switch during fueling operations. The topping off of fuel tanks shall not occur. – Fuels and lubricants shall not be stored on-site after-hours or on weekends or holidays. – Maintenance involving the removal or repair of hydraulic cylinders, hoses, or of any reservoirs containing TPH or other deleterious substances, shall be performed over impermeable fabric or other surfaces resistant to such substances. – Two sealed 5-gallon spill kits shall be kept on-site through the course of the construction. Kits that are used shall be replaced in-kind with new sealed kits. Unsealed spill kits shall be removed from the site as they are oftentimes missing key components necessary during emergency spill situations. - In the event of a spill, the local CDFW office shall be notified and consulted regarding clean-up procedures. Large spills should also be reported to the Office of Spill Prevention and Response, 1700 K Street, Suite 250 Sacramento, CA 95811, or report oil spills to 800-852-7550 or 800-OILS-911.			
MM BIO-5: Protection of Special Status Invertebrates Prior to equipment entry in the channel and concurrent with dewatering, a qualified biologist shall examine the river substrate for the Western Ridged Mussels. If found to be present in the construction disturbance footprint, individuals will be relocated to nearby wetted areas during dewatering efforts by a qualified biologist.	County and County's biologist and contractor	Performance criteria – California Department of Fish and Wildlife (CDFW) standards Reporting actions – Verify that protection and avoidance measures are in final specifications; verify completion and documentation of surveys, if necessary Schedule – Pre-construction and during construction; verify applicable disturbance buffers and protection measures are implemented	
MM BIO-6: Avoidance and Minimization Measures for Waters of the United States and Waters of the State 1. To the extent practicable, the discharge of dredged or fill material into waters of the United States, including wetlands, will be avoided. However, complete avoidance may be not feasible, thus the following measures will be implemented: 2. Prior to any discharge of dredged or fill material into waters of the United States, including wetlands, authorization will be obtained from the Corps. For any features determined not to be subject to USACE jurisdiction during the verification process, authorization to discharge	County and County's contractor	Performance criteria –County, state, and federal standards, consistent with the project's permits Reporting actions – Verify that protection and avoidance measures are in final specifications	

Environmental Protections Actions (EPA) and Mitigation Measures (MM)	Monitoring Responsibility	Monitoring/Reporting Action & Schedule	Verification (Initials/Date)
will be obtained from the North Coast Regional Water Quality Control Board (NCRWQCB). For fill requiring a USACE permit under Section 404 of the CWA, a water quality certification will be obtained from the Regional Board under Section 401 of the CWA prior to discharge of dredged or fill material. If jurisdictional agencies determine the Project's impacts to wetlands and Waters are not self-mitigating, compensatory mitigation will be designed and implemented to the satisfaction of jurisdictional agencies. 3. Prior to any activities that will obstruct the flow of, alter the bed, channel, or bank of any perennial or intermittent stream, or impact any riparian habitat, notification of streambed alteration will be submitted to the CDFW; and, if required, a Lake and Streambed Alteration Agreement will be obtained from CDFW. 4. If water is present in within the Project Area (i.e., western side channel of the Mattole) at the time of construction, such as in scenario 2-4 in section 3.10a, a dewatering plan will be developed for review and acceptance by regulatory agencies at least 15 days prior to the onset of construction. 5. No excavation or equipment operation will occur where flowing water is present. 6. Suitable BMPs, such as silt fences, fiber rolls, or earthen berms will be installed or constructed between work zones and staging and temporary material stockpile areas, and any watercourse to collect loose debris and to intercept sediment during rain events. These structures shall be installed pursuant to Caltrans specifications prior to pending rain events (trigger = greater than 50 percent possibility of rain within the next 24 hours), as forecasted by the National Weather Service. Any sediment caught by the fence or rolls will be removed before the fence/rolls are pulled. 7. Temporary spoils or construction material sites shall be located so as to not drain directly into ditches, streams, or other waterbodies. If a spoils/construction materials site has the potential to drain into a surface water feature, a retention basin, berm(s), or other catchment device shall be constructed or installed to intercept silt-laden storm runoff before it reaches any waterbody. Areas disturbed by construction and temporary storage sites shall be graded, seeded, and mulched upon completion of construction, whether or not they pose the risk of erosion and the off-site release of fine sediment. 8. All construction debris shall be removed from the site in a timely manner and disposed of appropriately. 9. All exposed mineral soil, or stockpiles to remain on-site through the wet season shall be protected from erosion associated with wind and rain (e.g., silt fences, straw bales, straw mulch, and tarps). 10. Any monitoring, maintenance, and reporting required by the regulatory agencies (i.e., USACE, Regional Board, and CDFW) shall be implemented and completed pursuant to		Schedule – During construction; check jobsite compliance as necessary	

Environmental Protections Actions (EPA) and Mitigation Measures (MM)	Monitoring Responsibility	Monitoring/Reporting Action & Schedule	Verification (Initials/Date)
established criteria and/or schedules. All measures contained in Project permits or associated with agency approvals shall be implemented in a timely manner. 11. Refueling of equipment will not occur within 100 feet of waters or wetlands.			
Cultural Resources			
MM CR-1: Inadvertent Discovery of Archaeological Material A pre-construction meeting shall be held with field contractors, where the protocols for inadvertent discovery (described below) will be communicated. The following provides means of responding to the circumstance of a significant discovery implementation of the proposed undertaking. If cultural materials for example: chipped or ground stone, historic debris, building foundations, or bone are discovered during ground-disturbance activities, work shall be stopped within 66 feet of the discovery, per the requirements of CEQA (Revised Guidelines, Title 14 CCR 15064.5 (f)). Work near the archaeological finds shall not resume until a professional archaeologist, who meets the Secretary of the Interior's Standards and Guidelines, has evaluated the materials and offered recommendations for further action. Tribal representatives shall be notified.	County and County's archaeologist and contractor	Performance criteria –County, state, and federal standards Reporting actions – Verify requirements are in final specifications; verify completion of archaeological monitoring; verify completion of noticing as detailed in MM CR-1 upon inadvertent discovery Schedule – During construction; verify completion of archaeological monitoring as detailed in MM CR-1	
MM CR-2: Inadvertent Discovery of Human Remains If human remains are discovered during project construction, work will stop at the discovery location, within 66 feet, and any nearby area reasonably suspected to overlie adjacent to human remains (PRC, Section 7050.5). The Humboldt County Coroner will be contacted to determine if the cause of death must be investigated. If the Coroner determines that the remains are of Native American origin, it is necessary to comply with State laws relating to the disposition of Native American burials, which fall within the jurisdiction of the NAHC (PRC, Section 5097). The Coroner will contact the NAHC. The descendants or most likely descendants of the deceased will be contacted, and work will not resume until they have made a recommendation to the landowner or the person responsible for the excavation work for means of treatment and disposition, with appropriate dignity, of the human remains and any associated grave goods, as provided in PRC, Section 5097.98.	County and County's archaeologist and contractor	Performance criteria –County, state, and federal standards Reporting actions – Verify inclusion of language in final plans and specifications Schedule – During construction; verify completion of protection measures and notifications if inadvertent discovery	
Geology and Soils			
MM GEO-1: Erosion Control BMPs To minimize erosion, sediment, and pollutant contribution to the Mattole River, BMPs will be instituted, including:	County and County's contractor	Performance criteria –County, state, and federal standards Reporting actions – Verify that protection and avoidance	

Environmental Protections Actions (EPA) and Mitigation Measures (MM)	Monitoring Responsibility	Monitoring/Reporting Action & Schedule	Verification (Initials/Date)
– Construction will occur in late summer when the chance of precipitation is lowest and Mattole River instream flows are at their annual minimum. – Construction equipment will be cleaned and inspected prior to use. Equipment maintenance and fueling will be done at designated staging areas. Equipment will not enter the wetted environment of the Mattole River. – On-site stockpiles will be isolated with silt fence, filter fabric, and/or straw bales/fiber rolls. – Silt fence or fiber rolls will be placed below the Project areas to contain loose rolling rocks and sediment. Silt fence/fiber roll will be kept in place and maintained during the entire Project. Any sediment caught by the fence or rolls will be removed before the fence/rolls are pulled. – Ground disturbed by construction work will be revegetated with fast-growing native grasses and sterile hybrids and mulched when work is complete. – The site will be monitored by HCDPW personnel during winter rains and any evidence of erosion (rilling, gullies, etc.) will be repaired promptly. In addition, areas where revegetation is not successful will be reseeded and remulched to ensure vegetative ground cover.		measures are in final specifications Schedule – During construction; verify completion of protection measures	
MM **GEO-2: Inadvertent Discovery of Paleontological Resources** In the event that fossils are encountered during construction (i.e., bones, teeth, or unusually abundant and well-preserved invertebrates or plants), construction activities shall be diverted away from the discovery within 50 feet of the find, and a professional paleontologist shall be notified to document the discovery as needed, to evaluate the potential resource, and to assess the nature and importance of the find. Based on the scientific value or uniqueness of the find, the paleontologist may record the find and allow work to continue, or recommend salvage and recovery of the material, if it is determined that the find cannot be avoided. The paleontologist shall make recommendations for any necessary treatment that is consistent with currently accepted scientific practices. Any fossils collected from the area shall then be deposited in an accredited and permanent scientific institution where they will be properly curated and preserved.	County and County's contractor	Performance criteria –County, state, and federal standards Reporting actions – Verify inclusion of language in final plans and specifications Schedule – During construction; verify completion of protection measures and notifications if inadvertent discovery	

Appendix C

CalEEMod Modeling Information and Results

Mattole P.M. 5.25 - Humboldt County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mattole P.M. 5.25

Humboldt County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	14.00	1000sqft	7.43	323,862.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	103
Climate Zone	1			**Operational Year**	2024
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Paved area is 14,000 sf, total area of disturbance of 323,862 sf.

Construction Phase - Project Specific Constructon Phasing

Off-road Equipment - Project Specfic Fleet and Activity

Off-road Equipment - Project Specfic Fleet and Activity

Off-road Equipment - Project Specfic Fleet and Activity

Trips and VMT - Default trip generation based on project specifc equipment and hauling

Grading - 7,500 CY of rock imported, 15,000 CY of soil exported.

Mattole P.M. 5.25 - Humboldt County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.2237	1.9398	1.8658	5.5600e-003	0.2990	0.0711	0.3701	0.1336	0.0659	0.1994	0.0000	495.3741	495.3741	0.1215	0.0139	502.5419
Maximum	**0.2237**	**1.9398**	**1.8658**	**5.5600e-003**	**0.2990**	**0.0711**	**0.3701**	**0.1336**	**0.0659**	**0.1994**	**0.0000**	**495.3741**	**495.3741**	**0.1215**	**0.0139**	**502.5419**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**6-15-2023**	**9-14-2023**	1.9693	1.9693
2	**9-15-2023**	**9-30-2023**	0.1165	0.1165
		Highest	1.9693	1.9693

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	6/15/2023	7/12/2023	5	20	
2	Excavation, Grading and Rock Placement	Grading	6/15/2023	9/20/2023	5	70	
3	Finished Grading and Re-Paving	Paving	10/1/2023	10/13/2023	5	10	

Mattole P.M. 5.25 - Humboldt County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 70

Acres of Paving: 7.43

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Dumpers/Tenders	2	8.00	171	0.42
Site Preparation	Excavators	2	8.00	158	0.38
Site Preparation	Off-Highway Trucks	2	8.00	402	0.38
Site Preparation	Rubber Tired Loaders	1	8.00	203	0.36
Site Preparation	Skid Steer Loaders	2	8.00	65	0.37
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Excavation, Grading and Rock Placement	Dumpers/Tenders	5	8.00	187	0.41
Excavation, Grading and Rock Placement	Excavators	4	8.00	158	0.38
Excavation, Grading and Rock Placement	Graders	1	8.00	187	0.41
Excavation, Grading and Rock Placement	Off-Highway Trucks	4	8.00	402	0.38
Excavation, Grading and Rock Placement	Plate Compactors	1	8.00	8	0.43
Excavation, Grading and Rock Placement	Pumps	1	8.00	84	0.74
Excavation, Grading and Rock Placement	Rollers	1	8.00	80	0.38
Excavation, Grading and Rock Placement	Rubber Tired Dozers	1	8.00	247	0.40
Excavation, Grading and Rock Placement	Rubber Tired Loaders	1	8.00	203	0.36
Excavation, Grading and Rock Placement	Skid Steer Loaders	1	8.00	65	0.37
Excavation, Grading and Rock Placement	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Finished Grading and Re-Paving	Dumpers/Tenders	4	8.00	187	0.41
Finished Grading and Re-Paving	Graders	1	8.00	187	0.41
Finished Grading and Re-Paving	Pavers	1	8.00	130	0.42

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Finished Grading and Re-Paving	Paving Equipment	1	8.00	132	0.36

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Finished Grading and Re-Paving	Rollers		1	8.00	80	0.38
Finished Grading and Re-Paving	Tractors/Loaders/Backhoes		1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	10	25.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Excavation, Grading and Rock Placemen	21	53.00	0.00	2,813.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Finished Grading and Re Paving	9	23.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0194	0.1615	0.1960	5.0000e-004		6.3300e-003	6.3300e-003		5.8200e-003	5.8200e-003	0.0000	44.1627	44.1627	0.0143	0.0000	44.5197
Total	**0.0194**	**0.1615**	**0.1960**	**5.0000e-004**	**0.0000**	**6.3300e-003**	**6.3300e-003**	**0.0000**	**5.8200e-003**	**5.8200e-003**	**0.0000**	**44.1627**	**44.1627**	**0.0143**	**0.0000**	**44.5197**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7600e-003	1.2700e-003	0.0120	3.0000e-005	3.0000e-003	2.0000e-005	3.0200e-003	8.0000e-004	2.0000e-005	8.2000e-004	0.0000	2.4872	2.4872	9.0000e-005	9.0000e-005	2.5167
Total	**1.7600e-003**	**1.2700e-003**	**0.0120**	**3.0000e-005**	**3.0000e-003**	**2.0000e-005**	**3.0200e-003**	**8.0000e-004**	**2.0000e-005**	**8.2000e-004**	**0.0000**	**2.4872**	**2.4872**	**9.0000e-005**	**9.0000e-005**	**2.5167**

3.3 Excavation, Grading and Rock Placement - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2492	0.0000	0.2492	0.1201	0.0000	0.1201	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1696	1.4670	1.4665	3.8400e-003		0.0601	0.0601		0.0557	0.0557	0.0000	336.7903	336.7903	0.1032	0.0000	339.3701
Total	**0.1696**	**1.4670**	**1.4665**	**3.8400e-003**	**0.2492**	**0.0601**	**0.3093**	**0.1201**	**0.0557**	**0.1758**	**0.0000**	**336.7903**	**336.7903**	**0.1032**	**0.0000**	**339.3701**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.1200e-003	0.2436	0.0403	8.6000e-004	0.0232	2.0600e-003	0.0253	6.4000e-003	1.9700e-003	8.3700e-003	0.0000	83.0538	83.0538	1.7000e-004	0.0131	86.9477
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0130	9.4100e-003	0.0893	2.0000e-004	0.0222	1.4000e-004	0.0224	5.9300e-003	1.3000e-004	6.0600e-003	0.0000	18.4546	18.4546	6.7000e-004	6.8000e-004	18.6735
Total	**0.0172**	**0.2530**	**0.1296**	**1.0600e-003**	**0.0455**	**2.2000e-003**	**0.0477**	**0.0123**	**2.1000e-003**	**0.0144**	**0.0000**	**101.5084**	**101.5084**	**8.4000e-004**	**0.0137**	**105.6212**

3.4 Finished Grading and Re-Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	5.2600e-003	0.0564	0.0561	1.1000e-004		2.4100e-003	2.4100e-003		2.2200e-003	2.2200e-003	0.0000	9.2815	9.2815	3.0000e-003	0.0000	9.3566
Paving	9.7300e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0150**	**0.0564**	**0.0561**	**1.1000e-004**		**2.4100e-003**	**2.4100e-003**		**2.2200e-003**	**2.2200e-003**	**0.0000**	**9.2815**	**9.2815**	**3.0000e-003**	**0.0000**	**9.3566**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.1000e-004	5.8000e-004	5.5400e-003	1.0000e-005	1.3800e-003	1.0000e-005	1.3900e-003	3.7000e-004	1.0000e-005	3.8000e-004	0.0000	1.1441	1.1441	4.0000e-005	4.0000e-005	1.1577
Total	**8.1000e-004**	**5.8000e-004**	**5.5400e-003**	**1.0000e-005**	**1.3800e-003**	**1.0000e-005**	**1.3900e-003**	**3.7000e-004**	**1.0000e-005**	**3.8000e-004**	**0.0000**	**1.1441**	**1.1441**	**4.0000e-005**	**4.0000e-005**	**1.1577**

Appendix D

Natural Environment Study

Mattole Road PM 5.25 Storm Damage Repair Project

NES

Natural Environment Study

Mattole Road PM 5.25

01-HUM-MATTOLE ROAD-PM5.25

ER-32LO-5904(109)

June 2021

Caltrans
CALIFORNIA DEPARTMENT OF TRANSPORTATION

Natural Environment Study

Mattole Road PM 5.25

ER-32LO-5904(109)

June 2021

STATE OF CALIFORNIA

Department of Transportation

In Cooperation with
COUNTY OF HUMBOLDT
Department of Public Works

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Local Assistance, Caltrans District 1

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Darrell Cardiff, Senior Environmental Planner
Local Assistance, Caltrans District 1

The public can obtain this document in an alternative format by contacting the Humboldt County Department of Public Works at (707) 445-7421 or use the California Relay Service 1 (800) 735-2929 (Voice) or 711 for further information.

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List of Tables

Acronyms List

Caltrans	California Department of Transportation
CDFG	California Department of Fish and Game
CDFW	California Department of Fish and Wildlife
HCDPW	Humboldt County Department of Public Works
NCRWQCB	North Coast Regional Water Quality Control Board
NMFS	NOAA’s National Marine Fisheries Service
RWQCB	Regional Water Quality Control Board
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey (USGS).
CESA	California Endangered Species Act
ESA	federal Endangered Species Act
CWA	Clean Water Act
MBTA	Migratory Bird Treaty Act

MSFCMA	Magnuson-Stevens Fishery Conservation and Management Act
API	Area of Potential Impact
BIOS	Biogeographic Information and Observation System
BSA	Biological Study Area
CC	California Coast
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
DPS	Distinct Population Segment
EFH	Essential Fish Habitat
ESU	Evolutionarily Significant Unit
SAL	CDFW Special Animals List
SNC	Sensitive Natural Community
SONCC	southern Oregon/northern California coast
SSC	Species of Special Concern
cfs	cubic feet per second
dbh	diameter at breast height
F	Fahrenheit
ft^2	square feet
in	inch/inches
mi^2	square miles
BMPs	Best Management Practices
GPS	Global Positioning System
OHWM	Ordinary High Water
PM	Post Mile
RSP	Rock Slope Protection

Summary

The Mattole Road PM 5.25 Storm Damage Repair Project (Project) proposes to stabilize the landslide to the extent possible, restore the roadway, improve roadway drainage, reduce erosion potential along the toe of the slide adjacent to the Mattole River, and increase roadway safety and local access. The Project includes lateral sub-drains with subsurface drainage, culvert replacement, and a restored roadway. The Project also includes installation of rock slope protection (RSP) at the toe of the landslide, along the bank of the anadromous Mattole River. Dewatering and fish relocation is anticipated.

Aquatic habitat in the Mattole River would be impacted as a result of dewatering and RSP installation. Aquatic habitat in Cook's Gulch and Granny Creek, located within the Biological Study Area (BSA; see **Chapter 2, Studies Required**) but outside the Area of Potential Impact (API, see **Chapter 1, Project Description**) would not be impacted. Additional three-parameter wetlands may be permanently and temporarily impacted adjacent to section of Mattole Road within the API (see **Chapter 4, Aquatic Habitat, Regulated Waters, and Wetlands**). Sensitive Natural Communities (SNCs) are not present within the API and would not be impacted.

During a seasonally-appropriate floristic survey occurring April 22, 2021, the GHD botanist did not observe any special status plant species. A second seasonally appropriate survey is planned for late June/early July 2021 to confirm special status plants are absent from the API. However, based on existing habitat, it is expected that the potential for occurrence of special status plants within the API is negligible. Invasive plant species were observed during the February 2021 site visit and April 2021 botanical survey.

Potential impacts to special status amphibians, reptiles, insects, mammals, bats, and bird species would be avoided with the incorporation of avoidance and minimization measures. Special status fish species could potentially be impacted as a result of dewatering and fish relocation, which would occur in accordance with California Department of Fish and Wildlife (CDFW) and National Marine Fisheries Service (NMFS) requirements.

Required permits and authorizations include:

- CDFW Streambed Alteration Agreement and compliance with the California Endangered Species Act (CESA)
- North Coast Regional Water Quality Control Board (NCRWQCB) Clean Water Act Section 401 Water Quality Certification
- U.S. Army Corps of Engineers (USACE) Clean Water Act Section 404 Permit
- NMFS Endangered Species Act Section 7 Consultation

- State Water Resources Control Board Construction General Permit

Environmental benefits would result from stabilizing the existing landslide by reducing the volume of eroding sediments entering the Mattole River, which currently impair water quality. Improved water quality conditions, including reduced turbidity, are expected. In addition, proposed willow plantings along the lower slope of the slide would improve riparian habitat conditions along this section of the river, including providing increased riparian shading.

Compensatory mitigation would be required for permanently impacted three-parameter wetlands (impacts are expected based on the current Project footprint). Compensatory mitigation would be reviewed and approved by jurisdictional agencies during the Project's permitting phase and would occur at a ratio of no less than 1:1. Currently, in-kind mitigation is proposed by the County at the Project site. Aside from potential compensatory mitigation related to permanent wetland impacts, no other compensatory mitigation requirements would result from the Project.

Chapter 1: Introduction

This Natural Environment Study (NES) has been prepared by Humboldt County Department of Public Works (HCDPW), Natural Resources Division to evaluate the potential effects of proposed permanent repair of the roadway at Mattole Road, Post Mile (PM) 5.25 (hereafter “Project” or “Project Site”).

Project History

The Project Site is located on Mattole Road at PM 5.25. At this location, Mattole Road passes across the side slope of an actively moving slide area referred to as the “Roscoe Slide” (**Appendix A, Figure 1 – Project Vicinity**). The winter storms of 2005 and 2006 resulted in a large slide that caused approximately 500 feet of the Mattole Road to shift and sink by about 10 to 15 feet. The head of the large slide area is located 800 feet upslope of the roadway and it extends below the roadway approximately 300 feet to the Mattole River. This slide also resulted in the plugging of an existing 24-inch (in) culvert located at the north end of the slide area, which ultimately caused severe erosion to the roadway as well as at the culvert outlet. Emergency opening work has been required following the 2005/2006 event as well as the 2011 and 2019 events. This work has consisted of fixing the culvert outlet, backfilling the outlet area with rock, and grading the roadway with 5 to10 feet of fill and gravel to restore traffic.

Project Purpose and Need

Since the original storm damage occurred, the landslide has remained active and the roadway has remained unpaved and limited to one lane, impeding local traffic and impacting roadway safety. The Project proposes to stabilize the landslide to the extent possible, restore the roadway, improve roadway drainage, reduce erosion potential along the toe of the slide adjacent to the Mattole River, and increase roadway safety and local access.

Project Description

Location

The Project is located in a remote region of Humboldt County on Mattole Road at PM 5.25, approximately 5.25 miles northwest of Honeydew (see **Appendix A, Figure 1 – Project Vicinity Map**). Mattole Road is a rural roadway that is roughly 65 miles (mi) in length (Dangerous Roads 2021). Mattole Road runs from the town of Ferndale in the north to Petrolia and Honeydew in the south. The road then heads east through Humboldt Redwoods State Park where it intersects with Highway 101. This Project is located within the Buckeye Mountain U.S. Geological Survey (USGS) 7.5” quadrangle, Township 1S, Range 1E, Section 25. The Global Positioning System (GPS) location in decimal degrees is: 40.2550174, -124.1905428. The roadway itself is encompassed within the County right of way (ROW). Additional right of way acquisition on both sides of the roadway will likely be necessary for the permanent repair. This Project is not located within local Coastal Zone jurisdiction.

Area of Potential Impact

The Project area, or Area of Potential Impact (API), for the purposes of this NES includes all areas where Project-related ground disturbances are anticipated to occur. This encompasses the longitudinal and transverse slope sub-drainage, road embankment reinforcement, culvert replacement area, rock slop protection (RSP), in-stream work, and the proposed staging and stockpile areas (see **Appendix A, Figure 2 – Area of Potential Impact**). The API encompasses an area of 7.43 acres or approximately 323,651 square feet (ft^2).

Project Elements

Project elements include longitudinal and transverse slope sub-drainage, a reinforced road embankment (supplemented by lightweight fill if feasible), replacement of the existing culvert and RSP armoring at the slope toe along the Mattole River. Project elements are shown in **Appendix A, Figure 3 – Project Overview**. The primary Project elements are described below.

Lateral Sub-Drains with Subsurface Drainage

East of Mattole Road on the upslope side of the road, three longitudinal sub-drains with a minimum width of four feet would start near the top of the landslide and extend downslope approximately 300 feet to the roadway. The sub-drains are comprised of permeable drain rock and geotextile fabric and intended to intercept subsurface flow. The three longitudinal sub-drains would include approximately four lateral sub-drains each with a minimum width of 2 feet. The longitudinal sub-drains would bisect an inboard ditch running parallel to the restored roadway and continue underneath the roadway. West of Mattole Road on the downslope side of the road, the longitudinal sub-drains would daylight into outlet pipes and discharge into energy dissipaters.

Replace Culvert

One new drainage culvert would be installed under Mattole Road (see **Appendix A, Figure 3 – Project Overview**). The culvert would have a diameter of approximately 18 in and would daylight onto RSP west of Mattole Road.

Restore Roadway

Approximately 500 feet of the roadway would be re-established with a reinforced embankment comprised of geogrid and native compacted soil or lightweight fill. Grading would widen the roadway to a final width of approximately 20 feet with 4-foot shoulders. Following grading, aggregate road base would be placed to achieve the final design elevation and slope. The restored roadway would be paved with asphalt concrete prior to roadway striping.

Install RSP with Live Willow Plantings at Toe of Slide

To protect the slope toe at the base of the slide from continued erosion, RSP would be placed along approximately 350 feet of riverbank. The RSP would be keyed below the anticipated scour depth and extend up the slope a minimum of two feet above the 100-year flood elevation. Layers of live willows and soil will be placed between layers of RSP. The live willows, once established, will provide additional slope stabilization and increase riparian cover over the open water where, due to the existing slope instabilities, riparian vegetation is absent. To place the RSP and live willow plantings, a temporary unpaved access road would be constructed from the restored roadway down to the Mattole River. The temporary access road would be removed, treated with erosion control best management practices (BMPs), and revegetated during site closure (see also Site Restoration and Closure below).

Project Construction

Construction Schedule

Construction would commence in 2023 and would occur within a single construction season. In-water construction would occur within the regulated in-water work period, typically June 15 through October 31. Construction would require approximately four months.

Construction would occur during late summer and fall when Mattole River streamflows are at their annual minimum. If wetted at the time of construction, the portion of the Mattole River at the toe of the landslide would be hydraulically isolated and dewatered in accordance with requirements from regulatory agencies (see **Appendix A, Figure 4 – Dewatering Plan**). Equipment would work from the streambank only to place RSP along the bank and would not enter the wetted environment. Dewatering would utilize coffer dams and/or other similar structures. Prior to dewatering, fish removal would occur by a qualified biologist following requirements from the CDFW and the NMFS. Following construction, coffer dams and other structures used during dewatering would be removed.

Construction Activities and Equipment

Excess soils, aggregate road base, RSP, and construction materials would be stored within designated staging areas (see **Appendix A, Figure 2 – Area of Potential Impact**). Excess materials may be re-used on-site for backfill and finished grading. Excess materials would not be stockpiled on-site once the Project is complete. The contractor would haul additional excess materials off-site for beneficial re-use, recycling, or legal disposal.

Construction would primarily include site preparation such as removal of vegetation, followed by excavation, grading, and hauling. Water from legal sources would be used for dust control and compaction and re-vegetation.

All construction activities would be accompanied by both temporary and permanent erosion and sediment control BMPs. Project construction would include the following activities:

- Clearing and grubbing – To clear roadside vegetation and brush from Mattole Road shoulders and to construct Project features above and below Mattole Road;
- Grading – Where required within the Project area;

- Excavation – Throughout the Project area to remove and place material, install sub-drains and underdrains, and install RSP;

- Paving - Along the roadway;

- Installation of RSP – RSP to be hauled to the site via dump trucks and placed at and above toe of slope via excavators; and

- Hauling – Transport of existing road base, pavement, and other excess materials off-site; transport of imported material to the Project area.

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

Site Access

The Project would be accessed via Mattole Road from Honeydew or Petrolia. A new, temporary access road from Mattole Road to the Mattole River which would be constructed within the Project limits of disturbance.

Establish Exclusion Areas and Erosion Control

Prior to construction, any exclusion areas to protect delineated wetlands or SNCs would be installed by the contractor pursuant the final construction design plans. To minimize erosion, sediment, and pollutant contribution to the Mattole River, BMPs would be instituted, including:

- Construction would occur in late summer when the chance of precipitation is lowest and Mattole River instream flows are at their annual minimum.

- Construction equipment would be cleaned and inspected prior to use. Equipment maintenance and fueling would be done at designated staging areas. Equipment would not enter the wetted environment of the Mattole River.

- On-site stockpiles would be isolated with silt fence, filter fabric, and/or straw bales/fiber rolls.

- Silt fence or fiber rolls would be placed below the Project areas to contain loose rolling rocks and sediment. Silt fence/fiber rolls would be kept in place and maintained during the entire Project. Any sediment caught by the fence or rolls would be removed before the fence/rolls are pulled.

- Ground disturbed by construction work would be revegetated with fast-growing native grasses and sterile hybrids and mulched when work is complete.

- The site would be monitored by HCDPW personnel during winter rains and any evidence of erosion (rilling, gullies, etc.) would be repaired immediately. In addition, areas where revegetation is not successful would be reseeded and remulched to ensure vegetative ground cover.

Vegetation Removal

Vegetation removal would be limited to minor roadside vegetation and on the landslide surface to install the drains and RSP and to for construction access. Vegetation removal would include minor mowing and minor brush removal. Small trees presently leaning on the hillside within the construction footprint will be removed (< 12-in diameter at breast height [dbh]).

To minimize potential impacts to birds, vegetation could be removed prior to February 1 or after September 15 to avoid the nesting bird season. If vegetation removal or ground disturbance cannot be confined to work outside of the nesting season, a qualified ornithologist would conduct pre-construction surveys within the vicinity of the Project area, to check for nesting activity of native birds and to evaluate the site for presence of raptors and special status bird species. If active nests are detected within the construction footprint or within the construction buffer established by the ornithologist, the ornithologist would flag an avoidance buffer around each nest.

Stockpiling and Staging

Temporary disturbance for stockpiling and staging would occur within the limits of the API and include existing roadside turnouts within approximately 0.5 miles of the Project area, in either direction (see **Appendix A, Figure 2 – Area of Potential Impact**). Within the stockpiling and staging area, BMPs would be utilized to prevent materials and hazardous materials from impacting the environment.

Channel Diversion or Dewatering

Construction would occur during late summer and fall when Mattole River streamflows are at their annual minimum. As of late April 2021, the thalweg of the Mattole River was located is on the north side and beyond the construction limits of the Project. If wetted at the time of construction, the portion of the Mattole River at the toe of the landslide would be hydraulically isolated and dewatered to create a work isolation area in accordance with requirements from regulatory agencies. Heavy equipment would be operated from the streambank to place RSP along the bank and would not enter the wetted environment. Dewatering would utilize coffer dams and/or other similar structures (**Appendix A, Figure 4 – Dewatering Plan**). Prior to construction, any remaining isolated pools would be surveyed for fish and herpetofauna. A qualified biologist would be present during any dewatering to relocate fish and herpetofauna (if present), consistent with protocols required by the CDFW, NMFS, and Project regulatory approvals.

A draft stream diversion plan was developed to show the anticipated diversion processes for the purpose of obtaining regulatory approvals (described in further detail described below). A final stream diversion plan would be developed by the contractor awarded the construction project and would be subject to review/approval by the HCDPW. The final plan is anticipated to be very similar to the draft plan and would be tailored to the contractor's specific construction techniques and phasing. The draft plan includes installation of a cofferdam to isolate the work area from the live channel. Following placement of the cofferdam, water remaining in the isolation area would be pumped to either an infiltration area if turbid or to the Mattole River if not turbid. All pumps would be screened to avoid inadvertent fish entrainment. Fish screening specifications would be consistent with those required by CDFW and NMFS (e.g., mesh no greater than 3/32-in opening). The pumps would be powered with gasoline or diesel generators. Generators would be operated at the lowest revolution per/minute needed to operate the pump(s) and minimize noise and placed on absorbance pads and/or in secondary containment if adjacent to the Mattole River. If water is present in the channel during construction, up to approximately 600 ft of the channel may need to be dewatered. However, the actual extent of dewatering is expected to be much lower, as the stream usually goes dry in the summer months, according to USGS records and available aerial photography from prior years. The maximum duration of time during which the stream may be dewatered is 90 days (may range from 60 to 90 days).

Following construction, coffer dams and other structures used during dewatering would be removed and flow slowly reintroduced to the site.

Existing Utilities

Overhead telephone and high voltage electrical lines bisect the Project area on both the upslope and downslope side of the road. The overhead clearance is sufficient to accommodate construction under the lines without needing temporary or permanent relocation.

Traffic and Access Control

Traffic control would be necessary during construction. Single travel lane would be maintained at all times through the construction site. However, short closures (less than 1 hour) may be needed during infrequent equipment/material deliveries.

Groundwater Dewatering

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

Site Restoration and Closure

Following construction, the contractor would demobilize and remove equipment, supplies, and construction waste. The disturbed areas, including the temporary access road to the Mattole River, would be restored to pre-construction conditions or stabilized with a combination of grass seed (broadcast or hydroseed), straw mulch, rolled erosion control fabric, and other plantings/revegetation.

Chapter 2 – Study Methods

Regulatory Requirements

Federal Jurisdiction

Endangered Species Act (ESA)

The ESA of 1973 (16 USC 1531 et seq.) establishes a national policy that all federal departments and agencies provide for the conservation of threatened and endangered species and their ecosystems. The Secretary of the Interior and the Secretary of Commerce are designated in the ESA as responsible for: (1) maintaining a list of species likely to become endangered within the foreseeable future throughout all or a significant portion of its range (threatened) and that are currently in danger of extinction throughout all or a significant portion of its range (endangered); (2) carrying out programs for the conservation of these species; and (3) rendering opinions regarding the impact of proposed federal actions on listed species. The ESA also outlines what constitutes unlawful taking, importation, sale, and possession of listed species and specifies civil and criminal penalties for unlawful activities.

Pursuant to the requirements of the ESA, an agency reviewing a proposed Project within its jurisdiction must determine whether any federally-listed or proposed species may be present in the Project region, and whether the proposed Project would result in a “take” of such species. The ESA prohibits “take” of a single threatened and endangered species except under certain circumstances and only with authorization from the USFWS or the National Oceanic and Atmospheric Administration (NOAA) Fisheries through a permit under Section 7 (for federal entities or federal actions) or 10(a) (for non-federal entities) of the Act. “Take” under the ESA includes activities such as “harass, harm, pursue, hunt shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.” USFWS regulations define harm to include “significant habitat modification or degradation.” On June 29, 1995, a U.S. Supreme Court ruling further defined harm to include habitat modification “…where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering.”

In addition, the agency is required to determine whether the Project is likely to jeopardize the continued existence of any species proposed to be listed under the ESA or result in the destruction or adverse modification of critical habitat for such species (16 USC 1536[3][4]). If it is determined that a Project may result in the "take" of a federally-listed species, consultation would be required under Section 7 or Section 10 of the ESA.

Critical habitat is defined by the ESA as a specific geographic area containing features essential for the conservation of an endangered or threatened species. Under Section 7 of the ESA, critical habitat should be evaluated if designated for federally-listed species that may be present in the Project’s Action Area (federally designated term for a BSA).

Habitat Conservation Plans (HCPs)

Conservation plans were incorporated into the ESA in 1982 (sections 10(a)(1)(B) and 10(a)(2)(A) of the ESA, as amended) to create a pathway for take exemptions under the Act for federal and non-federal entities (previously prohibited under Section 9 of the Act). HCPs are planning documents that provide measures to minimize or mitigate Project impacts to listed or candidate species (as well as eagles, following 2011 guidance) at an ecosystem versus single-species level. An HCP provides a degree of assurance for private entities that measures agreed upon in the HCP by federal regulators and the entity would be upheld and not altered for the lifespan of the document, and no additional obligations (financial, land use, or other) would be required at a later date with respect to the species covered in the HCP (referred to as the "No Surprises Rule"; 63 FR 8859). Requirements for issuance of an HCP require that all take is incidental, that take would be minimized and mitigated to the maximum extent practical, that adequate funds are available to implement the plan, and that the incidental take would not appreciably reduce the survival and recovery potential of the species, among others. HCPs also must comply with the Five Point Policy (65 FR 35242) that requires the incorporation of biological goals and objectives for each species in the document, adaptive management, monitoring, a set time frame for implementation, and public participation through the NEPA process.

The Project does not overlap any HCPs (the nearest HCP covers Humboldt Redwood Company property industrial timberlands and is located several miles northwest of the API; USFWS 2015).

Clean Water Act (CWA)

The CWA (1977, as amended) establishes the basic structure for regulating discharges of pollutants into waters of the U.S. It gives the U.S. Environmental Protection Agency (EPA) the authority to implement pollution control programs, including setting wastewater standards for industry and water quality standards for contaminants in surface waters. The CWA makes it unlawful for any person to discharge any pollutant from a point source into navigable waters, without a permit under its provisions.

Discharge of fill material into "waters of the U.S.," including wetlands, is regulated by the U.S. Army Corps of Engineers (USACE) under Section 404 of the CWA (33 USC 1251-1376). USACE regulations implementing Section 404 define "waters of the U.S." to include intrastate waters (such as, lakes, rivers, streams, wetlands, and natural ponds) that the use, degradation, or destruction of could affect interstate or foreign commerce. Wetlands are defined for regulatory purposes as "areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR 328.3; 40 CFR 230.3). The placement of structures in "navigable waters of the U.S." is also regulated by the USACE under Section 10 of the Federal Rivers and Harbors Act (33 USC 401 et seq.). Project s are approved by USACE under standard (i.e., individual) or general (i.e., nationwide, programmatic, or regional) permits. The type of permit is determined by the USACE and based on Project parameters.

The Fish and Wildlife Coordination Act requires consultation with the USFWS, NOAA Fisheries, and responsible state wildlife agency for any federally authorized action to control or modify surface waters. Therefore, any Project proposed or permitted by the USACE under the CWA Section 404 must also be reviewed by the federal wildlife agencies and CDFW.

Section 401 of the CWA requires any applicant for a federal license or permit, which involves an activity that may result in a discharge of a pollutant into waters of the U.S., obtain a certification that the discharge will comply with applicable effluent limitations and water quality standards. CWA 401 certifications are issued by Regional Water Quality Control Boards (RWQCBs) under the California Environmental Protection Agency.

Executive Order 11990 – Protection of Wetlands

Executive Order 11990 (1977) furthers the protection of wetlands under NEPA through avoidance of long and short-term adverse impacts associated with the destruction or modification of wetlands where practicable. The order requires all federal agencies managing federal lands, sponsoring federal Project s, or funding state or local Project s to assess the effects of their actions on wetlands. The agencies are required to follow avoidance, mitigation, and preservation procedures. The Presidential Wetland Policy of 1993 and subsequent reaffirmation of the policy in 1995 supports effective protection and restoration of wetlands, while advocating for increased fairness of federal regulatory programs.

Executive Order 13112 – Invasive Species

Executive Order 13112 directs federal agencies to use relevant programs and authorities to:

- Prevent the introduction of invasive species; and
- Detect and respond rapidly to and control populations of such species in a cost-effective and environmentally sound manner; and
- Monitor invasive species populations accurately and reliably; and
- Provide for restoration of native species and habitat conditions in ecosystems that have been invaded; and
- Conduct research on invasive species and develop technologies to prevent introduction and provide for environmentally sound control of invasive species; and
- Promote public education on invasive species and the means to address them; and

- Not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species in the united states or elsewhere unless, in accordance with guidelines that it has prescribed, the agency has determined and made public its determination that the benefits of such actions clearly outweigh the potential harm caused by invasive species; and that all feasible and prudent measures to minimize risk of harm will be taken in conjunction with the actions.

Executive Order 11988 (Floodplain Management)

Executive Order 11988 requires federal agencies to avoid the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and avoid direct and indirect support of floodplain development.

Migratory Bird Treaty Act (MBTA)

The MBTA of 1918 (16 USC 703-712) as amended established federal responsibilities for the protection of nearly all species of birds, their eggs, and nests. A migratory bird is defined as any species or family of birds that live, reproduce, or migrate within or across international borders at some point during their annual life cycle. The MBTA prohibits the take, possession, buying, selling, purchasing, or bartering of any migratory bird listed in 50 CFR Part 10, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 CFR 21). Only exotic species such as Rock Pigeons (*Columba livia*), House Sparrows (*Passer domesticus*), and European Starlings (*Sturnus vulgaris*) are exempt from protection.

In February of 2020, the USFWS proposed a new rule to redefine the scope of the MBTA (85 FR 5915). The rule specifies that “the Service proposes to adopt a regulation defining the scope of the MBTA's prohibitions to reach only actions directed at migratory birds, their nests, or their eggs” and essentially codifies M-37050 (i.e., “incidental take not prohibited) (85 FR 5915) The final rule was published on January 7, 2021 (86 FR 1134). However, on May 7, 2021, the USFWS issued a proposed rule (86 FR 24573) to revoke the January 2021 rule and revert to the previous (i.e., pre-2017) MBTA protections, with incidental take being prohibited. As of now (May 2021) however, the January 2021 rule remains in effect.

Magnuson-Stevens Fishery Conservation and Management Act of 1976 (as amended)

The Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) (16 U.S.C. 1801 et seq.) provides the federal government with the authority to manage fisheries in the U.S. Exclusive Economic Zone (EEZ) (from state waters which end three nautical miles offshore to a distance of 200 nautical miles). In addition, the Act mandates inter-agency cooperation in achieving protection, conservation, and enhancement of Essential Fish Habitat (EFH). The Act defines EFH as "Those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. For the purpose of interpreting the definition of EFH: 'waters' include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; 'substrate' includes sediment, hard bottom, structures underlying the waters, and associated biological communities; 'necessary' means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and “spawning, breeding, feeding, or growth to maturity” covers a species' full life cycle" (50 CFR 600.10).

EFH relates directly to the physical fish habitat and indirectly to factors that contribute to degradation of this habitat. Important features of EFH that deserve attention are adequate water quality, temperature, food source, water depth, and cover/vegetation. Adverse effects to EFH are considered to be “any impact that reduces quality and/or quantity of EFH. Adverse effects may include direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to, benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality and/or quantity of EFH. Adverse effects to EFH may result from actions occurring within EFH or outside of EFH and may include site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions” (50 CFR 600.10). Federal agencies are required to consult with NMFS regarding any actions (may include funding, permitting, or activities) that may adversely impact EFH.

Sustainable Fisheries Act of 1996

The Sustainable Fisheries Act (SFA) (Public Law 104-107) serves as an amendment to the MSFCMA to “authorize appropriations, to provide for sustainable fisheries, and for other purposes”. The SFA includes requirements for describing EFH in Fishery Management Plans (FMP) and also mandates the protection EFH. According to the SFA, “[o]ne of the greatest long-term threats to the viability of commercial and recreational fisheries is the continuing loss of marine, estuarine, and other aquatic habitats. Habitat considerations should receive increased attention for the conservation and management of fishery resources of the United States.” This act also mandates the delineation of EFH for all managed species.

State Jurisdiction

Porter-Cologne Water Quality Act

The Porter-Cologne Act provides for statewide coordination of water quality regulations by establishing the California State Water Resources Control Board. The State Board is the statewide authority that oversees nine separate RWQCBs that collectively oversee water quality at regional and local levels. California RWQCBs issue CWA Section 401 Water Quality Certifications for possible pollutant discharges into waters of the U.S. or state. On April 2, 2019 the California State Water Resources Control Board adopted new definitions and procedures for discharges of dredged or fill material to Waters of the State.

California Endangered Species Act (CESA)

The CESA includes provisions for the protection and management of species listed by the State of California as endangered, threatened, or designated as candidates for such listing (California Fish and Game Code (FGC) Sections 2050 through 2085). The CESA generally parallels the main provisions of the ESA and is administered by the CDFW, who maintains a list of state threatened and endangered species as well as candidate species. The CESA prohibits the “take” of any species listed as threatened or endangered unless authorized by the CDFW in the form of an Incidental Take Permit. Under FGC, “take” is defined as to “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.”

Other State Special Status Species and Communities

The CDFW maintains a list of species of special concern (CDFW 2021a). These are broadly defined as species that are of concern to the CDFW because of population declines and restricted distributions, and/or they are associated with habitats that are declining in California. The criteria used to define special status species are described by the CDFW. Impacts to special status plants, animals, and Sensitive Natural Communities may be considered significant under CEQA.

State Species of Special Concern (SSC) include those plants and wildlife species that have not been formally listed yet are proposed or may qualify as endangered or threatened. In addition, USFWS Birds of Conservation Concern, and CDFW special status invertebrates are considered special status species by CDFW.

Sensitive Natural Communities

CDFW provides oversight of habitats (i.e., plant communities) listed as Sensitive in the California Natural Diversity Database (CNDDB) and on the California Sensitive Natural Communities List, based on global and state rarity rankings. The natural communities are broken down to alliance and association levels for vegetation types affiliated with ecological sections in California. The alliances on the California Sensitive Natural Communities List coincide with A Manual of California Vegetation (Sawyer et al. 2009, CNPS 2021). CDFW considers alliances and associations with a state rank of S1 to S3 to be Sensitive. The application of ranking for determination of Sensitive Communities is summarized as follows in **Table 1** (NatureServe 2021):

Table 1: NatureServe Conservation Status Ranks

Name	Calculated Status Rank	Status Description
Score ≤ 1.5	G1, N1, S1	Critically Imperiled
1.5 ≤ Score ≤ 2.5	G2, N2, S2	Imperiled
2.5 ≤ Score ≤ 3.5	G3, N3, S3	Vulnerable
3.5 ≤ Score ≤ 4.5	G4, N4, S4	Apparently Secure
Score > 4.5	G5, N5, S5	Secure

California Fish and Game Code (FGC)

Native Plant Protection Act

The CDFW administers the Native Plant Protection Act (Sections 1900–1913 of the FGC). These sections allow the California Fish and Game Commission to designate endangered and rare plant species and to notify landowners of the presence of such species. Plant species on California Native Plant Society's (CNPS) California Rare Plant Ranking (CRPR) Lists 1 and 2 are considered eligible for state listing as Endangered or Threatened pursuant to the California Fish and Game Code and CDFW has oversite of these special status plant species as a trustee agency. As part of the CEQA process, such species should be considered as they meet the definition of Threatened or Endangered under Sections 2062 and 2067 of the California Fish and Game Code. CRPR List 3 and 4 plants may warrant protection under CEQA Guidelines 15380 only in special circumstances. CDFW publishes and periodically updates lists of special status species which include, for the most part, the above categories. Additionally, there are 64 plant species designated as "rare" which is a special designation created before plants were rolled into CESA in the 1980s. The CESA and the Native Plant Protection Act (NPPA) required a project to have a "Scientific, Educational, or Management Permit" from CDFW for activities that would result in "take," possession, import, or export of state-listed plant species including research, seed banking, reintroduction efforts, habitat restoration, and other activities relating to any plant designated SE (State endangered), ST (State threatened), SR (State rare), or SC (State candidate for listing).

Lake or Streambed Alteration Agreement

Streams, lakes, and riparian vegetation that serve as habitat for fish and other wildlife species are subject to jurisdiction by the CDFW under Sections 1600-1616 of the FGC. Any activity that would do one or more of the following: 1) substantially obstruct or divert the natural flow of a river, stream, or lake; 2) substantially change or use any material from the bed, channel, or bank of a river, stream, or lake; or 3) deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into a river, stream, or lake; generally require a 1602 Lake or Streambed Alteration Agreement (LSAA). The term "stream," which includes creeks and rivers, is defined in the California Code of Regulations (CCR) as follows: "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation" (14 CCR 1.72). In addition, the term stream can include ephemeral streams, dry washes, watercourses with subsurface flows, canals, aqueducts, irrigation ditches, and other means of water conveyance if they support aquatic life, riparian vegetation, or stream-dependent terrestrial wildlife. Riparian is defined as, "on, or pertaining to, the banks of a stream;" therefore, riparian vegetation is defined as, "vegetation which occurs in and/or adjacent to a stream and is dependent on, and occurs because of, the stream itself." Removal of riparian vegetation also requires a Section 1602 Lake and Streambed Alteration Agreement from the CDFW.

Birds of Prey and Native Nesting Birds

Sections 3503 and 3513 of the FGC prohibits the take, possession, or needless destruction of the nest or eggs of any bird. Subsection 3503.5 specifically prohibits the take, possession, or destruction of any birds in the orders Falconiformes (hawks and eagles) or Strigiformes (owls) and their eggs or nests. These provisions, along with the federal MBTA, essentially serve to protect nesting native birds. Non-native species, including the European Starling, Rock Pigeon, and House Sparrow, are not afforded protection under the MBTA or FGC.

Fully Protected Species

The CDFW enforces the FGC, which provides protection for “fully protected birds” (Section 3511), “fully protected mammals” (Section 4700), “fully protected reptiles and amphibians” (Section 5050), and “fully protected fish” (Section 5515). As fully protected species, the CDFW cannot authorize any Project or action that would result in “take” of these species, even with an incidental take permit.

Migratory Bird Protection Act (MBPA)

The California Migratory Bird Protection Act (MBPA; FGC Section 3513, as amended) was introduced in the California State Assembly 2019 by Assembly Member Ash Kalra and co-sponsored by the National Audubon Society. The text of the Act specifies that it is unlawful to take or possess any migratory nongame bird as designated in the federal MBTA (16 USC 703-712) before January 1, 2017. This upholds the interpretation of the MBTA under Clinton’s EO 13166, where “take” was defined as both “unintentional as well as intentional.” Governor Gavin Newson signed the Act into law on September 27, 2019. The MBPA effectively closes the federal MBTA loophole on incidental take of migratory birds in California.

Regional Jurisdiction

There are no local regulations to which the Project must comply. The Project would not be required to obtain a Humboldt County Grading Permit.

Studies Required

Biological Study Area (BSA)

The BSA, or the area directly or indirectly impacted by the proposed Project, encompasses a 0.25-mile radius around the API (construction area and staging area[s]) (see **Appendix A, Figure 5 – Biological Study Area**). The BSA boundary was determined based on the scope of work and includes all potential areas of impact (physical impacts such as sediment discharge and habitat loss, as well as potential for visual and auditory disturbance) to sensitive biological resources.

Literature Search

The following information or sources pertaining to biological resources within the BSA reviewed during this analysis, includes (but is not limited to):

- Bat Acoustic Monitoring Visualization Tool (BAMVT 2021);
- Bumble Bee Watch - Bumblebee Sightings Map (Bumble Bee Watch 2021);
- CDFW Biogeographic Information and Observation System (BIOS) (CDFW 2021b);
- CDFW CNDDB RareFind5 (CDFW 2021c) (see **Appendix A, Figure 6 – CNDDB Occurrences,** and **Appendix B**);
- CDFW Special Animals List (SAL) as of December 2020 (CDFW 2021a);
- CNPS Online Inventory of Rare and Endangered Plants (8^{th} Edition) (CNPS 2021; **Appendix C**);
- eBird Hot Spot Data (eBird 2021);
- iNaturalist Occurrence Data (iNaturalist 2021);
- National Oceanic and Atmospheric Administration (NOAA) Fisheries West Coast Region California Species List (NOAA Fisheries 2021a; **Appendix D**);
- NOAA Fisheries EFH mapper (NOAA Fisheries 2021b);
- NOAA Fisheries Critical Habitat-Salmon and Steelhead (NOAA Fisheries 2021c);
- Satellite imagery of the proposed BSA and surrounding area;
- U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) tool (USFWS 2021a; **Appendix E**);
- USFWS Environmental Conservation Online System (ECOS; USFWS 2021b);
- USFWS Wetlands Mapper (USFWS 2021c; **Appendix A, Figure 7 – NWI Wetlands**);

Field Reviews

Two field reconnaissance biological surveys of the BSA were conducted, one in February 2021 and the other in April 2021; a botanical survey was conducted in April 2021; an aquatic resources delineation was conducted in April and May 2021 (GHD 2021; **Appendix G**); all are described further below. Additionally, multiple agencies have conducted fish sampling and surveys within the Mattole River (see **Chapter 4 – Special Status Fish**).

Survey Methods

Personnel and Survey Dates

The County's biological consultant, GHD, performed pedestrian reconnaissance surveys of the BSA by walking the Project footprint as well as adjacent accessible areas. Field investigations included a general inspection to characterize existing habitat with an emphasis on areas having the potential to support special status species or sensitive habitats. The survey methods were intended to determine the potential for sensitive species presence. Where the habitat allowed the surveyor to walk without risk of damaging nests or dens and surrounding vegetation, the survey included a physical search of the area. This included inspecting the ground, shrubs, culverts, holes, etc. for the presence of any wildlife species or special status plants. Additionally, the ground layer under vegetation was inspected for evidence of wildlife species, such as feathers, pellets, whitewash, scat, tracks, etc. This reconnaissance-level survey was conducted to identify general wildlife resources, plants, and habitat in the BSA. There was storm damage at one of the staging areas to the east, with the westbound lane partially collapsed and closed with orange cones, the damage appeared to be very recent and could extend the area requiring work.

Representative photographs of the BSA are provided in **Appendix F**. Lists of plant and wildlife species observed during the survey are included in **Appendix G**.

The reconnaissance-level biological field survey was conducted by Ken Mierzwa, GHD Senior Biologist, on February 8, 2021, from 1400 to 1600 hours. Temperatures were slightly below normal (low 50s Fahrenheit [°F]), variable hazy sun to mostly cloudy, and light north winds. The surveyor walked downslope through the API all the way to the edge of the Mattole River, a short distance upslope of the road, and in both directions along the road to beyond the identified staging/stockpile areas.

The protocol level botanical field survey was conducted by Kelsey McDonald, GHD botanist (hereafter surveyor), on April 22, 2021. Temperatures were slightly below normal (low 50s °F), variable hazy sun to mostly cloudy, and light north winds. The surveyor walked downslope through the API all the way to the edge of the Mattole River, a short distance upslope of the road, and in both directions along the road to beyond the identified staging/stockpile areas.

A second brief site visit was conducted by Ken Mierzwa of GHD on April 28, 2021 from 1000 to 1300 hours, to verify amphibian use of shallow remnant pools at the toe of slope and in the nearby Mattole River. This visit was focused and intended to address specific knowledge gaps prior to completion of this NES.

An aquatic resources delineation was conducted on April 28 and May 12, 2021 by GHD botanists, Kelsey McDonald and Rose Dana, and GHD soil scientist, Misha Schwarz. To define a wetland, the USACE requires that vegetation, soil, and hydrology (three-parameters) all show wetland attributes (USACE 1987; USACE 2010). The wetland delineation used USACE criteria from the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys and Coast Region* (USACE 2010). The current standard field forms provided by the USACE (2010) were used to collect vegetation, soils, and hydrology data. In potential three-parameter wetland areas, vegetation, soil, and hydrology data were collected in a transect across the upland/wetland boundary with two plots (upland/wetland) per transect. The naming convention used on datasheets to designate upland or wetland plots associated with a transect is -U or -W, respectively. Each three-parameter wetland area was designated with a number (e.g., W1). The wetland points were also labeled with their respective wetland number. In addition to the wetland sampling points, two upland sampling points were described. These were labeled beginning with a “U” and numbered in sequence (e.g., U1, U2). The upland sampling points were completed to confirm and document the absence of any wetland indicators (soils, hydrology, and vegetation). Please see the separate Aquatic Resources Delineation Report (GHD 2021; **Appendix G**) for additional information regarding the wetland delineation.

To support the wetland delineation, vegetation data collection consisted of listing the dominant species in the herbaceous, shrub, and tree layer within a standard-sized plot determined by the strata layer. Nomenclature follows *The Jepson Manual* (Baldwin et al. 2012), which was cross-walked to federal standard nomenclature to identify the indicator status. The species’ wetland indicator status for the Western Mountains, Valleys, and Coast Region was denoted in the respective column, using the standard reference: *State of California 2016 Wetland Plant List* (Lichvar et al. 2016). This list classifies species based on the probability that they are found in wetlands (USACE 1987) as follows:

- Obligate (OBL): almost always in wetlands (99% probability)
- Facultative Wetland (FACW): usually occurring in wetlands (67% to 99% probability)
- Facultative (FAC): commonly occurring in wetlands and uplands (34% to 66% probability of occurring in wetlands)
- Facultative Upland (FACU): usually occurring in uplands (1% to 33% probability of occurring in wetlands)
- Upland (UPL): upland obligate, rarely in wetlands (1% in wetlands)

Species that do not appear on the list are considered to be in the upland category (Lichvar et al. 2016). Standard procedures for documenting hydrophytic vegetation indicators were used per the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)* (USACE 2010). A complete list of plants documented at the site with respective wetland indicator status was recorded.

Agency Coordination and Professional Contacts

Official Species Lists for the proposed Project were obtained from 1) the Arcata Fish and Wildlife Office for the API (USFWS 2021a; **Appendix E;** January 2021), and 2) NMFS for the Project quad (Buckeye Mountain) and surrounding 8 quads (NOAA Fisheries 2021a).

Additional agency coordination is anticipated during the Project's permitting phase. The following permits are anticipated to be required for the Project:

- USACE Section 404 Permit
- North Coast Regional Section 401 Water Quality Certification and Construction General Permit
- NOAA Fisheries Endangered Species Act Section 7 consultation
- CDFW Lake and Streambed Alteration Agreement
- CDFW compliance with the California Environmental Quality Act (CESA)

Cumulative Projects

To evaluate potential cumulative effects that could result from other recent, current, or planned projects near the BSA, the following agencies and organizations were queried:

- Mattole Restoration Council
- Humboldt Redwood Company
- County of Humboldt Planning and Building Department
- HCDPW

Of the contacted organizations, the Mattole Restoration Council and the Humboldt Redwood Company reported they did not have any recent, current, or planned Projects within one mile of the BSA. The County of Humboldt Planning and Building Department and HCDPW did report Projects in the vicinity of the BSA, summarized below in **Table 2**. The cumulative projects list includes two storm damage repair projects and various pending and existing cannabis permits. None of the identified projects include in-water work.

Table 2: Summary of Cumulative Projects

Project	Agency	Summary
Mattole Road Storm Damage Report PM 5.0 *Construct in summer 2021*	HCDPW	Solider pile tie back wall to support the slope (large retaining wall with horizontal anchors). The project is not located near the Mattole River and does not include surface drainage systems.
Mattole Road Storm Damage Report PM 6.5 *Construct in summer 2021*	HCDPW	Reconstruction of roadway and embankment, including a deep subdrainage system. Includes new culverts, culvert replacements, and tree removal. Does not include in-water work.
Pending cannabis application	County of Humboldt Planning and Building Dept.	Pending application at 39031 Mattole Road, most likely within BSA. Between Mattole River and Mattole Road.
Pending cannabis application	County of Humboldt Planning and Building Dept.	Pending application at 39811 Mattole Road, upstream of the BSA near Saunders Creek. Between Mattole River and Mattole Road.
Existing cannabis application	County of Humboldt Planning and Building Dept.	Existing operation at 40000 and 40300 Mattole Road. Located near or in the BSA near Cook Gulch. Located on the south side of Mattole Road.
Pending cannabis application	County of Humboldt Planning and Building Dept.	Pending application at 37773 Mattole Road. Located downstream of the BSA on the east side of Reynolds Road.
Pending cannabis application	County of Humboldt Planning and Building Dept.	Pending application at 40740 Mattole Road. Located upstream of the BSA on the south side of Mattole Road.
Existing cannabis application	County of Humboldt Planning and Building Dept.	Existing operation on APN 104-071-004-000 near Reynolds Road, downstream of the BSA.
Existing cannabis application	County of Humboldt Planning and Building Dept.	Existing operation on APN 107-321-002-000 near BSA at the intersection of Roscoe Road and Lindley Road.

Limitations That May Influence Results

The API was defined based on preliminary design and is subject to modification pending final design. Determinations reached in this NES are based on historic surveys and studies, as well as web-based sensitive species database, literature searches, and contemporary field surveys. As the historic studies/surveys may not accurately reflect actual occurrence of species presence in the BSA at this time, conclusions were based on the assumption of presence or non-presence based on existing habitat conditions, and impact and minimization measures have been developed accordingly.

Chapter 3 – Results: Environmental Setting

Description of the Existing Physical and Biological Conditions

Information regarding existing biological and physical conditions presented in this section is based on literature review of known resources within the vicinity of the BSA and on-site investigations.

Study Area

The Project area is located in the Buckeye Mountain USGS 7.5" quadrangle. The BSA encompasses a 0.25-mi radius around the API along Mattole Road, which equates to approximately 238.84 acres or 0.37 square miles (mi^2) (see **Appendix A**, **Figure 5** for a map of the Project's BSA). The Project work zone, or API, is specific to areas where Project-related ground disturbance would have the potential to occur.

The BSA was delineated to include all areas that could potentially be directly or indirectly impacted by Project construction. The BSA also is intended to accommodate minor Project limit and design changes (as this was developed with preliminary design specs) as well as provide options for parking and staging. The Project does not anticipate any impacts to sensitive species or habitats outside the BSA.

Land use within the API is limited to travel along Mattole Road, and private residences and agricultural use on adjacent properties. Private property surrounds the API and includes private residences a short distance to the northwest. The nearest public open space is the extensive King Range National Conservation Area within 1.7 linear miles to the south; and Arthur W. Way County Park approximately 2.25 linear miles to the west. Both are well beyond the limits of BSA for the Project.

A description of physical and biological conditions within the BSA and API is provided in the following sections. Photos of the API are provided in **Appendix F**.

Physical Conditions

The BSA is located along Mattole Road at PM 5.25 and adjacent to the Mattole River. The Mediterranean climate is relatively mild and cool due to year-around coastal influences, including fog in the summer months. Precipitation primarily falls in the form of rain at this low elevation. Annual rainfall averages 81 to 100.20 inches per year for the nearby town of Honeydew (Downie et al. 2002, WRCC 2021). Air temperatures vary, with winter lows in the 50s (°F) and summer high in the lower 70s (BestPlaces 2021).

Topographic and Soil Conditions

The topography of the BSA is generally composed of a relatively level road segment, with a steep slope leading down to the Mattole River to the northeast, and steep slopes to the southwest (see **Appendix A, Figure 8 – Topographic Map**). The elevation of the BSA ranges from about 217 feet to 418 feet above mean sea level. The slope within the API is northeast-facing and quite steep, steeper than 1:1 in some places. The entire slope is slumping and eroding. Soils have a high clay content and there are numerous small areas of seepage and even more areas of erosion from runoff.

Soil types within the Project construction limits include water and fluvents which contain 0 to 2 percent slopes, Crazycoyote-Sproulish-Caperidge complex soils which contain 15 to 50 percent slopes, Yorknorth-Windynip complex soils which contain 15 to 50 percent slopes, and Crazycoyote-Sproulish-Canoecreek complex soils which contain 30 to 50 percent slopes (**Appendix H**).

Hydrological Resources

The BSA is located along the south banks of the Mattole River, specifically within the western subbasin of the Mattole River watershed (Downie et al. 2002). At the base of the slope there is shallow depression within a gravel/cobble bar. Water levels had recently receded after substantial rainfall the week prior to the February 2021 site visit, and the bar had probably only been exposed for a few days. There was some recent deposition of fine silt; however, deposits were not thick or extensive and interstitial space in cobble was generally intact in shallow waters. By late April 2021, the gravel bar was up to 90 feet wide and retained only a few shallow isolated pools at the toe of slope. At late summer low water levels, the gravel/cobble bars would be even more extensive, and the pools may dry. At the time of the February and April 2021 site visits, the main flow was on the opposite side of the channel (to the northeast).

There is a well-established deeply incised tributary (Cook’s Gulch), which flows through a culvert toward the southeast end of the API by the staging areas near a tight curve in the road. It retained substantial flow in late April (see **Appendix A, Figure 5 – Biological Study Area**). An additional tributary, Granny Creek, is located at the northern extent of the BSA. What appeared to be a small, ephemeral waterway flows through a much smaller culvert in the northwest part of the API, at the end of the gravel road section, and continues downslope a short distance before going subsurface; water in this streamlet could be heard during the February 2021 site visit, but it was completely dry in late April.

The nearest active stream gauge on the Mattole (USGS 11469000 – Mattole River Near Petrolia CA) is located downstream of the BSA near the community of Petrolia, California. There was formerly a stream gage located upstream of the API near Honeydew, California, with a period of record spanning 1973 through 1977 (USGS 11468990 Honeydew Creek at Honeydew CA).

Measured streamflow at the USGS 11469000 gage would be higher than streamflows in the BSA due to tributary accretion. Annual peak streamflow data is available for the period of record between 1912 and 2020. The highest documented streamflows occurred during the 1955 and 1964 floods, with documented peak discharges of 90,400 cubic feet per second (cfs) and 78,500 cfs, respectively (USGS 2021). Continuous discharge measurements are available for the period of record between 1988 through present day. Water temperature data, suspended sediments, and bedload data were briefly collected during the 2000 through 2003 period.

Summer and fall streamflows were assessed for the five most recent water years (water year 2016 through water year 2020) during the June 15 through October 31 period, which most closely aligns with the regulated in-water work period. Of the assessed recent years, water year 2020 was the wettest, with mid-June streamflows commencing at 250 cfs and tapering as low as 30 cfs in September and October. Water year 2016 was the driest of the past five years, with mid-June streamflows commencing at approximately 85 cfs and tapering to as low as 12 cfs in September (USGS 2021). Annual minimum streamflows in the BSA would be further reduced, given the lack of tributary accretion recorded at USGS 11469000 downstream in Petrolia.

Biological Conditions

Natural Communities and Vegetation

The API primarily consists of an active landslide characterized by scrub with low cover of emergent trees and small patches of open grassland (see **Appendix F**). The riverbank within the API offers limited riparian habitat and is predominantly an active slide with exposed soils and few residual small shrubs. There is little riparian cover in much of the API because steep eroding slopes join directly to the gravel bar or open water. There is a narrow band of riparian woodland in some areas upstream and downstream, as well as on parts of the opposite riverbank. Invasive species are present in some areas.

Habitat types found within the BSA have been classified based on site visit observations and the vegetation descriptions provided in A Manual of California Vegetation (Sawyer et al. 2009). Specific vegetation alliance descriptions based on species observations in the API and immediate vicinity can be found below. Looking out a greater distance from the main Project area, the lower slopes to the southeast and northwest are predominantly forested and primarily characterized by Douglas fir (*Pseudotsuga menziesii*). An open flat is present about 0.25 miles to the east, showing evidence of agricultural use on a relatively level floodplain and with a residence at the far east end; across the river to the northeast is an extensive gravel point bar backed by scrub and riparian cover grading to grassland on a slope; to the west and upslope of the road scrub gradually grades to more open grassland with scattered trees and shrubs. Natural communities observed within the BSA are summarized below.

<u>Poison oak scrub (*Toxicodendron diversilobum* Shrubland Alliance)</u>

The slide area above Mattole Road is dominated by poison oak (*Toxicodendron diversilobum*) with low cover of young emergent Douglas fir, bigleaf maple (*Acer macrophyllum*), Oregon ash (*Fraxinus latifolia*), and coyote brush (*Baccharis* *pilularis*) with mesic openings characterized by orchardgrass (*Dactylis glomerata*), tall fescue (*Festuca arundinacea*), and spreading rush (*Juncus patens*). The upper slide was native-dominant with relatively few problematic invasive species. Some invasive Italian thistle (*Carduus pyncocephalus*) and bull thistle (*Cirsium vulgare*) was noted. Vegetation is low growing probably in part because taller or more mature vegetation cannot become well established on the unstable slope. The poison oak shrubland alliance is rated as apparently secure globally (G4) and in the state of California (S4).

Coyote brush scrub (*Baccharis pilularis* Shrubland Alliance)

The lower slide below Mattole Road is predominantly scrub habitat dominated by coyote brush. Emergent trees are present at low cover, including Douglas fir, bay laurel (*Umbellularia californica*), bigleaf maple, red alder (*Alnus rubra*), a very few Oregon white oak (*Quercus garryana*) on drier and rockier locations, and arroyo willow (*Salix lasiolepis*) near the riverbank. Highly invasive French broom (*Genista monspessulana*) was widespread in the lower slide, especially along Mattole Road. Other species that characterize the shrub canopy include poison oak, oceanspray (*Holodiscus discolor*), and blueblossom (*Ceanothus thyrsiflorus*). Herbaceous openings occur along the slide, predominantly characterized by riverbank lupine (*Lupinus rivularis*), invasive fennel (*Foeniculum vulgare*) and non-native grasses such as tall fescue, orchardgrass, and sweet vernal grass (*Anthoxanthum odoratum*). The coyote brush scrub alliance is rated secure globally (G5) and in the state of California (S5).

Douglas fir woodland (*Pseudotsuga menziesii* Forest and Woodland Alliance)

Woodland dominated by Douglas fir with Pacific madrone (*Arbutus menziesii*), tanoak (*Notholithocarpus densiflorus*), bay laurel, Oregon white oak, and black oak (*Quercus kelloggii*) is present in areas east and west of the main API. The understory is predominantly poison oak (*Toxicodendron diversilobum*) and pink honeysuckle (*Lonicera hispidula*). The Douglas fir woodland surrounding the Project area is diverse and dominated by native species, with scattered invasive French broom, Italian thistle, and non-native grass species such as ripgut brome (*Bromus diandrus*) and slender oat (*Avena barbata*) along the roadside. The Douglas fir woodland alliance is rated secure globally (G5) and in the state of California (S4).

Bigleaf maple woodland (*Acer macrophyllum* Forest & Woodland Alliance)

To the south of the BSA and outside the API, Cook’s Gulch has a narrow riparian corridor dominated by red alder and bigleaf maple within a V-shaped steep ravine. The bigleaf maple alliance is characterized by >25% relative cover of bigleaf maple in the tree canopy and may be codominant with species found in the area including red alder, Douglas fir, and bay laurel. Bigleaf maple woodland is a Sensitive Natural Community rated as vulnerable in California (S3), but secure globally (G4).

Aquatic Resources

The Mattole River lies along the eastern extent of the API. Numerous small seeps and ephemeral watercourses occur along the active slide, which are delivering fine sediment to the river below. Seasonally ponded habitat occurs in spring at the intersection of the active slide and the Ordinary High Water Mark (OHWM) at the boundary of the Mattole River channel; during high water events this area is within the active channel. Emergent willows (*Salix* spp.), spreading rush, and slough sedge (*Carex obnupta*) can be found along and just above OHWM. The off-channel, disconnected pools observed in April 2021 provide valuable amphibian habitat. Numerous Rough-skinned Newts (*Taricha granulosa*, common species with no special status) and Foothill Yellow-legged Frogs (*Rana boylii*, SSC) were observed within the ponded refuge outside of the main channel during the April 2021 site visit. Additional breeding activity (recently hatched tadpoles) of Foothill Yellow-legged Frogs was observed in the main channel during the April 2021 site visit.

Constructed ditches above Mattole Road collect water and appear to overflow through culverts to ephemeral drainages below. Cook's Gulch and Granny Creek are aquatic resources within the BSA but outside the API; both are tributary to the Mattole River. Cook's Gulch retained substantial flow in late April. Three parameter wetlands and other jurisdictional waters are present within the API (GHD 2021; **Appendix G**). These wetlands occur directly adjacent to and along the west side of Mattole Road and adjacent to the Mattole River at the slope toe below the existing landslide. Other Waters (including ephemeral ditches along the upper portion of the slide, watercourses, and the Mattole River seasonal side channel) are also present within the API. Please see the separate aquatic resources delineation report for full results and wetland locations within the API (GHD 2021; **Appendix G**).

Wildlife

Relatively little evidence of wildlife was noted during the February 2021 site visit, likely because of cooler than normal temperatures, receding river levels which often result in semi-aquatic species remaining under cover, and the mid-afternoon timing of the visit. The most important observation was of a Western Pond Turtle (*Emys marmorata*) shell found partway up the lower slope. The only other mammal tracks observed were Black-tailed Deer (*Odocoileus hemionus columbianus*) throughout the API, with five animals observed just to the west. Although no sign was observed, local residents also report multiple recent Mountain Lion (*Puma concolor*) sightings just west of the API.

Only a few common bird species were observed during this low activity period of the day; Steller's Jay (*Cyanocitta stelleri*), Northern Flicker (*Colaptes auratus*), and unidentified sparrows were the most abundant. One Sierran Chorus Frog (*Pseudacris sierra*) was observed under down woody debris, as were various invertebrates including crickets and centipedes.

Although too early in the year to be easily found, a number of special status species could be present in the general area. Cook's Gulch and Granny Creek, tributaries located outside the API, appear to include suitable habitat for Red-bellied Newt (*Taricha rivularis*), Southern Torrent Salamander (*Rhyacotriton variegatus*), and Pacific Tailed Frog (*Ascaphus truei*) although posted private land prevented access to the creeks. The section of the Mattole River within the API includes excellent Foothill Yellow-legged Frog (*Rana boylii*) habitat, including potential breeding habitat. Welsh et al (2005) reported all of these amphibian species from the Mattole watershed. Salmonids are known to occur in the Mattole River and presence of Chinook, Coho, and Steelhead (*Oncorhynchus mykiss irideus*). Presence of Pacific Lamprey (*Entosphenus tridentatus*) is also presumed.

Habitat Connectivity

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

No wildlife movement corridors or regional wildlife linkages have been identified within the BSA. The BSA is not located within or near a high-integrity forest habitat "natural landscape block" identified in the California Essential Habitat Connectivity Project (Spencer et al. 2010, Data Basin 2021). However, extensive forested land is present adjacent to the BSA. General dispersal of terrestrial wildlife may occur from the Mattole River corridor through the BSA. This would occur as random movement of species throughout a normal home range.

Salmonids are known to occur in the Mattole River and no barriers to fish passage are present in the API. In addition, Cook's Gulch and Granny Creek, tributaries within the BSA, likely provide suitable habitat for numerous amphibian species. This tributary connects directly with the Mattole River and may be used for different life history needs (i.e., Foothill Yellow-legged Frogs breed in sunny gravel-bottomed rivers and may overwinter in smaller tributaries).

Regional Species and Habitats and Natural Communities of Concern

Habitats and Natural Communities of Special Concern

A list of regionally occurring habitats and natural communities of special concern was compiled based on a review of the CNDDB (**Appendix B**) database records and the April 2021 botanical survey. Three Sensitive Natural Communities were documented in the Project vicinity (within the 9-quad search; CDFW 2021b) but outside the API.

A discussion of the potential for habitat occurrence, avoidance and minimization measures, and potential Project-related impacts to habitats and natural communities of special concern is provided in **Chapter 4**. The Mattole River and delineated wetlands were identified as aquatic features and are discussed in

Chapter 4. Habitats and natural communities of special concern potentially occurring or known to occur in the BSA are listed in the following table.

Table 3: Habitats and Natural Communities of Special Concern Potentially Occurring or Known to Occur in the Project BSA

Name	Global Rank[1]	State Rank[2]	General Habitat[3]	Habitat Present/ Absent[4]	Rationale
Coastal and Valley Freshwater Marsh	G3	S2.1	Marsh & swamp | Wetland	A	Identified in CNDDB, but not present in BSA based on April 2021 botanical survey.
Coastal Douglas Fir Western Hemlock Forest	G4	S2.1	North coast coniferous forest	A	Identified in CNDDB, but not present in BSA based on April 2021 botanical survey.
Upland Douglas Fir Forest	G4	S3.1	North coast coniferous forest	P	Habitat present in BSA but not in API; there would be no disturbance to this natural community.

Footnotes:

[1] Global Ranks: G3 [Vulnerable] – At moderate risk of extinction or elimination due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors; G4 [Apparently Secure] – At fairly low risk of extinction or elimination due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors (NatureServe 2021).

[2] State Ranks: S2 = Imperiled—Imperiled in the state because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the state; S3 [Vulnerable] – At moderate risk of extirpation in the jurisdiction due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors (NatureServe 2021).

[3] Reprinted from CNPS Manual of California Vegetation Online (February 2021; CNPS 2021).

[4] Habitat Present/Absent: Absent [A] - no habitat present and no further work needed. Present [P] - the sensitive natural community is present.

Special Status Plant Species

For the purpose of this study, special status plant species include plants that are (1) listed as threatened or endangered under the CESA or the ESA; (2) designated as rare by the CDFW; (3) state or federal candidate or proposed species for listing as threatened or endangered; and/or (4) have a California Rare Plant Rank of 1 or 2.

A list of regionally occurring special status plant species was compiled based on a review of the USFWS official species list (generated for the API; **Appendix E**; December 2020), CNDDB RareFind 5 (generated for the Buckeye Mountain 7.5" quadrangle and surrounding 8 quads; **Appendix B**; February 2021), and CNPS (generated for the Buckeye Mountain 7.5" quadrangle and surrounding 8 quads; **Appendix C**; February 2021) database records. Three federally-listed and state-listed plant species (also CNPS-ranked) have been documented in the Project vicinity (9-quad search). CRPR rank 1 2, and 3 plant species have also been documented, as summarized in **Table 4**.

Habitat requirements for each species were assessed and compared to the habitats within the BSA in order to evaluate the potential for species presence. A discussion of the habitat requirements, potential for species occurrence, avoidance and minimization measures, and potential Project-related impacts to special status plant species is provided in Section 4.2. Special status plant species potentially occurring or known to occur in the BSA are listed in the following table.

Table 4: Special Status Plant Species Potentially Occurring or Known to Occur in the Project BSA

Common Name	Scientific Name	Status[1]	CRPR[2]	General Habitat[3]	Habitat Present/ Absent[4]	Rationale
coastal marsh milk-vetch	*Astragalus pycnostachyus var. pycnostachyus*	--/--	1B.2	Coastal dunes (mesic), Coastal scrub, Marshes and swamps (coastal salt, streamsides)	A	No known occurrences in API or BSA. No suitable habitat (coastal dunes, salt marsh) present in API or BSA; excluded from further consideration.
leafy reed grass	*Calamagrostis foliosa*	--/CR	4.2	Coastal bluff scrub, North Coast coniferous forest	HP	Known occurrences within 5 miles of API and BSA as recently as 1980 (CDFW 2021c). Many occurrences located in the King Range; may be found in rocky areas (CNPS 2021). North Coast coniferous forest present in API and BSA.
Oregon coast paintbrush	*Castilleja litoralis*	--/--	2B.2	Coastal bluff scrub, Coastal dunes, Coastal scrub	A	No known occurrences in API or BSA. No suitable habitat (coastal dunes) present in API or BSA; excluded from further consideration.
bluff wallflower	*Erysimum concinnum*	--/--	1B.2	Coastal bluff scrub, Coastal dunes, Coastal prairie	A	No known occurrences in API or BSA. No suitable habitat (coastal dunes, bluff scrub or prairie) present in API or BSA; excluded from further consideration.
Menzies' wallflower	*Erysimum menziesii*	FE/SE	1B.1	Coastal dunes	A	No known occurrences in API or BSA. No critical habitat has been designated (USFWS 2021a). No suitable habitat (coastal dunes) present in API or BSA; excluded from further consideration.
giant fawn lily	*Erythronium oregonum*	--/--	2B.2	Cismontane woodland, Meadows and seeps	HP	No known occurrences in API or BSA. Marginal cismontane woodland and seeps near the Mattole

Common Name	**Scientific Name**	**Status[1]**	**CRPR[2]**	**General Habitat[3]**	**Habitat Present/ Absent[4]**	**Rationale**
						Riverbanks occur within the API and BSA.
coast fawn lily	*Erythronium revolutum*	--/--	2B.2	Bogs and fens, Broadleafed upland forest, North Coast coniferous forest	HP	No known occurrences in API or BSA. Upland forest, mesic habitat and riverbanks present in API and BSA.
Pacific gilia	*Gilia capitata ssp. pacifica*	--/--	1B.2	Coastal bluff scrub, Chaparral (openings), Coastal prairie, Valley and foothill grassland	HP	Known occurrence within 6 miles of BSA (CNDDB 2008). Marginal chaparral openings and patches of grassland present within the API and BSA.API and BSA
dark-eyed gilia	*Gilia millefoliata*	--/--	1B.2	Coastal dunes	A	No known occurrences in API or BSA. No suitable habitat (coastal dunes) present in API or BSA; excluded from further consideration.
short-leaved evax	*Hesperevax sparsiflora var. brevifolia*	--/--	1B.2	Coastal bluff scrub (sandy), Coastal dunes, Coastal prairie	A	No known occurrences in API or BSA. Coastal dunes, bluff scrub and prairie absent in API and BSA; excluded from further consideration.
beach layia	*Layia carnosa*	FE/SE	1B.1	Coastal dunes, Coastal scrub (sandy)	A	No known occurrences in API or BSA. No critical habitat has been designated (USFWS 2021a). No suitable habitat (coastal dunes or scrub) present in API or BSA; excluded from further consideration.
western lily	*Lilium occidentale*	FE/SE	1B.1	Bogs and fens, Coastal bluff scrub, Coastal prairie, Coastal scrub, Marshes and swamps (freshwater), North Coast coniferous forest (openings)	A	No known occurrences within 30 miles of BSA. No critical habitat has been designated (USFWS 2021a). This species is typically associated with North Coast coniferous forest openings within the coastal fogbank rather than the warm inland woodland habitat occurring in the BSA. This species has not been documented south of Loleta or more than 4 miles inland.; species excluded from further consideration.

Common Name	Scientific Name	Status[1]	CRPR[2]	General Habitat[3]	Habitat Present/ Absent[4]	Rationale
Howell's montia	*Montia howellii*	--/--	2B.2	Meadows and seeps, North Coast coniferous forest, Vernal pools	HP	Known occurrences within 3.5 miles of BSA as recently as 2016 (CDFW 2021b). North Coast coniferous forest and mesic habitat present within the API and BSA.
Wolf's evening-primrose	*Oenothera wolfii*	--/--	1B.1	Coastal bluff scrub, Coastal dunes, Coastal prairie, Lower montane coniferous forest	HP	No known occurrences in API or BSA. Lower montane coniferous forest present within API and BSA. Other suitable habitat (coastal bluff scrub, dunes, and prairie) is not present.
seacoast ragwort	*Packera bolanderi var. bolanderi*	--/--	2B.2	Coastal scrub, North Coast coniferous forest	HP	No known occurrences in API or BSA. Marginal north Coast coniferous and scrub habitat present within the API and BSA.
white-flowered rein orchid	*Piperia candida*	--/--	1B.2	Broadleafed upland forest, Lower montane coniferous forest, North Coast coniferous forest	HP	Known occurrences within 5 miles of the API and BSA as recently as 2019 (CDFW 2021c). Broadleafed upland forest, and North Coast coniferous forest habitat present within the API and BSA.
Oregon polemonium	*Polemonium carneum*	--/--	2B.2	Coastal prairie, Coastal scrub, Lower montane coniferous forest	HP	No known occurrences within the API or BSA. Lower montane coniferous forest present within the BSA. Marginal scrub and grassy openings occur within the API and BSA.
Siskiyou checkerbloom	*Sidalcea malviflora ssp. patula*	--/--	1B.2	Coastal bluff scrub, Coastal prairie, North Coast coniferous forest	HP	No known occurrence within API or BSA. North Coast coniferous forest, scrub habitat, and grassy openings present within the API and BSA.
Hitchcock's blue-eyed grass	*Sisyrinchium hitchcockii*	--/--	1B.1	Cismontane woodland (openings), Valley and foothill grassland	HP	No known occurrence within API or BSA. Cismontane woodland openings and marginal patches of grassland habitat occur within the API and BSA.

Footnotes:

[1] Status: FE = Federal Endangered; SE = State Endangered; CR = California Rare.

[2] California Rare Plant Ranking: 1A = Plants presumed extinct in California; 1B = Plants rare, threatened or endangered in California and elsewhere; 2 = Plants rare, threatened, or endangered in California, but more common elsewhere. Threat

Common Name	Scientific Name	Status[1]	CRPR[2]	General Habitat[3]	Habitat Present/ Absent[4]	Rationale
Code extensions and their meanings:" .1 - Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat); .2 – Moderately threatened in California (20-80% of occurrences threatened / moderate degree and immediacy of threat); .3 – Not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known)" (CNPS 2021). [3] General habitat column information reprinted from CNDDB (February 2021; CDFW 2021c). [4] Habitat Present/Absent: Absent [A] - no habitat present and no further work needed. Habitat Present [HP] -habitat is or may be present. The species may be present.						

Special Status Invertebrate Species

Special status invertebrate species include species that are (1) listed as threatened or endangered under the CESA or the ESA; (2) proposed for federal listing as threatened or endangered; (3) state or federal candidates for listing as threatened or endangered; and/or (4) identified by the CDFW as SSC, California Fully Protected (FP) species, or species on their SAL (CDFW 2021a).

The USFWS IPaC official species list (generated for the API; **Appendix E**; December 2020) did not identify any federally-listed invertebrate species in the Project vicinity. The CNDDB RareFind 5 (generated for the Buckeye Mountain 7.5" quadrangle and surrounding 8 quads; **Appendix B**; February 2021) indicates three special status invertebrate species potentially occurring within the 9-quad search area. A discussion of the habitat requirements, potential for species occurrence, avoidance and minimization measures, and potential Project-related impacts to special status invertebrate species is provided in **Chapter 4** of this document. Special status invertebrate species potentially occurring or known to occur in the BSA are listed in the following table.

Table 5: Special Status Invertebrate Species Potentially Occurring or Known to Occur in the Project BSA

Common Name	Scientific Name	Status[1]	General Habitat[2]	Habitat Present/ Absent[3]	Rationale
Mollusks					
Western Ridged Mussel	*Gonidea angulata*	--/--/SAL	Primarily creeks & rivers & less often lakes. Originally in most of state, now extirpated from Central & Southern Calif.	HP	Suitable habitat present; see **Chapter 4.**
Mountain Shoulderband	*Helminthoglypta arrosa monticola*	--/--/SAL	Known only from the King Range in Humboldt County. Found in talus slopes.	A	No suitable habitat (e.g., talus slopes) present within API or BSA; excluded from further consideration.
Insects					

Common Name	Scientific Name	Status[1]	General Habitat[2]	Habitat Present/ Absent[3]	Rationale
Western Bumble Bee	*Bombus occidentalis*	--/SCE/SAL	Once common & widespread, species has declined precipitously from central California to southern British Columbia, perhaps from disease.	HP	Suitable habitat present; see **Chapter 4.**

Footnotes:

[1] Status: SCE = State Candidate Endangered; SAL = CDFW Special Animals List (CDFW 2021a).

[2] General habitat column information reprinted from CNDDB (February 2021; CDFW 2021c).

[3] Habitat Present/Absent: Absent [A] - no habitat present and no further work needed. Habitat Present [HP] -habitat is or may be present. The species may be present.

Special Status Fish Species

Special status fish species include species that are (1) listed as threatened or endangered under the CESA or the ESA; (2) proposed for federal listing as threatened or endangered; (3) state or federal candidates for listing as threatened or endangered; and/or (4) identified by the CDFW as SSC, California FP species, or species on their SAL.

The USFWS IPaC official species list (generated for the API; **Appendix E**; December 2020), NOAA Fisheries West Coast Region California Species List (generated for the Buckeye Mountain 7.5" quadrangle and surrounding 8 quads; **Appendix D**; February 2021), and CNDDB RareFind 5 (generated for the Buckeye Mountain 7.5" quadrangle and surrounding 8 quads; **Appendix B**; February 2021) identified six federally-listed species, one federal candidate species, and three state SSC with potential to occur in the 9-quad search area. Within the BSA, the Mattole River contains suitable aquatic habitat for numerous special status fish species. Two smaller tributaries (Cook's Gulch and Granny Creek) within the BSA may provide some limited additional habitat for fish species. No other perennial aquatic resources, such as rivers and streams, are present or immediately adjacent to the BSA. A small, ephemeral drainage near the northwest end of the BSA is too steep and too ephemeral to support fish presence. See **Section 4.1.2.** for general aquatic habitat conservation measures. Special status fish species potentially occurring or known to occur in the BSA are listed in the following table.

Table 6: Special Status Fish Species Potentially Occurring or Known to Occur in the Project BSA

Common Name	Scientific Name	Status[1]	General Habitat[2]	Habitat Present/ Absent[3]	Rationale
Green Sturgeon - southern Distinct Population Segment (DPS)	*Acipenser medirostris*	FT/--/SSC	These are the most marine species of sturgeon. Abundance increases northward of Point Conception. Spawns in the Sacramento, Klamath, & Trinity Rivers. Spawns at temps between 8-14 C. Preferred spawning substrate is large cobble but can range from clean sand to bedrock.	A	BSA does not overlap designated critical habitat (74 FR 52300). The Southern DPS is only known to spawn in the Sacramento, Feather, and Yuba rivers (NOAA Fisheries 2021d); thus, juvenile presence in the API is not possible. Adult visitors traveling up the Mattole River would be extremely rare but have not been documented. During dry season the Mattole River in the API and BSA is too small and shallow to support adults. Species excluded from further consideration.
Pacific Lamprey	*Entosphenus tridentatus*	--/--/SSC	Found in Pacific Coast streams north of San Luis Obispo County, however regular runs in Santa Clara River. Size of runs is declining. Swift-current gravel-bottomed areas for spawning with water temps between 12-18 C. Ammocoetes need soft sand or mud.	HP/P	Documented spawning in Mattole River (Mattole Restoration Council 2012, Mattole Salmon Group 2015a). See **Chapter 4.**
Tidewater Goby	*Eucyclogobius newberryi*	FE/SE/--	Brackish water habitats along the California coast from Agua Hedionda Lagoon, San Diego County to the mouth of the Smith River. Found in shallow lagoons and lower stream reaches, they need fairly still but not stagnant water and high oxygen levels.	A	BSA is located at an inland location. No known occurrences within BSA. BSA does not overlap designated critical habitat (USFWS 2021b). No suitable habitat (brackish water) present in BSA; excluded from further consideration.
Coho Salmon - southern Oregon / northern California Evolutionarily Significant Unit (ESU)	*Oncorhynchus kisutch pop. 2*	FT/ST/--	Federal listing refers to populations between CAPI Blanco, Oregon and Punta Gorda, Humboldt County, California. State listing refers to populations between the	HP/P/CH	The Mattole River supports populations of Coho Salmon (Downie et al. 2002). BSA overlaps designated critical habitat within the Mattole River (NOAA Fisheries 2021c). See **Chapter 4.**

Common Name	Scientific Name	Status[1]	General Habitat[2]	Habitat Present/ Absent[3]	Rationale
			Oregon border and Punta Gorda, California.		
Chinook Salmon - California coastal ESU	*Oncorhynchus tshawytscha pop. 17*	FT/--/--	Federal listing refers to wild spawned, coastal, spring & fall runs between Redwood Cr, Humboldt Co & Russian River, Sonoma Co	HP/P/CH	The Mattole River supports populations of Chinook Salmon (Downie et al. 2002). BSA overlaps designated critical habitat within the Mattole River (NOAA Fisheries 2021c). See **Chapter 4.**
Steelhead - northern California DPS	*Oncorhynchus mykiss irideus pop. 16*	FT/--/--	Coastal basins from Redwood Creek south to the Gualala River, inclusive. Does not include summer-run steelhead.	HP/P/CH	The Mattole River supports populations of Steelhead (CDFG 2003). Documented Steelhead spawning presence upstream in Honeydew Creek (CDFG 1996). BSA overlaps designated critical habitat within the Mattole River (NOAA Fisheries 2021c). See **Chapter 4.**
summer-run Steelhead Trout	*Oncorhynchus mykiss irideus pop. 36*	--/SCE/SSC	No. Calif coastal streams south to Middle Fork Eel River. Within range of Klamath Mtns province DPS & No. Calif DPS. Cool, swift, shallow water & clean loose gravel for spawning, & suitably large pools in which to spend the summer.	HP/P	A known summer Steelhead run occurs in the Mattole River (Moyle et al. 1995). Suitable habitat present; see **Chapter 4.**

Footnotes:

[1] Status: FC = Federal Candidate; FE = Federal Endangered; FE = Federal Threatened; SE = State Endangered; ST = State Threatened; SSC = State Special Status Species.

[2] General habitat column information reprinted from CNDDB (February 2021; CDFW 2021c).

[3] Habitat Present/Absent: Absent [A] - no habitat present and no further work needed. Habitat Present [HP] -habitat is or may be present. The species may be present. Present [P] - the species is present. Critical Habitat [CH] - Project footprint is located within a designated critical habitat unit, but does not necessarily mean that appropriate habitat is present.

Special Status Amphibian Species

Special status amphibian species include species that are (1) listed as threatened or endangered under the CESA or the ESA; (2) proposed for federal listing as threatened or endangered; (3) state or federal candidates for listing as threatened or endangered; and/or (4) identified by the CDFW as SSC, California FP species, or species on their SAL.

The USFWS IPaC official species list (generated for the API; **Appendix E**; December 2020) did not identify any federally-listed amphibian species in the Project vicinity. The CNDDB RareFind 5 (generated for the Buckeye Mountain 7.5" quadrangle and surrounding 8 quads; **Appendix B**; February 2021) indicates there are four special status amphibian species potentially occurring within the 9-quad search area. A discussion of the habitat requirements, potential for species occurrence, avoidance and minimization measures, and potential Project-related impacts to special status amphibian species is provided in **Chapter 4** of this document. Special status amphibian species potentially occurring or known to occur in the BSA are listed in the following table.

Table 7: Special Status Amphibian Species Potentially Occurring or Known to Occur in the Project BSA

Common Name	Scientific Name	Status[1]	General Habitat[2]	Habitat Present/ Absent[3]	Rationale
Pacific Tailed Frog	*Ascaphus truei*	--/--/SSC	Occurs in montane hardwood-conifer, redwood, Douglas-fir & ponderosa pine habitats. Restricted to perennial montane streams. Tadpoles require water below 15 degrees C.	HP	Suitable habitat present; see **Chapter 4**.
Northern Red-legged Frog	*Rana aurora*	--/--/SSC	Humid forests, woodlands, grasslands, and streamsides in northwestern California, usually near dense riparian cover. Generally near permanent water, but can be found far from water, in damp woods and meadows, during non-breeding season.	HP	Suitable habitat is present; see **Chapter 4**.
Foothill Yellow-legged Frog	*Rana boylii*	--/--/SSC	Partly shaded, shallow streams and riffles with a rocky substrate in a variety of habitats. Needs at least some cobble-sized substrate for egg-laying. Needs at least 15 weeks to attain metamorphosis.	HP/P	Suitable habitat present and individuals observed within API during multiple visits in April 2021; see **Chapter 4**.
Southern Torrent Salamander	*Rhyacotriton variegatus*	--/--/SSC	Coastal redwood, Douglas-fir, mixed conifer, montane riparian, and montane hardwood-conifer habitats. Old growth forest. Cold, well-shaded, permanent streams and seepages, or within splash zone or on moss-	HP	Suitable habitat present; see **Chapter 4**.

Common Name	Scientific Name	Status[1]	General Habitat[2]	Habitat Present/ Absent[3]	Rationale
			covered rocks within trickling water.		
Red-bellied Newt	*Taricha rivularis*	--/--/SSC	Coastal drainages from Humboldt County south to Sonoma County, inland to Lake County. Isolated population of uncertain origin in Santa Clara County. Lives in terrestrial habitats, juveniles generally underground, adults active at surface in moist environments. Will migrate over 1 km to breed, typically in streams with moderate flow and clean, rocky substrate.	HP	Suitable habitat present; see **Chapter 4**.

Footnotes:

[1] Status: SSC = State Species of Special Concern.

[2] General habitat column information reprinted from CNDDB (February 2021; CDFW 2021c).

[3] Habitat Present/Absent: Absent [A] - no habitat present and no further work needed. Habitat Present [HP] -habitat is or may be present. The species may be present. Present [P] - the species is present.

Special Status Reptile Species

Special status reptile species include species that are (1) listed as threatened or endangered under the CESA or the ESA; (2) proposed for federal listing as threatened or endangered; (3) state or federal candidates for listing as threatened or endangered; and/or (4) identified by the CDFW as SSC, California FP species, or species on their SAL.

The CNDDB RareFind 5 (generated for the Buckeye Mountain 7.5” quadrangle and surrounding 8 quads; **Appendix B**; February 2021) indicates one special status reptile species potentially occurring within the 9-quad search area. Marine reptiles (i.e., sea turtles) indicated as potentially occurring within the 9-quad search area by the USFWS IPaC official species list (generated for the Buckeye Mountain 7.5” quadrangle and surrounding 8 quads; **Appendix E**; December 2020) and NOAA Fisheries West Coast Region California Species List (generated for the Buckeye Mountain 7.5” quadrangle and surrounding 8 quads; **Appendix D**; February 2021) are not included as there is no suitable marine habitat within the API or BSA. A discussion of the habitat requirements, potential for species occurrence, avoidance and minimization measures, and potential Project-related impacts to special status amphibian species is provided in **Section 4.3.3** of this document. Special status reptile species potentially occurring or known to occur in the BSA are listed in the following table.

Table 8: Special Status Reptile Species Potentially Occurring or Known to Occur in the Project BSA

Common Name	Scientific Name	Status[1]	General Habitat[2]	Habitat Present/ Absent[3]	Rationale
Western Pond Turtle	*Emys marmorata*	--/--/SSC	A thoroughly aquatic turtle of ponds, marshes, rivers, streams and irrigation ditches, usually with aquatic vegetation, below 6000 ft elevation.	HP/P	Suitable habitat present and shell observed on-site during February 2021 site visit; see **Chapter 4**.

Footnotes:

[1] Status: State Species of Special Concern (SSC).

[2] General habitat column information reprinted from CNDDB (February 2021; CDFW 2021c).
[3] Habitat Present/Absent: Habitat Present [HP] -habitat is or may be present. The species may be present. Present [P] - the species is present.

Special Status Bird Species

Special status bird species include species that are (1) listed as threatened or endangered under the CESA or the ESA; (2) proposed for federal listing as threatened or endangered; (3) state or federal candidates for listing as threatened or endangered; and/or (4) identified by the CDFW as SSC, California FP species, or species on their SAL.

The USFWS IPaC official species list (generated for the API; **Appendix E**; December 2020) identified seven species with potential to occur in the Project vicinity. The CNDDB RareFind 5 (generated for the Buckeye Mountain 7.5" quadrangle and surrounding 8 quads **Appendix B**; February 2021) indicates there are 14 additional special status bird species potentially occurring within the 9-quad search area. A discussion of the habitat requirements, potential for species occurrence, avoidance and minimization measures, and potential Project-related impacts to special status bird species is provided in **Section 4.3.4** of this document. Special status bird species potentially occurring or known to occur in the BSA are listed in the following table.

Table 9: Special Status Bird Species Potentially Occurring or Known to Occur in the Project BSA

Common Name	Scientific Name	Status[1]	General Habitat[2]	Habitat Present/ Absent[3]	Rationale
Cooper's Hawk	*Accipiter cooperii*	--/--/WL	Woodland, chiefly of open, interrupted or marginal type. Nest sites mainly in riparian growths of deciduous trees, as in canyon bottoms on river floodplains; also, live oaks.	HP	Suitable habitat present; see **Chapter 4**.
Sharp-shinned Hawk	*Accipiter striatus*	--/--/WL	Ponderosa pine, black oak, riparian deciduous, mixed	HP	Suitable habitat present; see **Chapter 4**.

Common Name	Scientific Name	Status[1]	General Habitat[2]	Habitat Present/ Absent[3]	Rationale
			conifer, and Jeffrey pine habitats. Prefers riparian areas. North-facing slopes with plucking perches are critical requirements. Nests usually within 275 ft of water.		
Great Egret	*Ardea alba*	--/--/SAL	Colonial nester in large trees. Rookery sites located near marshes, tide-flats, irrigated pastures, and margins of rivers and lakes.	HP	Suitable habitat present; see **Chapter 4**.
Great Blue Heron	*Ardea herodias*	--/--/SAL	Colonial nester in tall trees, cliffsides, and sequestered spots on marshes. Rookery sites in close proximity to foraging areas: marshes, lake margins, tide-flats, rivers and streams, wet meadows.	HP	Suitable habitat present; see **Chapter 4**.
Golden Eagle	*Aquila chrysaetos*	--/--/FP, WL	Rolling foothills, mountain areas, sage-juniper flats, and desert. Cliff-walled canyons provide nesting habitat in most parts of range; also, large trees in open areas.	HP	Suitable habitat present; see **Chapter 4**.
Marbled Murrelet	*Brachyramphus marmoratus*	FT/SE/--	Feeds near-shore; nests inland along coast from Eureka to Oregon border and from Half Moon Bay to Santa Cruz. Nests in old-growth redwood-dominated forests, up to six miles inland, often in Douglas-fir.	A	Closest record is ~5 miles east of the API on private timberlands (CDFW 2021b). BSA does not overlap designated critical habitat (USFWS 2021b). No suitable nesting habitat (old growth coniferous forest) is present in the API or BSA; excluded from further consideration.
Western Snowy Plover	*Charadrius nivosus*	FT/--/SSC	Sandy beaches, salt pond levees & shores of large alkali lakes. Needs sandy, gravelly or friable soils for nesting.	A	API is located at an inland location at least 31 miles from the nearest extant recorded population (Humboldt Bay South Spit), according to the CNDDB (CDFW 2021c). Although Western Snowy Plovers have been documented nesting on Eel River gravel bars, the gravel bars along the Mattole River are considered fairly narrow (with widths of 200-300 feet) with the exception of

Common Name	Scientific Name	Status[1]	General Habitat[2]	Habitat Present/ Absent[3]	Rationale
					wider gravel bars in the lower reaches (within 1.5 to 3 miles; Tuttle et al. 1997). Surveys conducted during the breeding season from 1999 to 2003 along the lower reaches, as well as the Mattole River mouth, did not detect any plovers (BLM 2004). BSA does not overlap designated critical habitat (USFWS 2021b). No suitable habitat present in API or BSA; excluded from further consideration.
Western Yellow-billed Cuckoo	*Coccyzus americanus occidentalis*	FT/SE/WL	Riparian forest nester, along the broad, lower flood-bottoms of larger river systems. Nests in riparian jungles of willow, often mixed with cottonwoods, with lower story of blackberry, nettles, or wild grape.	A	Closest records are from riparian habitat in Fortuna and Ferndale, ~24 miles north of the API (eBird 2021). BSA does not overlap designated critical habitat (USFWS 2021b). No suitable habitat (e.g., extensive riparian forest) within the API and BSA is not suitable for the subspecies; excluded from further consideration.
Osprey	*Pandion haliaetus*	--/--/WL	Ocean shore, bays, freshwater lakes, and larger streams. Large nests built in tree-tops within 15 miles of a good fish-producing body of water.	HP	Suitable habitat present; see **Chapter 4**.
Short-tailed Albatross	*Phoebastria albatrus*	FE/--/SSC	Offshore Japanese Islands, Northern Pacific Ocean, Sea of Okhotsk. Islands with bare ground/grass surrounded by cliffs.	A	There are no known records of this species from the API or BSA. The species is extremely rare along the west coast of the U.S. They only breed on offshore islands in Japan and recently Midway atoll (BirdLife International 2021). The closest known records of this species to the BSA are offshore the Mendocino coast (eBird 2021). No suitable habitat (e.g., marine waters) for this species within the API

Common Name	Scientific Name	Status[1]	General Habitat[2]	Habitat Present/ Absent[3]	Rationale
					or BSA; excluded from further consideration.
Bank Swallow	*Riparia*	--/ST/--	Colonial nester; nests primarily in riparian and other lowland habitats west of the desert. Requires vertical banks/cliffs with fine-textured/sandy soils near streams, rivers, lakes, ocean to dig nesting hole.	HP	Suitable habitat present; see **Chapter 4**.
Northern Spotted Owl	*Strix occidentalis caurina*	FT/ST/SSC	Old-growth forests or mixed stands of old-growth and mature trees. Occasionally in younger forests with patches of big trees. High, multistory canopy dominated by big trees, many trees with cavities or broken tops, woody debris, and space under canopy.	A	No known occurrences within the API or BSA. BSA does not overlap designated critical habitat (USFWS 2021b). No suitable habitat present in API or BSA; see **Chapter 4**.

Footnotes:

[1] Status: FE = Federal Endangered; FD = Federal Delisted; FT = Federal Threatened; SE = State Endangered; ST = State Threatened; FP = CDFW Fully Protected Species; WL = CDFW Watch List Species; SAL = CDFW Special Animals List; SSC = State Species of Special Concern.

[2] General habitat column information reprinted from CNDDB (February 2021; CDFW 2021c).
[3] Habitat Present/Absent: Absent [A] - no habitat present and no further work needed. Habitat Present [HP] -habitat is or may be present. The species may be present.

Special Status Mammal Species

Special status mammal species include species that are (1) listed as threatened or endangered under the CESA or the ESA; (2) proposed for federal listing as threatened or endangered; (3) state or federal candidates for listing as threatened or endangered; and/or (4) identified by the CDFW as SSC, California FP species, or species on their SAL.

The USFWS IPaC official species list (generated for the API; **Appendix E**; December 2020) did not identify any federally-listed mammal species in the Project vicinity. The CNDDB RareFind 5 (generated for the Buckeye Mountain 7.5” quadrangle and surrounding 8 quads; **Appendix B**; February 2021) indicates there are nine special status mammal species potentially occurring within the 9-quad search area. Marine mammals indicated as potentially occurring within the 9-quad search area by the CNDDB RareFind 5 and NOAA Fisheries West Coast Region California Species List (generated for the Buckeye Mountain 7.5” quadrangle and surrounding 8 quads; **Appendix D**; February 2021) are not included as there is no suitable marine habitat within the API or BSA. A discussion of the habitat requirements, potential for species occurrence, avoidance and minimization measures, and potential Project-related impacts to special status mammal species is provided in **Chapter 4** of this document. Special status mammal species potentially occurring or known to occur in the BSA are listed in the following table.

Table 10: Special Status Mammal Species Potentially Occurring or Known to Occur in the Project BSA

Common Name	Scientific Name	Status[1]	General Habitat[2]	Habitat Present/ Absent[3]	Rationale
Humboldt Mountain Beaver	*Aplodontia rufa humboldtiana*	--/--/SAL	Coast Range in southwestern Del Norte County and northwestern Humboldt County. Variety of coastal habitats, including coastal scrub, riparian forests, typically with open canopy and thickly vegetated understory.	A	No known occurrence records from API or API or BSA. No suitable habitat (e.g., forested slopes adjacent to sufficient water) present in API or BSA or BSA; excluded from further consideration.
Sonoma Tree Vole	*Arborimus pomo*	--/--/SSC	North coast fog belt from Oregon border to Sonoma County. In Douglas-fir, redwood & montane hardwood-conifer forests. Feeds almost exclusively on Douglas-fir needles. Will occasionally take needles of grand fir, hemlock or spruce.	HP	No known occurrence records from API or API or BSA. Suitable habitat present; see **Chapter 4**.
Townsend's Big-eared Bat	*Corynorhinus townsendii*	--/--/SSC	Throughout California in a wide variety of habitats. Most common in mesic sites. Roosts in the open, hanging from walls and ceilings. Roosting sites limiting. Extremely sensitive to human disturbance.	HP	Suitable habitat present; see **Chapter 4**.
North American porcupine	*Erethizon dorsatum*	--/--/SAL	Forested habitats in the Sierra Nevada, Cascade, and Coast ranges, with scattered observations from forested areas in the Transverse Ranges. Wide variety of coniferous and mixed woodland habitat.	HP	Suitable habitat present; see **Chapter 4**.
Western Red Bat	*Lasiurus blossevillii*	--/--/SSC	Roosts primarily in trees, 2-40 ft above ground, from sea level up through mixed conifer forests. Prefers habitat edges and mosaics with trees that are protected from above and open below with open areas for foraging.	HP	Suitable habitat present; see **Chapter 4**.

Common Name	Scientific Name	Status[1]	General Habitat[2]	Habitat Present/ Absent[3]	Rationale
Long-eared Myotis	*Myotis evotis*	--/--/SAL	Found in all brush, woodland and forest habitats from sea level to about 9000 ft. Prefers coniferous woodlands and forests. Nursery colonies in buildings, crevices, spaces under bark, and snags. Caves used primarily as night roosts.	HP	Suitable habitat present; see **Chapter 4**.
Yuma Myotis	*Myotis yumanensis*	--/--/SAL	Optimal habitats are open forests and woodlands with sources of water over which to feed. Distribution is closely tied to bodies of water. Maternity colonies in caves, mines, buildings or crevices.	HP	Suitable habitat present; see **Chapter 4**.
Fisher	*Pekania pennanti*	--/--/SSC	Intermediate to large-tree stages of coniferous forests and deciduous-riparian areas with high percent canopy closure. Uses cavities, snags, logs and rocky areas for cover and denning. Needs large areas of mature, dense forest.	HP	Suitable habitat present; see **Chapter 4**.
American Badger	*Taxidea taxus*	--/--/SSC	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Needs sufficient food, friable soils and open, uncultivated ground. Preys on burrowing rodents. Digs burrows.	HP	Suitable habitat present; see **Chapter 4**.

Footnotes:

[1] Status: SSC = State Species of Special Concern; SAL = CDFW Special Animals List (CDFW 2021a).

[2] General habitat column information reprinted from CNDDB (February 2021; CDFW 2021c).
[3] Habitat Present/Absent: Absent [A] - no habitat present and no further work needed. Habitat Present [HP] -habitat is or may be present. The species may be present.

Chapter 4 – Results: Biological Resources, Discussion of Impacts, and Mitigation

Habitats and Natural Communities of Special Concern

Habitats and Sensitive Natural Communities of Special Concern include the aquatic habitat included in the waters of Cook's Gulch, Granny Creek, and the Mattole River. Three parameter wetlands were also delineated within the API (GHD 2021).

Aquatic Habitat, Regulated Waters, and Wetlands

Aquatic habitat present in the Project area includes two tributaries to the Mattole River, Cook's Gulch and Granny Creek (see **Appendix A, Figure 5 – Biological Study Area**). Neither tributary is located within the API and direct and indirect impacts would not result. The aquatic habitat of the anadromous Mattole River is present within the API, and in-channel work is expected. Wetlands were evaluated within the API and summarized in a separate Aquatic Resources Delineation Report (GHD 2021, **Appendix G**).

Survey Results

A National Wetlands Inventory (NWI) query was completed (see **Appendix A, Figure 7 – NWI Wetlands**) for the Project as well as and aquatic resources delineation. The aquatic resources delineation was conducted within the API on April 28 and May 12, 2021 (GHD 2021). A total of 0.086 acres (3,788 ft^2) of three-parameter wetlands occur within the API, all of which are hydrologically connected to the Mattole River, and therefore are likely under the jurisdiction of the USACE and the RWQCB. Additionally, there were 0.254 acres (11,064 ft^2) of Other Waters which are hydrologically connected to the Mattole River, and are therefore under the jurisdiction of the USACE. In total, 0.340 acres (14,851 ft^2) of USACE-jursidictional aquatic resources were delineated within the API.

Project Impacts

Given the distance of Cook's Gulch and Granny Creek from the API and the implementation of standard measures to control erosion, direct and indirect impacts to these ephemeral tributaries would not result. Water quality impacts or changes in the aquatic habitats of Cook's Gulch and Granny Creek would not occur.

Based on the aquatic resources delineation results, the Project may impact three-parameter wetlands within the API. These wetlands are described separately in the Project 's wetland delineation report (GHD 2021, **Appendix G**). Project design in currently in the preliminary stages, so final temporary and permanent impacts to wetlands cannot be definitively calculated at this time. However, given the current extent of the API, it is estimated that the Project could result in impacts of up to 0.340 acres (14,851 ft^2) of aquatic resources within the API.

Permanent fill of wetlands could occur where the proposed longitudinal sub-drains bisect an inboard ditch (northern section of the ditch delineated as a three-parameter wetland, and southern section delineated as an Other Waters of the US; see **Appendix G**) running parallel to the roadway, and where the existing roadway would be reconstructed (i.e., widened with four foot shoulders; this could extend again into the above-mentioned ditch that parallels the western side of the road).

Given the potential need to temporarily dewater the work area along the toe of the slide (adjacent to Mattole River), potential temporary impacts to aquatic habitat of the Mattole River could occur. Impacts may include elevated turbidity as well as accidental spills and release of hazardous material. No permanent or temporary fill is proposed within the river itself.

Avoidance and Minimization Efforts

The following measures will be implemented to avoid or minimize the potential for Project-related impacts to potentially jurisdictional aquatic resources within the API. These measures are recommended in addition to those provided in **Chapter 1, Project Construction - Establish Exclusion Areas and Erosion Control.**

To the extent practicable, the discharge of dredged or fill material into waters of the United States, including wetlands, will be avoided (this also includes jurisdictional waters not subject to Corps jurisdiction, but subject to RWQCB jurisdiction). However, complete avoidance may be not feasible, thus the following measures will be implemented:

Prior to any discharge of dredged or fill material into waters of the United States, including wetlands, authorization will be obtained from the Corps. For any features determined not to be subject to USACE jurisdiction during the verification process, authorization to discharge will be obtained from the North Coast Regional Water Quality Control Board (NCRWQCB). For fill requiring a USACE permit under Section 404 of the CWA, a water quality certification will be obtained from the Regional Board under Section 401 of the CWA prior to discharge of dredged or fill material.

Prior to any activities that would obstruct the flow of, alter the bed, channel, or bank of any perennial or intermittent stream, or impact any riparian habitat, notification of streambed alteration will be submitted to the CDFW; and, if required, a Streambed Alteration Agreement will be obtained from CDFW.

If water is present in within the API (i.e., western side channel of the Mattole) at the time of construction, a dewatering plan will be developed for review and acceptance by regulatory agencies at least 15 days prior to the onset of construction.

No excavation or equipment operation will occur where flowing water is present.

Suitable BMPs, such as silt fences, fiber rolls, or earthen berms would be installed or constructed between work zones and staging and temporary material stockpile areas, and any watercourse to collect loose debris and to intercept sediment during rain events. These structures shall be installed pursuant to Caltrans specifications prior to pending rain events (trigger = greater than 50 percent possibility of rain within the next

24 hours), as forecasted by the National Weather Service. Any sediment caught by the fence or rolls would be removed before the fence/rolls are pulled.

Temporary spoils or construction material sites shall be located so as to not drain directly into ditches, streams, or other waterbodies. If a spoils/construction materials site has the potential to drain into a surface water feature, a retention basin, berm(s), or other catchment device shall be constructed or installed to intercept silt-laden storm runoff before it reaches any waterbody. Areas disturbed by construction and temporary storage sites shall be graded, seeded, and mulched upon completion of construction, whether or not they pose the risk of erosion and the off-site release of fine sediment.

All construction debris shall be removed from the site in a timely manner and disposed of appropriately.

All exposed mineral soil, or stockpiles to remain on-site through the wet season shall be protected from erosion associated with wind and rain (e.g., silt fences, straw bales, straw mulch, and tarps).

Any monitoring, maintenance, and reporting required by the regulatory agencies (i.e., USACE, Regional Board, and CDFW) shall be implemented and completed pursuant to established criteria and/or schedules. All measures contained in Project permits or associated with agency approvals shall be implemented in a timely manner.

Refueling of equipment will not occur within 100 feet of waters or wetlands.

Compensatory Mitigation

Temporary and permanent impacts to delineated three-parameter wetlands are expected as a result of Project construction. The County proposes to keep impacts to jurisdictional aquatic resources under 0.1 acres if possible (avoiding compensatory mitigation requirements associated with 404 permitting through the USACE). However, pursuant to E.O. W-59-93, the Regional Water Board requires mitigation for all temporary and permanent impacts to wetlands. Compensatory mitigation for impacts to aquatic resources regulated by the RWQCB would occur to the satisfaction of the jurisdictional agency and at a ratio of no less than 1:1 (mitigation plan will be finalized in coordination with regulators). Compensatory mitigation is currently proposed on-site by the County through proposed bioengineering/enhancement of habitat (willow plantings) and an expansion of the existing wetland swale immediately to the west of Mattole Road. The final locations of any compensatory mitigation areas would be submitted to jurisdictional agencies for approval as part of the Project's permitting phase.

Cumulative Impacts

Given that cumulative projects identified in **Table 2** do not involve construction or operation in or near the Mattole River or tributaries thereto, cumulative impacts would not result.

Special Status Plant Species

As discussed in **Chapter 3**, based on the USFWS Official Species List generated for this Project (**Appendix E**), three federally-listed plant species could occur within the Project vicinity. However, given the lack of suitable habitat and nearby records, none of these species are expected to occur within the API or greater BSA. Potentially suitable habitat is present within the BSA for 11 special status plants tracked by the CNDDB and CNPS. A discussion of the habitat requirements, potential for species occurrence, survey results, potential Project-related impacts, applicable impact avoidance and minimization measures, compensatory mitigation, and cumulative impacts to plant species is provided below.

Discussion of Special Status Plants

Leafy reed grass

Leafy reed grass (*Calamagrostis foliosa*) is state listed is Rare under CESA by the CDFW and ranked as 4.2 by the CNPS. The species is a perennial herb that occurs in rocky habitats associated with coastal bluff scrub and north coast coniferous forest at elevations from 0-4,000 feet. The species is restricted to Del Norte, Humboldt, and Mendocino counties in California. Blooming period occurs from May through September (CNPS 2021). There are no CNDDB or Calflora occurrences within the BSA.

Giant fawn lily

Giant fawn lily (*Erythronium oreganum*) is a CNPS listed 2B.2 perennial bulb primarily found in rocky woodland openings as well as seeps, meadows, and serpentine areas (Baldwin et al. 2012, CNPS 2021). No known occurrences are within the API or BSA. Cismontane woodland openings and seeps can be found near the Mattole River within the API and BSA. Woodland openings and seeps within the API are marginal potential habitat due to the ongoing landslide-related disturbance.

Coast fawn lily

Ranked 2B.2 by CNPS, coast fawn lily (*Erythronium revolutum*) is a perennial bulb found in bogs and fens, broad leafed upland forest, and North Coast coniferous forest. It is in bloom from March through July at elevations ranging from 400 to 2800 ft. Primary threats to this species include road maintenance and logging (CNPS 2021). There is one recorded occurrence of this species (approx. 70 plants) within the BSA, mapped as several polygons in 2013 (CDFW 2020). This species' affinity for mesic habitats increases the likelihood that a population may be found along streams, though none have been recorded to date within the BSA.

Pacific gilia

Pacific gilia (*Gilia capitata ssp. pacifica*) is ranked 1B.2 by CNPS, and is an annual herb most often found in coastal bluff scrub, chaparral, coastal prairie, and valley and foothill grassland. The species thrives in well-drained soil and full sunlight. Pacific gilia is known to California and Oregon, where it blooms from April to August, and is found at elevations from near sea level to just over 3,000 feet. The subspecies is threatened by development and recreational activities, and possibly threatened by road construction and logging (CNPS 2021).

Wolf's evening-primrose

Wolf's evening primrose has a CRPR rank of 1B.1, which means it is rare, threatened or endangered in California and elsewhere, and the ".1" modifier indicates it is seriously endangered in California (CNPS 2021). It is a perennial herb in the evening primrose family (Onagraceae). The subspecies grows at 10 - 2625 ft (3 - 800 m) in sandy, usually mesic areas of coastal bluff scrub, dunes, and prairie as well as lower montane coniferous forest within California (Del Norte, Humboldt, Mendocino, and Trinity counties), Oregon, and Washington (CNPS 2021). It blooms from May through October and is threatened by disturbance from road maintenance and pedestrian trampling, development, invasive plants, and hybridization with non-native *Oenothera* species (CNPS 2021). Marginal suitable habitat is present in the API and BSA.

Seacoast ragwort

Seacoast ragwort has a CRPR rank of 2B.2, which means it is rare or endangered in California and common elsewhere, and the ".2" modifier indicates it is fairly endangered in California (CNPS 2021). It is perennial rhizomatous herb in the sunflower family (Asteraceae). The varietal grows at 100 – 2,133 feet within coastal scrub and North Coast coniferous forest, as well as occasionally along roadsides in Northern California (Del Norte, Humboldt, and Mendocino counties), Oregon, and Washington (CNPS 2021). It blooms primarily in May through July but may also be found as early as January through April and as late as August (CNPS 2021). The species is likely threatened by logging, erosion, and disturbance as a result of road maintenance (CNPS 2021). Marginal coniferous forest and scrub habitat occur within the API and BSA.

White-flowered rein orchid

White-flowered rein orchid (*Piperia candida*) is a perennial herb ranked 1B.2 by CNPS. This species typically inhabits North Coast coniferous forest, lower montane coniferous forest, and broad leafed upland forest often growing in forest duff or mossy banks. The small white flowers of this orchid are in bloom from May through September. Logging serves as a primary threat to this species (CNPS 2021).

Oregon polemonium

Oregon polemonium (*Polemonium carneum*) is a CNPS 2B.2 rare perennial herb primarily found in openings in moist to dry habitat (Baldwin et al. 2012). Oregon polemonium can be found in prairie, scrub, and lower montane coniferous forest (CNPS 2021). No known occurrences are within the API or BSA. The API and BSA contain openings in coniferous forest and scrub that may provide potential habitat for Oregon polemonium.

Siskiyou checkerbloom

Siskiyou checkerbloom (*Sidalcea malviflora* ssp. *patula*) is a CNPS 1B.2 rare perennial rhizomatous herb that may occur in coastal forests, scrub, prairie, bluff, and edge habitats such as road cuts along the North Coast (Baldwin et al. 2012, CNPS 2021). CNPS lists potential threats to this plant as road widening, non-native plants logging, grazing, and trampling (CNPS 2021). The species is secure, but the subtaxon is imperiled throughout its range (G5T2) and in the state of California (S2) (CNPS 2021). Siskiyou checkerbloom is not known to occur within the API or BSA. Potential habitat within the API and BSA includes woodland and scrub openings, which comprise much of the area. Siskiyou checkerbloom typically flowers between May and August (CNPS 2021).

Hitchcock's blue-eyed grass

Hitchcock's blue-eyed grass (*Sisyrinchium hitchcockii*) is a CNPS 1B.1 rare perennial rhizomatous herb found in grassy, vernally moist areas (Baldwin et al. 2012). This rare plant, which is primarily differentiated from other similar locally common *Sisyrinchium bellum* by the unbranched stem, lack of cauline leaves, extensive rhizome, and lack of yellow tepal blotch (Baldwin et al. 2012, CNPS 2021). Hitcock's blue-eyed grass is primarily known in California from an occurrence in the Cape Ridge area, and also occurs in southwestern Oregon. Grassy mesic openings in woodland are common throughout the API and BSA and may provide suitable habitat.

Survey Results

During the initial spring special status plant survey, conducted by GHD botanist Kelsey McDonald on April 22, 2021 within the API, no threatened, endangered or CNPS List 1 or 2 rare plants were observed. A second seasonally appropriate survey is scheduled for late June/early July 2021. No other information is readily available on previous botanical surveys (if any) from the Project vicinity.

Project Impacts

Upland ground disturbances associated with temporary parking and temporary placement and use of storage containers may temporarily affect low growing grasses and forbs, but it is anticipated that impacts shall be minor and temporary. Storage of excavated spoils or the stockpiling of imported construction materials may result in temporary disturbances to low growing vegetation near the edges of designated turnouts, but all disturbances are considered temporary and minor as well.

Restoration of the hillslope and development of a temporary access road to the Mattole River would result in vegetation removal, including small trees presently leaning on the hillside (< 12-in dbh). Based on the results of the reconnaissance level site visit, the lower slide below Mattole Road is predominantly scrub habitat, with a few small trees present including Douglas fir, bay laurel, bigleaf maple, red alder, Oregon white oak, and arroyo willow. As the Project is only in the preliminary design stage, final impacts to trees, particularly those related to the proposed access road down to the Mattole, are currently unknown. It is assumed however, that the area of impact in acres will not exceed that of the proposed willow plantings (i.e., 0.15 acres). Plantings are proposed along approximately 350 feet of riverbank and would result in a net increase in trees and riparian cover along the slope (i.e., where, due to the existing slope instabilities, riparian vegetation is largely absent). In the long-term, riparian habitat is expected to increase due to replanting efforts covering approximately 0.15 acres.

Aside from tree removal, all disturbances to vegetation shall be temporary, with post-construction remediation in the form of grading, seeding, and mulching to return disturbed areas to preexisting condition following completion of the Project. On-site remediation or vegetative restoration is not anticipated because woody vegetation shall not be removed. As such, it is anticipated that disturbances to vegetation will be minimal.

Based on field assessments and habitat requirements of regionally occurring special status plant communities, it has been determined that there is suitable habitat for special status plant species within the BSA, but with only limited habitat potential within the associated API. This study concludes the potential for impacts to special status plant species is negligible, pending the results of the late season floristic survey. Appropriate BMPs will be in place for the duration of the Project to maximize protection of sensitive plant species that may be present within the API, if any.

That being the case, it is anticipated that permanent restoration of the roadway will not affect listed or sensitive plant species or their habitat.

Avoidance and Minimization Efforts

- Upland locations designated for equipment and material storage shall be chosen to avoid riparian habitat and to minimize impacts to surrounding vegetation.
- The removal of woody vegetation along the river edge shall be minimized.
- Resource protection and conservation measures shall be integrated into Project design.
- Any mineral soil that is exposed as the result of construction, maintenance, or repair, shall be treated for erosion prior to the onset of any rainfall event capable of generating run-off, or at the end of the yearly work period, whichever comes first.
- Impacts to herbaceous cover will be offset by reseeding any unvegetated and impacted areas with a suitable seed mixture applied at an acceptable rate post-construction.

Additional efforts to prevent the spread of invasive plant species will be undertaken during Project implementation:

- Equipment used will be cleaned to remove deleterious material and organic matter and shall be free of all plant matter prior to entering the construction site.
- If project implementation calls for mulches, it shall be of a weed-free type.
- Any seed mixes or vegetation used to revegetate previously disturbed areas shall be limited to locally adapted native plant species or fast-growing hybrids.

Compensatory Mitigation

The proposed Project has been designed such that conservation measures and proposed avoidance and minimization measures shall avoid or minimize potential effects to vegetation to the fullest extent feasible. As the potential for special status plants to occur within the API is negligible, based on existing habitat conditions, no impacts are expected. No compensatory mitigation regarding special status plants is anticipated or proposed.

Cumulative Impacts

Cumulative effects are those impacts of future state, local, and private actions affecting endangered and threatened species that are reasonably certain to occur in the BSA. Cumulative Projects identified in **Table 2** include two storm damage repair projects along Mattole Road and various cannabis cultivations within and near the BSA. As a standard protocol, the storm damage projects to be implemented by the HCDPW would complete pre-construction special status plant surveys to ensure potential impacts are avoided. Cannabis projects are located on private property and include grading, irrigation, herbicides, lighting, and other potentially impactful practices by their very nature. The County of Humboldt Planning and Building Department requires such projects to be compliant with CEQA, which includes an evaluation of special status plants and habitats. The present project is not expected to contribute to cumulative impacts to special status plants.

Special Status Animal Species

Discussion of Special Status Invertebrates

As discussed in **Chapter 3**, based on the USFWS Official Species List generated for this Project (**Appendix E**), no federally-listed invertebrate species are expected to occur within the Project vicinity. However, CNDDB records indicate that two state special status invertebrate species may be present in the Project vicinity: Western Ridged Mussel and Western Bumble Bee. A discussion of the habitat requirements, potential for species occurrence, survey results, potential Project-related impacts, applicable impact avoidance and minimization measures, compensatory mitigation, and cumulative impacts to invertebrate species is provided below.

Western Ridged Mussels (SAL)

Western Ridged Mussels were historically known from rivers and creeks across western North America including California, Oregon, Washington, Idaho, Nevada, and British Columbia (Blevins et al. 2020). However, the species has experienced a drastic 43% range reduction, especially within southern California (Blevins et al. 2020). Recent studies have documented their presence in northern California and southern Oregon rivers (Howard 2010). However, no known records exist within the Mattole watershed. Additionally, none of the known or likely species' host fish (hardhead [*Mylopharodon conocephalus*], pit sculpin [*Cottus pitensis*], tule perch [*Hysterocarpus traski*], pit roach [*Lavinia symmetricus mitrulus*] and the non-native black crappie [*Pomoxis nigromaculatus*]) have been documented in the Mattole River (Jepsen 2009).

Recent survey efforts were conducted within the adjacent Eel River watershed (Howard 2010). The closest known record is from 2009, approximately 17 linear miles northeast of the API in the Eel River (Howard 2010, CDFW 2021c). Based on suitable aquatic habitat, the species may be present in the BSA within main channels of the Mattole River, although no suitable habitat is present in the API.

Western Bumble Bee (SAL)

Western Bumble Bees were historically widespread in coastal valleys and foothills throughout western North America. However, the species has experienced precipitous declines and they are now regionally rare. Western Bumble Bees are habitat generalists but require reliable sources of nectar plants and pollen resources (blooming periods from spring through fall). Meadow complexes are a preferred habitat type (DoW 2015). Colonies are typically located underground in rodent burrows (BumbleBee Watch 2021).

The closest known record is from 1969 in Humboldt Redwoods State Park, approximately 11.75 miles northeast of the API (CDFW 2021c). There are no recent documented occurrences of this species within the BSA or nearby (BumbleBeeWatch 2021, CDFW 2021c). Although the BSA falls within the species pre-2002 range (according to ICUN Redlist), the range has contracted significantly in the last decade and now primarily includes the intermountain west and cascade regions of the US (Hatfield et al. 2015). This being the case, the species is not expected to occur in the API or BSA during construction.

Survey Results.

No special status invertebrates were observed during the February 2021 site visit or April 2021 botanical survey. No mussels were observed in remnant isolated pools of the Mattole River within the API in April 2021. However, neither of these surveys were targeted towards detection of the full range of invertebrates. Some nectar sources that could be utilized by Western Bumble Bee were observed. No other targeted surveys for these species or incidental occurrence data is known from the BSA (Bumble Bee Watch 2021, iNaturalist 2021). The API and BSA do not overlap designated or proposed critical habitat for any federally-listed invertebrate species.

Project Impacts

The Project may require temporary dewatering of a small area of the Mattole River to allow placement of RSP. No mussels, and no suitable habitat, were observed in the API in April 2021. If any mussels are observed in proximity to Project impacts during construction, they would be relocated.

Vegetation removal will be limited to minor roadside vegetation and on the landslide surface to install the drains and RSP and to for construction access. Vegetation removal will include minor mowing and minor brush removal. No impacts to large areas of nectar sources or open meadow are expected. The Project not expected to result in any impacts to the Western Bumble Bee, if present.

Avoidance and Minimization Efforts

Western Ridged Mussels, if found to be present in the API will be relocated to nearby wetted areas during dewatering efforts (see Special Status Fish – Avoidance and Minimization Efforts further in this chapter). Project design (including staging and stockpile locations) considered minimization of impacts to vegetation and sensitive habitat during design. No further avoidance or minimization measures are proposed as no suitable habitat is present for Western Bumble Bee in the API (habitat may only be present in the greater BSA, where no impacts to vegetation/nectar sources will occur).

Compensatory Mitigation

The proposed Project has been designed such that Project-specific conservation measures and avoidance and minimization measures shall effectively avoid or minimize to the greatest extent feasible, impacts to sensitive habitat and wildlife resources. As no impacts to Western Ridged Mussels, Western Bumble Bees, or their habitat is expected, no compensatory mitigation is proposed.

Cumulative Impacts

The proposed Project will not facilitate further development in the area. In addition, with implementation of the recommended avoidance and minimization measures, the Project would not contribute to cumulative impacts to special status invertebrates.

Discussion of Special Status Fish

As discussed in **Chapter 3**, the BSA contains suitable habitat for federally and state listed anadromous salmonids as well as state special status Pacific Lamprey and summer-run Steelhead Trout within the Mattole River. A discussion of the habitat requirements, potential for species occurrence, survey results, potential Project-related impacts, applicable impact avoidance and minimization measures, compensatory mitigation, and cumulative impacts to fish species is provided below.

<u>Pacific Lamprey (SSC)</u>

Pacific Lamprey, *Entosphenus tridentatus* formerly *Lampetra tridentata*, is a primitive fish lacking true fins and jaws of true fishes (Streif 2007, Stillwater Sciences 2010). They appear eel-like and have a sucker-like mouth, no scales, and breathing holes instead of gills (Streif 2007). Pacific Lamprey range from the Japan to the Bering Sea in Alaska and along the west coast of North America to central Baja, California (Stillwater Sciences 2010).

Pacific Lamprey are anadromous with typical spawning from March through July (Stillwater Sciences et al. 2016). Both sexes build redds (nests) where eggs are deposited by moving stones with their mouths, typically in riffles of gravel-bottomed streams and upstream of quality ammocoete (larval lamprey) habitat. Females may lay 30 to 240 thousand eggs (Stillwater Sciences et al. 2016). Adults then die within a few days to a month of spawning (Streif 2007). Ammocoetes hatch within approximately 19 days depending on water temperature (Streif 2007). Upon hatching, ammocoetes move downstream where they settle into silty sandy substrates (Streif 2007). They remain in these areas, often in colonies, for two to seven years filter feeding primarily on algae until they metamorphose into macropthalmia (juveniles; Streif 2007). During this metamorphosis, they develop eyes, a suctoral disc, sharp teeth, and more-defined fins allowing them to be free swimming (Streif 2007, Stillwater Sciences et al. 2016). As macropthalmia, they emigrate downstream to the ocean (Streif 2007). They mature into adults where they are parasitic on a variety of fishes. Adults return to their natal streams following one to three years in the marine environment (Streif 2007). There may be two major life strategies in which some adults spawn immediately upon returning to freshwater and other adults may overwinter in freshwater before spawning (Streif 2007, Stillwater Sciences et al. 2016).

This species is of particular cultural value to many native indigenous tribes and was historically a major fishery in northern California. Threats to their populations are similar to those experienced by salmonid species (Stillwater Sciences and Wiyot Tribe 2017). These threats include limits to passage (e.g., dams), diversions, urban development, mining, pollution, estuary modification, stream and floodplain degradation, declines in prey abundance predation by non-native species, and overharvest (Streif 2007, Stillwater Sciences and Wiyot Tribe 2017). Extensive spawning has been documented in the Mattole River (Mattole Restoration Council 2012, Mattole Salmon Group 2015a). Suitable spawning, rearing, and migratory habitat is present for Pacific Lamprey in the Mattole River within the BSA and may be present in the API; however, Project construction would not occur during the spawning period.

Coho Salmon - southern Oregon / northern California ESU Coho Salmon (FT/ST)

The southern Oregon/northern California coast Coho Salmon (SONCC) Coho Salmon ESU was federally-listed as a threatened effective June 5, 1997 (62 FR 24588). The listing status was reaffirmed effective August 29, 2005 (70 FR 37159) and April 14, 2014 (79 FR 20802). Critical habitat was designated for SONCC Coho Salmon, effective June 4, 1999. Critical habitat includes all accessible reaches between and including the Mattole River (California) and Elk River (Oregon) (64 FR 24049).

The SONCC ESU is defined as all Coho Salmon naturally produced in streams between Punta Gorda in northern California (Humboldt County) and Cape Blanco in southern Oregon (70 FR 37160). Adult Coho Salmon enter rivers from late summer to mid-winter with most spawning occurring in early to mid-winter. Eggs incubate for one to one and a half months during winter. Fry emerge and occupy shallow areas with vegetative cover. Juvenile Coho Salmon rear in freshwater for over a year (some for two years) before migrating to the ocean in spring (Weitkamp et al. 1995, NMFS 2014). Juveniles and yearlings spend various amounts of time in freshwater/estuary transition zones. Length of stay by an individual averages about one to two months, with spring being the heaviest time of use. Adults typically spend the next two years in the ocean before returning to their home streams to spawn (Wallace 2010). Marine invertebrates, such as copepods, euphausids, amphipods, and crab larvae, are the primary food sources for Coho Salmon when they first enter saltwater. Fish represent an increasing proportion of the diet as Coho Salmon grow and mature (Moyle 2002).

Freshwater habitat requirements for juvenile Coho Salmon include cool water temperatures (53.6-57.2 ºF is optimal), clear water, riparian vegetation that provides shade, clean silt-free gravel for spawning, in-stream large woody debris, availability of food (invertebrates), and overwintering habitat consisting of large off-channel pools with complex cover or small spring-fed tributary streams (Moyle 2002). Coho Salmon from Humboldt Bay tributaries that rear in the estuary grow larger than their cohorts that reared farther upstream, which suggests that a stream/estuary ecotone is an important overwintering and rearing habitat for juvenile Coho Salmon (Wallace and Allen 2009).

Population declines and extirpations in individual streams and tributaries have occurred due to widespread degradation of freshwater habitats from activities such as timber harvest, road building, grazing and mining activities, urbanization, stream channelization, dam construction, wetland filling or draining, beaver trapping, and water withdrawals and diversions for irrigation (NOAA Fisheries 2011). These activities have resulted in changes to channel morphology and substrate, loss and degradation of estuaries, wetlands, and riparian areas, declines in water quality (e.g., elevated pH and water temperatures, reduced dissolved oxygen, altered stream fertility and biological communities, and toxics), altered stream flows, and fish passage impediments such as dams and road crossings (NOAA Fisheries 2011).

The Mattole River supports populations of Coho Salmon (Downie et al. 2002). Suitable spawning, rearing, and migratory habitat is present for Coho Salmon in the Mattole River within the BSA and may be present in the API; however, Project construction would occur in advance of the spawning period.

Chinook Salmon – California Coastal ESU (FT)

The California Coastal (CC) Chinook Salmon ESU was listed as threatened, effective November 15, 1999 (64 FR 50394). The listing was updated effective August 29, 2005 (70 FR 37159) and April 14, 2014 (79 FR 20802). Critical habitat was designated for Chinook Salmon (Coastal California ESU), effective January 2, 2006. Designated critical habitat includes riverine and estuarine habitat in Humboldt, Trinity, Mendocino, Sonoma, Lake, Napa, Glenn, Colusa, and Tehama counties (70 FR 52487).

The California Coast Chinook Salmon (California coastal ESU) ranges from Redwood Creek in Humboldt County south to the Russian River in Sonoma County. California Coast Chinook Salmon spawn and rear in coastal and interior rivers in northern California. Ocean-type Chinook (fall run) rear for less than one year in freshwater, while stream-type Chinook (spring run) remain in freshwater for one year or more before emigrating to forage in coastal and marine zones of California for two to five years (Healey 1991). Currently, only fall-run Chinook appear to be extant in the DPS. These Chinook Salmon typically migrate to the ocean within their first year from April through July (NOAA Fisheries 2007). The ideal temperature range for rearing, smolting, and migrating (seaward) Chinook Salmon appears to be 50° to 55° F (Rich 1997). Habitat requirements for spawning also include clean, loose gravel, a lack of fine sediment, cool water, and unimpeded passage to the ocean. After spawning, females bury fertilized eggs in gravel and guard them until they die. Rearing habitat is characterized by the presence of pools, off-stream channels, and riparian cover.

The destruction and modification of historic spawning habitat, fish passage barriers, over-harvesting, decreased floodplain connectivity and function, as well as reduced stream flow and predation are considered moderate to very high threats to this ESU. Land use activities (logging, road construction, streambank alterations, etc.), water diversions and overutilization of rivers and streams for recreational purposes are also have contributed to the decline of the ESU. The main factors limiting this Chinook Salmon ESU are low abundance, low distribution, and negative population trends. Predation by pikeminnow in the Eel River and genetic integrity are considered significant threats to the population (NOAA Fisheries 2007).

The Mattole River supports populations of Chinook Salmon (Downie et al. 2002). Suitable spawning, rearing, and migratory habitat is present for Coho Salmon in the Mattole River within the BSA and may be present in the API; however, Project construction would occur in advance of the spawning period.

Steelhead, Northern California DPS (FT)

Steelhead (northern California DPS) was listed as threatened, effective August 7, 2000 (65 FR 36074). This listing was reaffirmed, effective February 6, 2006 (at which point two hatchery stocks were added; these are no longer active) (71 FR 833), and again on April 14, 2014 (79 FR 20802). Both summer and winter-run Steelhead are included in this DPS. NMFS recently announced that a petition to list summer-run Steelhead as a unique DPS was not warranted (85 FR 6527). Critical habitat was designated for Steelhead (northern California DPS), effective January 2, 2006. Designated critical habitat includes riverine and estuarine habitat in Humboldt, Trinity, Mendocino, Sonoma, Lake, Glenn, Colusa, and Tehama counties (70 FR 52487).

The Northern California Steelhead (northern California DPS) occupies river basins from Redwood Creek in Humboldt County to the Gualala River (near the Mendocino/Sonoma County line). Both summer and winter-run Steelhead are included in this DPS. Steelhead spend their adult lives in marine environments, returning to freshwater at the age of four or five to spawn, usually in their stream of origin. Steelhead is the anadromous form of rainbow trout. Unlike salmon, Steelhead do not necessarily die after spawning. Eggs are deposited in redds constructed in gravel, and (for winter run fish) hatch after three to 14 weeks in later winter through spring. The hatchlings, or alevins, emerge from the gravel after an additional two to five weeks (Moyle 2002). During the egg and alevin stages, survival depends in part on the presence of clean, well-oxygenated gravel (excessive siltation contributes to mortality at these stages) (Barnhart 1991, Stillwater Sciences 2006). Juveniles remain in fresh water for one or two years before returning to saltwater, with emigration typically occurring from March through June. A second year of growth is thought to contribute to a much higher probability of survival in the open ocean (Stillwater Sciences 2006). Less is known about the life history of summer run Steelhead, although adult fish are believed to enter rivers in May (Yoshiyama and Moyle 2010).

In the Northern California DPS, the decline of Steelhead has been attributed to factors such as watershed disturbances, including logging on steep slopes, grazing, road building, water diversions, and severe habitat degradation caused by timber harvest and intensive agricultural practices. These factors have resulted in decreased flows, loss of riparian habitat, channel widening, and increased siltation and water temperatures. Despite this decline, north coast rivers and streams have the greatest amount of Steelhead habitat in California. The most abundant populations of Steelhead are in the Klamath/Trinity River system (Barnhart 1991, Stillwater Sciences 2006).

The Mattole River supports populations of Steelhead (Downie et al. 2002). Juvenile Steelhead have been documented upstream of the API in Honeydew Creek (CDFG 1996). Suitable spawning, rearing, and migratory habitat is present for Coho Salmon in the Mattole River within the BSA and may be present in the API; however, project construction would occur in advance of the spawning period.

Summer-run Steelhead Trout (SSC)

Steelhead life history is summarized in the Northern California DPS species account above (see **Section 6.5.3.1**). Populations of summer-run Steelhead are known to occur in the Mattole River (Mattole Salmon Group 2015b). Summer-run Steelhead enter freshwater in the spring and summer months, and then spawn in fall. Both winter-run and summer-run Steelhead are found in the Mad River (Mattole Salmon Group 2015b).

Threats to summer-run Steelhead populations are similar to those experienced by other Steelhead summarized in the Northern California DPS species account above (see **Section 6.5.3.1**). Importantly, summer-run Steelhead adults rely upon cold-water refuges to oversummer in (CalTrout un. yr., NMFS un. yr).

The Mattole River supports populations of Steelhead (Downie et al. 2002). Juvenile Steelhead have been documented upstream of the API in Honeydew Creek (CDFG 1996). Suitable spawning, rearing, and migratory habitat is present for Coho Salmon in the Mattole River within the BSA and may be present in the API; however, Project construction would occur in advance of the spawning period.

Survey Results

Although no fish surveys have been conducted as part of this Project, a number of small fish were observed in the largest pool (approximately 10 x 33 feet in size) of the Mattole River within the API during the April 28, 2021 site visit. No fish were captured for close observation, but presence of salmonid young-of-the-year is possible, as some fish were within appropriate size ranges.

The presence of Coho Salmon, Chinook Salmon, and Steelhead is well documented in the Mattole River (CDFW 1996, Mattole Restoration Council 2021). Pacific Lamprey are also present in the Mattole River Numerous stream inventory reports have been completed by the California Department of Fish and Game (CDFG)/CDFW for the Mattole River and its tributaries to evaluate anadromous salmonids.

Additionally, multiple agencies have conducted salmonid spawner surveys within the Mattole River including CDFG/CDFW, Humboldt Redwood Company, Mattole Salmon Group, and the Watershed Stewards program. Snorkel surveys for juvenile and adult salmonids have also been conducted. A downstream migrant trap to count Coho Salmon smolts has also been operated by the Mattole Salmon Group. Most of these surveys are long-term and extensive and are thus their results are not summarized here. For instance, survey data from Mattole Salmon Group annual spawning surveys for fall-run Chinook Salmon and Coho Salmon were conducted from the winter of 1981-82 through 2013-14 (Mattole Salmon Group 2015a).

The Mattole River is considered EFH for Chinook Salmon and Coho Salmon (NOAA 2021b). Chinook and Coho Salmon are managed under the Pacific Coast Salmon Fisheries Management Plan (NOAA Fisheries 2021e). The Mattole River is also considered Critical Habitat for Coho Salmon, Chinook Salmon, and Northern California Steelhead (NOAA 2021c).

Project Impacts

The Project may require temporary dewatering of a small area of the Mattole River to allow placement of RSP (see **Appendix A, Figure 4 – Dewatering Plan**). Although placement of a temporary coffer dam and dewatering would greatly reduce the risk of severe sedimentation, it may require relocation of any fish within the area to be dewatered. Fish would be relocated to nearby suitable wetted habitat consistent with protocols required by NMFS, CDFW, and Project permits.

Given the reduced risk of future sediment delivery by stabilizing the slope, the Project is expected to have an overall positive and long-term benefit to anadromous fish. The proposed willow planting along the slope with although improve riparian habitat along the Mattole River and increase riparian habitat shading. Potential impacts are further described in the following sections.

Table 11 provides a summary of potential impacts to fisheries resources and habitat associated with permanent roadway restoration.

Table 11: Impacts to Fish and Habitat Resources

Description and Likelihood of Impacts	
Description of Potential Impact	**Anticipated Level of Effect:** (None/Minimal/Moderate/High)
Loss or Modification of Juvenile Rearing Habitat	Minimal with BMPs
Loss of Spawning Habitat	None
Loss of Riparian Habitat	None
Hydroacoustic Effects	Minimal with BMPs
Increased Turbidity and Suspended Sediment	Minimal with BMPs
Impaired Fish Passage during Construction	None
Potential Spill Hazard	Minimal with BMPs
Injury and Mortality of Juveniles during Construction	Minimal

Loss or Modification of Juvenile Rearing Habitat

Juvenile salmonids may be present in nearshore portions of the Mattole River. Construction of a coffer dam and dewatering after placement of block nets would result in a temporary loss of shallow shoreline habitat. If any fish are present within the block nets, they would need to be relocated to nearby suitable habitat with short-term stress related to handling. Lamprey ammocoetes could be present and may not be readily detectable if burrowed into substrate.

Loss of Spawning Habitat

Work would be conducted outside of spawning season. Thus, no loss of spawning habitat or direct impact to spawning is anticipated.

Loss of Riparian Habitat

Loss of riparian habitat will be limited. Vegetation removal will be limited to minor roadside vegetation and on the landslide surface to install the drains and RSP and to establish a temporary construction access road between Mattole Road and the Mattole River. Vegetation removal will include minor mowing and minor brush removal. Small trees presently leaning on the hillside will be removed (< 12-in dbh). One moderate sized willow and a few small, isolated shrubs may be removed at toe of slope prior to RSP placement. In the long-term, riparian habitat is expected to increase due to replanting efforts covering approximately 0.15 acres.

Hydroacoustic Effects

Noise effects would be largely related to the presence of heavy construction equipment, grading of the road surface, and placement of rock on the slope. The road surface is well removed from open water, such that road grading activities are not expected to result in noise effects related to fish.

Rock for RSP would be dumped well above and away from the river, and then individually carried down the slope and placed by an excavator. Individual placement of RSP would minimize effects related to rock placement by keeping trucks at a distance from the river. The primary noise and vibration effects would thus be related to equipment noise rather than rock placement and would remain within typical construction equipment noise ranges which are well below potentially lethal levels for fish. Although low-level noise effects may continue throughout construction, equipment would begin at the toe of slope and gradually move up the slope and away from the river. Special status fish within the dewatering area would be relocated away from the work area prior to equipment use and rock placement, further limiting potential for exposure. Fish in nearby open water may be subjected to startle response during initial rock placement at toe of slope (effects expected to be limited to 75 feet radius or less of the active construction equipment, based on hydroacoustic impacts from similar projects), gradually decreasing as fish move away from the disturbance and work moves up the slope.

Increased Turbidity and Suspended Sediment

Increased turbidity and suspended sediments in the Mattole River may occur as a result of work within the river and adjacent slope, or as a result of upland restoration activities such as riparian vegetation replanting. Because work at the edge of the river would occur during low water, late summer or fall conditions and because the immediate work area would be dewatered, sedimentation risk would be minimized and localized. Some turbidity would likely occur during placement and removal of coffer dams; however, this is would occur within the established limits of the NCRWQCB Clean Water 401 water quality certification for allowable turbidity levels above background and limited to the immediate work vicinity.

Increased turbidity and suspended sediments could cause mortality, illness, or injury of salmonids due to re-suspended contaminants, clogging and abrasion of gill filaments, low-oxygen water, and interference with feeding due to poor visibility (LFR 2004). Sediment can also smother salmonid eggs, which would affect future fish stocks (Hobbs 1937).

Even with BMPs in place, fine sediment has the potential to enter the river from adjacent slopes during initial storm events following Project completion. Increased turbidity and suspended sediment are anticipated to be slightly above base levels initially but are expected to return to normal following the initial flush. In the long-term, turbidity and suspended sediment are expected to be reduced due to stabilization of the currently bare and eroding lower slopes, upland restoration activities, and establishment of a riparian buffer. Turbidity and suspended sediment are expected to be localized and temporary. Except during and immediately after storm events, modest streamflow through the API offers adequate opportunity for sediment to drop out of the water column.

The Project is expected to result in an overall benefit to water quality conditions in the Mattole River. Stabilization of the slide and proposed willow plantings along the slope will greatly reduce further sediment contribution to the river and should improve water quality conditions from current (baseline) levels.

Impaired Fish Passage During Construction

The Project does not require alternative fish migration mechanisms, as dewatering will occur outside of the spawning season, and only a very small portion of the channel width would be affecting by work isolation. Impacts related to impaired fish passage during construction are not anticipated for this Project.

Potential Spill of Hazardous Materials

Potential spills of hazardous materials (i.e., oil, grease, fuels, and coolants) could have deleterious effects on fisheries resources downstream of the Project. Additionally, operating construction equipment in or adjacent to any watercourse, whether it is wet or dry, poses the risk of serious environmental damage if a spill were to occur. The Project requires daily on-site refueling of construction equipment. As a result of that activity, minor fuel and oil spills can occur, and there is always the risk of larger releases. Without rapid containment, such materials can be extremely difficult to clean up in their entirety, when taking into consideration the size of a spill and its proximity to flowing water. Oils, fuels, and other toxic contaminants can have deleterious effects on fisheries resources, with the risk being substantially elevated when spills are near streams or other waterbodies. Safeguards to prevent spills in the BSA are critical because of the Project's relationship to a fish-bearing stream (Mattole River). Except for an excavator placing rock at the toe of slope, most equipment would remain well above the river. The excavator would be operated from the streambank to place RSP along the bank and would not enter the wetted environment of the Mattole River.

Injury and Mortality of Fisheries Resources

All pools would be surveyed for fish prior to dewatering by a qualified biologist. Any observed fish would be relocated to suitable habitat downstream consistent with fish relocation protocols established by CDFW, NMFS, and Project permits. A qualified biologist would be present on-site until dewatering is complete to ensure that no fish are overlooked. Dewatering pumps will be screened to avoid inadvertent fish entrainment. Fish screening specifications will be consistent with those required by CDFW and NMFS (e.g., mesh no greater than 3/32-in opening). Due to its dry condition and use of a coffer dam, fish would not be able to reenter the Project vicinity during work.

In the course of relocation, there is some risk of injury and mortality (an estimated 3% mortality; Collins 2004, NMFS 2012) to juvenile salmonids, especially where small nets are ineffective and an electrofisher must be used. A qualified fish biologist with experience in fish relocation will complete this portion of the Project. Aside from fish relocation prior to dewatering, other causes of injury and mortality of fisheries resources are not impacts associated with this Project.

Avoidance and Minimization Efforts

Avoidance and minimization efforts include:

- All instream work will be completed during the regulated in-water work window, typically mid-June through late October and depending in rainfall.
- Equipment shall be cleaned of deleterious materials before being delivered to the job site.
- Equipment shall be staged, and materials shall be stockpiled outside riparian habitat, in designated staging and stockpile areas.
- Any new or previously excavated gravel material placed in the channel shall meet California Department of Transportation’s (Caltrans) Gravel Cleanliness Specification #227 having a value of 85 or higher.
- Any construction equipment operating adjacent to a stream shall be inspected daily for leaks. Any oil, fuel, and grease residue that has the potential to fall from machinery shall be removed and properly disposed of. Refueling and equipment maintenance would occur in designated staging and stockpiling areas only.
- Spill containment booms shall be available on-site at all times during construction operations and/or staging of equipment or during fueling when work occurs over live waterbodies. Fueling trucks shall at all times be equipped with sealed spill kits.
- The awarded contractors shall develop and implement site-specific BMPs, a Water Pollution Control Plan, and emergency spill control plan. The awarded contractor shall be responsible for immediate spill containment and cleanup, as

well as proper disposal of hazardous materials and BMPs used during spill recovery.

- Fish relocation would comply with all NMFS and CDFW permit conditions.

Compensatory Mitigation

The proposed Project has been designed such that Project-specific conservation measures and avoidance and minimization measures shall effectively avoid or minimize to the greatest extent feasible, affects to fisheries and water resources. It is not anticipated that other compensatory mitigation would be required.

Cumulative Impacts

Cumulative Projects identified in **Table 2** do not involve aquatic work, avoiding the potential to impact fisheries resources. Thus, a cumulative impact to fisheries resources would not result.

Discussion of Special Status Amphibians

As discussed in **Chapter 3**, based on the USFWS Official Species List generated for this Project (**Appendix E**), no federally-listed amphibian species are expected to occur within the Project vicinity. There are four special status amphibian species recorded in the CNDDB as known to occur nearby: Pacific Tailed Frog, Northern Red-legged Frog, Foothill Yellow-legged Frog, Southern Torrent Salamander, and Red-bellied Newt. A discussion of the habitat requirements, potential for species occurrence, survey results, potential Project-related impacts, applicable impact avoidance and minimization measures, compensatory mitigation, and cumulative impacts to amphibian species is provided below.

Pacific Tailed Frog (SSC)

Pacific Tailed Frogs are long-lived, small (snout-vent length 2.5-5.1 centimeters) frogs varying in color from olive, gray, brown, to red to match the rocks in their habitat. Their skin is rough. The species is named for its unique possession of a tail-like copulatory organ in males. Frogs in the *Ascaphus* genus are the only known frogs to have internal fertilization through copulation (Stebbins 2003, Nafis 2021). Pacific Tailed Frogs occur across the Pacific Northwest. In northern California, their range extends from the Oregon border south along the coast to Mendocino County and east to Shasta County (AmphibiaWeb 2021). Coastal and inland populations may be separate species. Adults, eggs, and tadpoles inhabit clear, cold, rocky streams in humid forests. Following wet weather, adults may be found in moist woods adjacent to their stream habitats. Rocky substrates are an important habitat feature to provide attachment points for egg masses as well as cover for tadpoles and adults from predation (Stebbins 2003). Tadpole diet consists mostly of diatoms, whereas adults feed on a variety of invertebrates depending on availability. Predators include garter snakes (*Thamnophis spp.)*, giant salamanders (*Dicamptodon* spp.), trout (Salmonidae), sculpins (*Cottus confusus*), American Dippers (*Cinclus mexicanus*), and hellgrammites (Megaloptera; AmphibiaWeb 2021).

The closest known record is from 1994, approximately 5 miles southeast of the API (CDFW 2021c). Portions of Cook's Gulch and Granny Creek, tributaries within the BSA, may include suitable habitat for Pacific Tailed Frogs. No work is expected to occur in Cook's Gulch or Granny Creek.

Northern Red-legged Frog (SSC)

Northern Red-legged Frogs occur along the west coast of North America from British Columbia to California. The geographic range split between the Northern and California Red-legged Frog species occurs just south of Elk Creek in Mendocino County where both species overlap (Nafis 2021, AmphibiaWeb 2021). Northern Red-legged Frogs are typically found near freshwater sources (e.g., wetlands, ponds, streams, etc.). However, they can range widely and inhabit damp places far from water. Northern Red-legged Frogs reproduce in water from December to February in Humboldt County, with some breeding occurring as late as March. Preferred egg laying locations are in "vegetated shallows with little water flow in permanent wetlands and temporary pools" (Nafis 2021). Northern Red-legged Frogs are relatively common in and near coastal portions of Humboldt County.

The closest known occurrence record is from 2020, approximately 13.4 miles east of the API (iNaturalist 2021). Individuals have been observed within Humboldt Redwoods State Park over 12 linear miles east of the API (GHD 2020). Although there are no nearby records and Welsh et al. (2005) did not report the species from the Mattole watershed, the API includes potentially suitable habitat, especially in seeps with emergent vegetation.

Foothill Yellow-legged Frog (SSC)

Foothill Yellow-legged Frogs occur from sea level to elevations of 7000 feet and range from the Willamette River in Oregon south to the Upper San Gabriel River in California, including the coast ranges and Sierra Nevada Foothills (Stebbins 2003, NatureServe 2021). The species prefers open to partially shaded, perennial streams with rocky substrate, often near riffles. These rivers and streams are typically bordered by chaparral, riparian habitat, mixed conifer forest, or wet meadows. Streams are usually small to mid-size with shallow pools and slow-moving water (CBD 2012). They are also found at river edges, in calm pools, and vegetated backwaters (CBD 2012, NatureServe 2021). Rocky, cobble substrate (3 in or larger) is preferred, particularly for egg laying sites (CBD 2012).

Breeding activity typically occurs from March through May with some regional variation (breeding in northern California is reported to occur from April through June; USFS 1997). Breeding coincides with a decrease in stream and river flows during the spring, following periods of winter storms and runoff (NatureServe 2021). Adult frogs congregate on river and stream gravel bars during this time, with oviposition occurring in stream and river margins (USFS 1997). Eggs are laid in masses (may include up to 3,000 eggs per mass) and attached to gravel or rocks (USFS 2016, Nafis 2021, NatureServe 2021). Eggs may be covered with a layer of silt, potentially to hide them from predators. Hatching time occurs in five to 27 days and is dependent on water temperature (Nafis 2021). Tadpoles are not known to overwinter, and larvae undergo metamorphosis during the summer (USFS 2016, NatureServe 2021). Fidelity to breeding sites has been reported in this species (USFS 2016).

There are numerous records of this species within 5 miles of the Project (CDFW 2021c). Welsh et al. (2005) noted that this species is common in the Mattole watershed. The section of the Mattole River within the API and BSA includes high-quality Foothill Yellow-legged Frog habitat

Southern Torrent Salamander (SSC)

The Southern Torrent Salamander is a member of the family Rhyacotritonidae. The species is endemic to the Pacific Northwest from northern California to northern Oregon. Southern Torrent Salamanders prefer a forested environment with 80% or greater canopy closure. They are often found in shallow, cold, clear, well-shaded streams, waterfalls and seepages, particularly those running through and under rocks all year, in areas of mature to old-growth forests. They are occasionally found in riparian vegetation adjacent to water, but usually in contact with water and often in the splash zone. They exist at elevations from sea level to 5,000 feet.

The closest known record is from 1963, approximately 14.6 miles southeast of the API (CDFW 2021c). Portions of Cook's Gulch and Granny Creek, tributaries within the BSA outside the API, may include suitable habitat for Southern Torrent Salamanders, although they would not be expected in the Mattole River proper.

Red-bellied Newt (SSC)

The Red-bellied Newt is one of four medium-sized newt species within the genus *Taricha*, endemic to California. Their range is limited to northern coastal portions of the state in Humboldt, Lake, Mendocino, and Sonoma counties (AmphibiaWeb 2020, Nafis 2021). They typically occur in and near streams and rivers in coastal woodlands and redwood forests (Nafis 2021).

They are generally most active at night although they can be found during the day throughout the breeding season and in rainy weather (Nafis 2021). Adults migrate to breeding grounds seasonally in February to March as high winter water levels recede, with males arriving several weeks before females (AmphibiaWeb 2020, Nafis 2021). Breeding occurs March to May in rocky flowing streams; the species avoids ponded and stagnant water (AmphibiaWeb 2020). Eggs are laid in a flattened mass, typically consisting of 10 eggs, beneath rocks or on submerged roots (Nafis 2021). Larvae remain in the stream until metamorphosing in the late summer or early fall. After metamorphosis, juveniles exit their aquatic habitats and live primarily underground until becoming sexually mature (AmphibiaWeb 2020, Nafis 2021). Adults are terrestrial except during their aquatic breeding period. Aboveground activity occurs from October to February (AmphibiaWeb 2020). Individuals reach sexual maturity at 4-6 years of age and can live to 20-30 years in age (Nafis 2021). They are generalist carnivores (AmphibiaWeb 2020). Common Gartersnakes (*Thamnophis sirtalis*) are a common predator, being highly resistant to their toxins (Nafis 2021).

There are additional nearby records in the Mattole watershed, and Welsh et al (2005) reported that the species is present in the southern portion of the Mattole River watershed, especially along smaller tributaries.

Survey Results

During the reconnaissance level biological survey, GHD Senior Biologist Ken Mierzwa noted the habitat conditions within the BSA are suitable for several state special status amphibian species. Specifically, Cook’s Gulch and Granny Creek appear to include potentially suitable habitat for Pacific Tailed Frog and Southern Torrent Salamander, although posted private land prevented access to these creeks.

Potential Red-bellied Newt habitat is widespread in the API and BSA, especially on forested lower slopes, but not in the API.

In addition, the section of the Mattole River within the API and BSA includes excellent Foothill Yellow-legged Frog habitat, including documented breeding habitat. Six subadult Foothill Yellow-legged Frogs were observed in isolated pools at toe of slope in the API during the April 28, 2021 site visit. Numerous recently hatched tadpoles were present in the main Mattole River channel. Given observations of individual animals and presence of suitable habitat along the Mattole River including within the API, it is assumed that Foothill Yellow-legged Frogs would be present during construction.

Riparian and moist woodlands and herbaceous seeps within the API and BSA include suitable habitat for Northern Red-legged Frogs. No other amphibian surveys or incidental occurrence data are known from the BSA.

The API and BSA do not overlap designated or proposed critical habitat for any federally-listed amphibian species.

Project Impacts

The proposed Project could impact Pacific Tailed Frog, Northern Red-legged Frog, Foothill Yellow-legged Frog, Southern Torrent Salamander, and Red-bellied Newt if individuals are present in the API during construction. Pacific Tailed Frog and Southern Torrent Salamander may occur in the BSA but are unlikely to be not present in the API; impacts to these two species are considered unlikely. Red-bellied Newt may be present in the BSA but is much less likely in the API, which does not include suitable habitat. Cook’s Gulch and Granny Creek are unlikely to be surface active during late summer construction season. Northern Red-legged Frogs are not known from the immediate vicinity however herbaceous seeps within the API provide suitable habitat and individuals may be active all year.

Foothill Yellow-legged Frogs have been documented within potential impact areas in the API, including the Mattole River at the toe of slope.

No impacts to Cook’s Gulch or Granny Creek are expected.

The proposed Project has the potential to result in adverse impacts on the aforementioned amphibian species for the reasons identified below:

- Construction related impacts, especially in-channel work, could have an adverse impact via direct mortality or injury (e.g., due to grading, ground disturbance, or operation of equipment). The potential for direct injury is likely low since the majority of impacts will be restricted to previously disturbed areas and work would occur in late summer or fall outside of peak surface activity periods for most of the species. Implementation of various avoidance and minimization measures will minimize the potential for direct injury.

- Certain activities related to the Project could result in disturbance to vegetation and soil. Vegetation removal and soil disturbances can accelerate erosion processes in the API/BSA and increase the potential for sediment to enter nearby streams. Excessive sedimentation into streams has the potential to reduce habitat quality for amphibians and other sensitive species (e.g., decreasing availability of potential food items including aquatic invertebrates and filling interstitial spaces in substrate).

- Construction activities typically include the on-site refueling and maintenance of equipment. As a result, minor fuel and oil spills may occur as well as a risk of large-scale releases. Without rapid containment and clean up, these materials can be potentially toxic depending on the location of the spill in proximity to surface water features.

- Permanent loss of portions of seasonal pools at toe of slope during RSP placement; additional temporary habitat loss if dewatering is required.

- Temporary loss of small areas of riparian vegetation.

Avoidance and Minimization Efforts

As well as adhering to the sediment reduction measures and efforts to minimize disturbances to vegetation, the footprint of the proposed Project, when in proximity to wetlands or aquatic habitat, will be restricted to the minimum area necessary.

Within 24 hours prior to the start of construction, a qualified biologist will conduct a pre-construction survey for special status amphibians within the API. Any special status amphibians found will be relocated to nearby suitable habitat outside of the API.

Compensatory Mitigation

The proposed Project has been designed such that Project-specific conservation measures and avoidance and minimization measures shall effectively avoid or minimize, to the greatest extent feasible, impacts to amphibians and their habitat. It is not anticipated that other compensatory mitigation will be required.

Cumulative Impacts

The proposed Project will not facilitate further development in the area. Most impacts to Northern Red-legged Frog, Foothill Yellow-legged Frog, Pacific Tailed Frog, Southern Torrent Salamander, and Red-bellied Newt potentially found in the API/BSA, if any, will be avoided or minimized. Projects considered for cumulative effects, summarized in **Table 2**, do not involve work in or near aquatic environments suitable for amphibians. Thus, cumulative impacts would not result.

Discussion of Special Status Reptiles

As discussed in **Chapter 3**, based on the USFWS Official Species List generated for this Project (**Appendix E**), no federally-listed reptile species are expected to occur within the Project vicinity. There is one special status reptile species recorded in the CNDDB as known to occur nearby: Western Pond Turtle. A discussion of the habitat requirements, potential for species occurrence, survey results, potential Project-related impacts, applicable impact avoidance and minimization measures, compensatory mitigation, and cumulative impacts to reptile species is provided below.

Western Pond Turtle (SSC)

Western Pond Turtles occur in a variety of permanent and semi-permanent freshwater aquatic habitats including lakes, rivers, ponds, creeks, and marshes. Nesting occurs on land in areas of loose to hard-packed soils on south or west facing slopes (Rathburn et al. 1992, Reese and Welsh 1997). The species is frequently observed basking on exposed banks, logs, and rocks. Winter activity is possible but limited to unusually warm, sunny days. Normally pond turtles are dormant during winter months on the north coast, which typically involves the turtle burrowing into loose substrate above the high water mark (Thompson et al. 2016).

The closest known previous record is from 2019, approximately 4.25 miles northeast of the API (iNaturalist 2021). The API and BSA include suitable aquatic habitat within the Mattole River.

Survey Results

A Western Pond Turtle shell was found partway up the lower slope within the API during the February 2021 site visit. A northeast facing slope (within the API) is unlikely to be nesting habitat, however, pond turtles often hibernate on land above the water line, and the turtle may have been scoured out during recent high water events and predated by mammalian omnivores. Numerous fresh raccoon (*Procyon lotor*) tracks were observed just below the shell, and the extensive damage to the shell was sharp-edged and apparently recent. Given the observed shell on-site and presence of suitable habitat within the Mattole River and adjacent uplands, it is assumed that Western Pond Turtles would be present in the API and/or BSA during construction. No other reptile surveys or incidental occurrence data are known from the BSA.

The API and BSA do not overlap designated or proposed critical habitat for any federally-listed reptile species.

Project Impacts

The proposed Project has the potential to result in adverse impacts on Western Pond Turtle for the reasons identified below:

- Construction related impacts, especially in-channel work, could have in an adverse impact via direct injury (e.g., due to operation of equipment in or adjacent to stream channels where flowing, standing, or sub-surface water is present). The potential for direct injury is likely low since the majority of impacts will be restricted to the previously disturbed road prism or areas directly adjacent to the road prism, and the lower slope. Work at the toe of slope would be completed after dewatering. Implementation of various avoidance and minimization measures will minimize the potential for direct injury.
- Certain activities related to the Project could result in localized disturbances to vegetation and soil. Vegetation removal and soil disturbances can accelerate erosion processes in the API/BSA and increase the potential for sediment to enter nearby streams. Excessive sedimentation into streams has the potential to reduce habitat quality for semi-aquatic reptiles and other sensitive species (e.g., decreasing availability of potential food items including aquatic invertebrates and filling interstitial spaces in substrate).
- Construction activities typically include the on-site refueling and maintenance of equipment. As a result, minor fuel and oil spills may occur as well as a risk of large-scale releases. Without rapid containment and clean up, these materials can be potentially toxic depending on the location of the spill in proximity to surface water features.
- Permanent loss of portions of seasonal pools at toe of slope during RSP placement; additional temporary habitat loss if dewatering is required.
- Temporary loss of small areas of riparian vegetation.

Avoidance and Minimization Efforts

As well as adhering to the sediment reduction measures to minimize hydrocarbon contamination, and efforts to minimize disturbances to vegetation, the footprint of the proposed Project when in proximity to wetlands or aquatic habitat will be restricted to the minimum area necessary. In-river work would be completed after dewatering.

Within 24 hours prior to the start of construction, a qualified biologist will conduct a pre-construction survey for special status wildlife within the API. Any special status reptiles found will be relocated to nearby suitable habitat outside the API.

Compensatory Mitigation

The proposed Project has been designed such that Project-specific conservation measures and avoidance and minimization measures shall effectively avoid or minimize, to the greatest extent feasible, impacts to reptiles and their habitat. It is not anticipated that other compensatory mitigation will be required.

Cumulative Impacts

The proposed Project will not facilitate further development in the area. Furthermore, impacts to Western Pond Turtle potentially found in the API/BSA would be avoided. As identified in **Table 2**, the two storm damage repair Projects would not involve habitat suitable for Western Pond Turtles. It is unknown if the cannabis Projects occurring on private property would involve habitat suitable for Western Pond Turtles. However, the cannabis Projects summarized in **Table 2** are also required to be CEQA-compliant. Thus, any potential impacts to Western Pond Turtles should be addressed in each Project's individual CEQA process, avoiding an individual Project impact. With implementation of the recommended avoidance and minimization measures, the Project would not contribute to cumulative impacts on Western Pond Turtles.

Discussion of Special Status Birds

As discussed in **Chapter 3**, based on the USFWS Official Species List generated for this Project (**Appendix E**), seven federally-listed bird species are expected to occur within the Project vicinity. However, none of these species are expected to occur within the API or greater BSA. There are seven special status avian species recorded in the CNDDB as known to occur nearby. A discussion of the habitat requirements, potential for species occurrence, survey results, potential Project-related impacts, applicable impact avoidance and minimization measures, compensatory mitigation, and cumulative impacts to avian species is provided below.

Cooper's Hawk (WL)

Cooper's Hawks are year-round residents across most temperate areas in North America. In California, migrants from more northern climes (southern Canada) pass through the state during the fall months (August-November). Some of these northern populations of Cooper's Hawks likely winter in the state. Cooper's Hawks may be found in a variety of forested habitats included deciduous, mixed, or evergreen forests in urban, suburban, or rural areas. Cooper's Hawk populations have increased over the past few decades in urban and suburban areas, likely as a result of readily available prey populations in these habitats (e.g., European Starling and Rock Pigeon flocks). Cooper's Hawks build their nests in any number of tree species including pines, oaks, firs, eucalyptus, etc. Nest site selection is most likely related to dense prey availability in the surrounding area as well as canopy cover and the adjacent habitat structure. Their nests are constructed out of sticks and bark and may be built on top of existing squirrel or other raptor nests. Cooper's Hawks prey on a variety of small bird and mammal species including European Starlings, Mourning Doves (*Zenaida macroura*), Rock Pigeons, Deer Mice (*Peromyscus maniculatus*), squirrels, and hares. (Rosenfield 2020).

There are several records from the Project vicinity (surrounding 5 miles; eBird 2021). Suitable nesting and foraging habitat are present within the BSA.

Sharp-shinned Hawk (WL)

Sharp-shinned Hawks are year-round residents across most densely forested areas of western and eastern North America. In California, migrants from more northern climes (southern Canada) pass through the state during the fall months (August-November).

Some of these northern populations of Sharp-shinned Hawks winter in the state. Sharp-shinned Hawks may be found in a variety of forested habitats including coniferous forests, deciduous forests, woodlots, and transitional/forested edges. They prefer to nest in dense stands of a diversity of tree species. Nests are constructed out of dead twigs and placed against a tree trunk on a horizontal limb. Sharp-shinned Hawks primarily prey on small forest birds and mammals. In more urban/developed areas, Sharp-shinned Hawks hunt at bird feeders. (Bildstein and Meyer 2000).

There are several records from the Project vicinity (surrounding 5 miles; eBird 2021). Suitable nesting and foraging habitat are present within the BSA.

Great Egret (SAL)

Great Egrets are year-round residents in western California, with breeders concentrated in the Klamath and Warner basin in Siskiyou and Modoc Counties, along the coast in Humboldt County, the San Francisco Bay area, Monterey County, the Salton Sea, and the Central Valley. This species favors wetlands, estuaries, lakes, rivers, ponds, streams, marshes, and tidal flats. Great Egrets utilize a variety of substrates for nesting including trees, woody vegetation, or artificial nest platforms. Nests platforms are typically constructed of locally available sticks and vegetation. Great Egrets nest communally or in mixed-species colonies. They are opportunistic foragers, wading in shallow water to feed on fish, amphibians, and invertebrates. They also hunt on shore for reptiles, birds, and small mammals. (Mccrimmon Jr. et al. 2020).

There are several records from the Project vicinity (surrounding 5 miles; eBird 2021). Suitable foraging habitat is present within the API and BSA, especially within the Mattole River; suitable nesting habitat may be present within the BSA.

Great Blue Heron (SAL)

Great Blue Herons are year-round residents in the majority of coastal and central California. Notable exceptions include the Sierras and the very southeastern desert regions of the state. Great Blue Herons are extremely adaptable to a variety of habitats including most saltwater and freshwater bodies, agricultural land, wetlands, as well as commercial and residential areas such as golf courses. Nesting habitat includes trees, bushes, or artificial structures. Nest platforms are typically constructed out of locally available sticks and lined with material such as grass, moss, and reeds. Great Blue Herons are colonial nesters in mixed-species colonies. They are opportunistic foragers, wading in shallow water to feed on fish, amphibians, and invertebrates. They also hunt on shore for reptiles, birds, and small mammals. Additionally, they are known to scavenge carrion. (Vennesland and Butler 2020).

There are several records from the Project vicinity (surrounding 5 miles; eBird 2021). Suitable foraging habitat is present within the API and BSA, especially within the Mattole River; suitable nesting habitat may be present within the BSA.

Golden Eagle (FP, WL)

Golden Eagles breed in western North America from Alaska to central Mexico. They are found across a wide range of elevations (sea level to11,900 feet) and prefer open habitats that support their prey base. Golden Eagles typically build nests on cliffs, but nests have also been documented on a wide array of other substrates (in trees, on ground, clay cliffs, riverbanks, and human-made structures, including windmills, observation towers, nesting platforms, abandoned gold dredges, and electrical transmission towers; Kochert et al. 2021). Across industrial timberlands in Humboldt County, Golden Eagles select for large, pre-dominantly Douglas fir trees, in which to build their stick nests. These nests are constructed in areas adjacent to abundant foraging habitat (e.g., open prairies) (Chinnici et al. unpubl. data).

There is a CNDDB record of this species approximately 5 miles to the northeast of the API (active nest in 2006 on private timberlands; CDFW 2021c). Suitable habitat, in the form of large dbh trees overlooking open foraging habitat, is not present within the API but may be present in the greater BSA.

Osprey (WL)

Ospreys have a cosmopolitan distribution and their breeding range throughout North America is widespread. The majority of individuals within the breeding range are migratory (except for individuals in temperate southern areas of their range, e.g., in southern Florida, the Caribbean, southern California, and the Baja Peninsula). In California, Ospreys breed throughout the state near various bodies of water including and inland near rivers and lakes as well as on the coast near bays, estuaries, and marshes. Specific nest location preferences include: proximity to shallow fish-bearing waters, and a nest site free of predators (usually highly elevated but Ospreys nest on the ground on predator-free islands). Ospreys build large stick nests on a wide variety of natural and artificial nest substrates, especially trees, but also large rocks or bluffs, as well as nest platforms, towers supporting electrical lines or cellphone relays, and channel markers). Ospreys feed almost exclusively on fish, but anecdotal observations of non-fish prey have been documented. (Bierregaard et al. 2020).

The closest known record is from 2020, approximately 2.25 linear to the west of the API at the Arthur W. Way County Park (eBird 2021). Suitable foraging habitat is present in the Mattole River within the API and BSA. Suitable nesting habitat, in the form of large dbh trees, is not present within the API but may be present in the greater BSA.

Bank Swallows (ST)

Bank Swallows breed in most of North America at low elevations in suitable habitat. Breeding ranges extend from Alaska to Northern California, and occasionally occurs in the southern half of the U.S.A. Wintering grounds occur along the western coast of Central America. In California, Bank Swallows are found in Siskiyou, Shasta, Yolo, Del Norte, Humboldt, and Lassen Counties. Bank Swallows favor open habitat associated with water features such as coastlines, streams, rivers, lake banks, wetlands, agricultural areas, prairies, and riparian woodlands. Bank Swallows generally nest colonially along stream/riverbanks in burrows excavated perpendicular to the bank. These burrows are lined with grasses, straw, leaves, feathers, and other organic material. Bank Swallows capture insects on the wing but will also consume aquatic insects and larvae. (Garrison and Turner 2020).

The closest known record is from 2019, approximately 9 linear miles west of the API at the Mattole River Mouth (eBird 2021). Suitable foraging habitat (and potentially nesting habitat) is present in the API and BSA. No available muddy banks/cliffs for nesting are present in the API.

Northern Spotted Owl (FT/ST)

The Northern Spotted Owl was listed as federally threatened under the ESA effective July 23, 1990 (55 FR 26114) (also listed under CESA as threatened). Critical habitat was designated for the Northern Spotted Owl effective February 14, 1992 (57 FR 1796). It was revised effective September 12, 2008 (73 FR 47326), January 3, 2013 (77 FR 71876), and March 16, 2021 (86 FR 4820). Critical habitat includes coniferous forest habitat in Washington, Oregon, and California. No critical habitat for Northern Spotted Owls is located in or directly adjacent to the API or BSA. The closest critical habitat is located approximately 1.45 miles north on private timberlands (CDFW 2021b).

Preferred nesting and roosting habitat for the Northern Spotted Owl consists of old growth, structurally complex conifer or mixed conifer and hardwood forests. These forests include variable-aged stands, moderate to high canopy closure, a multi-species canopy with large overstory trees, large trees with numerous decadent features (i.e., broken tops, cavities, and snags), and a significant amount of open space beneath the canopy (77 FR 71875, CDFW 2016). Preferred forest types may include Douglas fir, coast redwood, western hemlock (*Tsuga heterophylla*), ponderosa pine (*Pinus ponderosa*), and mixed evergreen and hardwood, among others (Forsman et al. 1984). Foraging habitat may include forested (conifer and hardwood) and non-forested habitat types and is related to prey availability and abundance (Diller et al. 2010 *in* CDFW 2016, CDFW 2016). Spotted owls will occasionally forage in burned areas (CDFW 2016). Transitional or forest edge features are important foraging habitat in the southern part of the subspecies' range (Franklin and Gutiérrez 2002). The Northern Spotted Owl is a rodent specialist and typical prey items include woodrats (*Neotoma fuscipes*), flying squirrels (*Glaucomys sabrinus*), mice, and voles (CDFW 2016).

Based on CNDDB occurrence records, there are no recorded observations of Northern Spotted Owls within the API or BSA (CDFW 2021b). The closest documented positive occurrences are from an activity center 1.45 miles north of the API on private timberlands with an occupied nest in 1998 and 2003, with nearby positive records as recently as 2014 (CDFW 2021b).

Although some marginal dispersal habitat (narrow riparian forest) may occur in the BSA, areas within the API do not include any suitable habitat for Northern Spotted Owl. Additionally, the narrow riparian forest within the BSA does not contain suitable nesting habitat (e.g., mature contiguous forest with complex structure) and traffic-generated noise (moderate ambient sounds levels, 71-80 decibels [dB]) along Mattole Road likely discourages nesting activity adjacent to the API. Based on the lack of suitable habitat, it is anticipated that this species has a low potential to occur within the API and BSA.

Survey Results

Only a few common (protected by the MBTA and FGC) bird species were observed during the reconnaissance-level biological field survey on February 8, 2021, as it was conducted in a low activity period of the day. Steller's Jay, Northern Flicker, and unidentified sparrows were the most abundant. The Mattole River within the API and BSA includes suitable foraging habitat for numerous avian species including Great Egrets, Great Blue Herons, Ospreys, and Bank Swallows among others. No extensive conifer forest was noted, only relatively small and isolated stands. Nonetheless, these stands could be utilized as nesting habitat by Cooper's Hawks or Sharp-shinned Hawks as well as other common bird species. Most nearby habitat was low, open scrub and clearly not suitable for Northern Spotted Owl. No other avian surveys or incidental occurrence data are known from the BSA.

The API and BSA do not overlap designated or proposed critical habitat for any federally-listed avian species.

Project Impacts

The Project is expected to have no effect on the Marbled Murrelet, Western Snowy Plover, Yellow-billed Cuckoo (Western DPS), Short-tailed Albatross, and Northern Spotted Owl. The Project will have no effect on designated critical habitat for the Marbled Murrelet, Western Snowy Plover, Yellow-billed Cuckoo (Western DPS), or Northern Spotted Owl. With implementation of avoidance and minimization measures, any potential Project-related impacts to Cooper's Hawks, Sharp-shinned Hawks, Great Egrets, Great Blue Herons, Golden Eagles, Ospreys, Bank Swallows, and nesting migratory bird species are expected to be, at most, temporary and minimal.

As described above, common, protected migratory bird species may nest in the API or greater BSA. Construction-related disturbance (noise and visual disturbance, as well as possible nest destruction during clearing and grubbing) during the breeding season could result in the loss of fertile eggs or nestlings, or otherwise lead to nest abandonment. As only a limited number of small trees (< 12-in dbh, unsuitable for Osprey or eagle nests) are expected to be impacted as a result of this Project, no impacts to Osprey or Golden Eagle nesting habitat will occur. Loss of fertile eggs or any activities resulting in nest abandonment may have the potential to affect these species. However, most disturbances will occur in the roadway or directly adjacent to the roadway, where nesting habitat does not occur. Additionally, the removal of vegetation shall be mostly limited to grasses, forbs, and a minor amount of scrub along the edges of the roadway and the stockpiling/staging area and a more extensive area of scrub on the lower slope. The riverbank within the API offers limited riparian habitat and is predominantly an active slide with a few residual small shrubs. Riparian habitat upstream and downstream of the API would not be impacted by the Project. It is more likely that the majority of nesting activity will occur outside of the API itself, in adjacent habitat within the BSA. Project implementation will be concluded in as short a timeframe as is reasonable to minimize long-term disturbance to migratory and resident nesting birds. Impacts to riparian vegetation are also considered, and restrictions to its removal will be paramount when conducting road repairs in the API.

Avoidance and Minimization Efforts

The following measures shall be implemented to avoid or minimize the potential for Project-related impacts on protected avian species potentially nesting adjacent to the API:

- No night work (with new, artificial sources of lighting) may occur within the API or BSA.

- Contractors shall attempt to remove trees and other vegetation that could potentially contain nesting birds outside the bird nesting season (Feb 1 to September 15). If vegetation removal occurs outside the bird nesting season, no further mitigation is necessary. If vegetation removal or construction work occur adjacent to suitable nesting habitat between February 1 and September 15, a qualified ornithologist shall conduct pre-construction surveys within the vicinity of the Project, to check for nesting activity of native birds and to evaluate the site for presence of raptors and special status bird species. The ornithologist shall conduct at minimum a one-day pre-construction survey within the 7-day period prior to vegetation removal and ground-disturbing activities. If ground disturbance and vegetation removal work lapses for seven days or longer during the breeding season, a qualified ornithologist shall conduct a supplemental avian pre-construction survey before Project work is reinitiated.

- If active nests are detected within the construction footprint or up to 500 feet from construction activities, the ornithologist shall flag a buffer around each nest (assuming property access). Construction activities shall avoid nest sites until the ornithologist determines that the young have fledged or nesting activity has ceased. If nests are documented outside of the construction (disturbance) footprint, but within 500 feet of the construction area, buffers will be implemented as needed (buffer size dependent on species). In general, the buffer size for common species would be determined on a case-by-case basis in consultation with the CDFW and, if applicable, with USFWS. Buffer sizes will take into account factors such as (1) noise and human disturbance levels at the construction site at the time of the survey and the noise and disturbance expected during the construction activity; (2) distance and amount of vegetation or other screening between the construction site and the nest; and (3) sensitivity of individual nesting species and behaviors of the nesting birds. An absolute minimum buffer size of 30 feet is recommended as a starting point of discussion for common species, with larger buffers expected for special status species and raptors.

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

Compensatory Mitigation

The proposed Project has been designed such that Project-specific conservation measures and avoidance and minimization measures shall effectively avoid or minimize to the greatest extent feasible, affects to birds and their habitat. It is not anticipated that other compensatory mitigation will be required.

Cumulative Impacts

The proposed Project will not facilitate further development in the area. With implementation of the recommended avoidance and minimization measures, the proposed Project the Project would not contribute to cumulative impacts on special status birds.

Discussion of Special Status Terrestrial Mammals

As discussed in **Chapter 3**, based on the USFWS Official Species List generated for this Project (**Appendix E**), no federally-listed mammalian species are expected to occur within the Project vicinity. There are four special status mammal species recorded in the CNDDB as known to occur nearby: Sonoma Tree Vole, North American Porcupine, Fisher, and American Badger. A discussion of the habitat requirements, potential for species occurrence, applicable impact avoidance and minimization measures, potential Project-related effects, and cumulative effects to mammalian species is provided below.

Sonoma Tree Vole (SSC)

The Sonoma Tree Vole is an arboreal-dwelling mammal that usually occur within the fog belt of northern California from Sonoma County to the Oregon border (Zeiner et al. 1988, Blois et al. 2008). They are diet specialists on needles of Douglas fir and grand fir (*Abies grandis*). Tender leaves may be eaten entirely, but usually the needle resin ducts are removed and may be used to line the nest or discarded (Zeiner et al. 1988). These can be found littering the ground below an active nest. Females build large, domed nursery nests out of needles in trees ranging in height from six to 150 feet off the ground whereas males build smaller arboreal nests but also may nest in shallow burrows at the base of fir trees (Zeiner et al. 1988). They are primarily nocturnal when they forage outside of the nest, but they also feed on needles stored in the nest throughout the day (Zeiner et al. 1988). Spotted Owls (*Strix occidentalis*) are the main predator throughout their range (Forsman 1976), although other owls, raccoons, and Fishers likely prey upon them too (Blois et al. 2008). No habitat for this species is present within the API; however, they are likely to occur in the greater BSA.

The closest known record is from 1997, approximately 4.75 miles northeast of the API (CDFW 2021b). No suitable habitat for this species is present within the API, however, some suitable coniferous habitat including Douglas fir trees are present in the BSA.

North American Porcupine (SAL)

The North American Porcupine are primarily nocturnal but can sometimes be seen during the day. Their range extends across mainland Canada, Alaska, and the western and northeastern United States (Reid 2006). They use a wide variety of habitats, but are most common in montane conifer, Douglas fir, alpine dwarf-shrub (Sweitzer 2013). A population in Del Norte County, centered in Tolowa Dunes State Park, is especially known to concentrate in riparian areas. Porcupines are herbivores and feed on a variety of plant materials depending on the season (Appel et al. 2017, SNZ and CBI 2019). They feed on berries, seeds, grasses, leaves, roots and stems during the spring and summer (SNZ and CBI 2019). In contrast, they primarily feed on evergreen needles and tree bark during the winter.

The closest known record is from 1960, approximately 9 miles east of the API (CDFW 2021b). Suitable habitat for this species is limited in the API (narrow strip of riparian vegetation); however, they are likely to occur in the greater BSA.

Fisher (SSC)

The Fisher occupies low to mid-elevation late successional conifer or conifer/mixed hardwood forests with high canopy closure, multi-story canopy, woody debris, and snags/large hollow trees (USFWS 2016, NatureServe 2021). Managed (younger) forest habitat as well as forested habitat containing a mosaic of seral stages is also suitable when key habitat components are present. Habitat components for reproduction must include dens and rest sites. Snags and hollows/cavities (typically from heartwood decay, fire scarring, or woodpecker cavities) serve as den locations. Rest sites are typically in deteriorating or deformed live tress as well as snags and logs (USFWS 2016). Fishers have large home ranges (may be up to 81 mi^2; Weir et al. 2013 in USFWS 2016), with males occupying larger home ranges than females. Home range size may be linked to habitat complexity (and, in turn, prey species diversity and availability (USFWS 2016). Fishers are omnivorous generalists and will take a variety of prey items including porcupines, small rodents, carrion, and birds. Fisher will also eat fruits and certain vegetation (CDFW 2015, USFWS 2016).

The closest known record is from 1934, approximately 2.2 miles southeast of the API along Mattole Road (CDFW 2021b). Although some potentially suitable habitat (narrow riparian forest) may occur in the BSA, areas within the API do not include suitable habitat for Fisher. However, rare dispersal events through the area are possible because of the high mobility of the species. It is anticipated that there is low potential for this species to occur in the API and BSA.

American Badger (SSC)

The American Badger is a medium-sized mammal approximately 1.5 to 3 feet in length. The American Badger is most abundant in drier open stages of shrub, forest and herbaceous habitats with friable soils. They prefer uncultivated ground. The American Badger digs burrows and preys on burrowing rodents.

The closest known record is from 2007, approximately 2 miles southwest of the API along Squaw Creek (CDFW 2021b). Suitable habitat is limited within the API or immediate Project vicinity and is primarily within more extensive grasslands within the BSA.

Survey Results

No special status mammals were observed during the February 2021 site visit. Evidence of several common mammalian species, with no special status, was observed during the February 2021 site visit. The Western Pond Turtle observed on-site is presumed to have been predated by mammalian omnivores. Numerous fresh Raccoon (*Procyon lotor*) tracks were observed just below the shell, and the extensive damage to the shell was sharp-edged and apparently recent. The only other mammal tracks observed were Black-tailed Deer throughout the Project area, with five animals observed just to the west. Although no sign was observed, local residents report multiple recent Mountain Lion sightings also just west of the Project area. No other mammalian surveys or incidental occurrence data are known from the BSA.

The API and BSA do not overlap designated or proposed critical habitat for any federally-listed mammalian species.

Project Impacts

The API does not provide suitable foraging or nesting habitat for the Sonoma Tree Vole. Project implementation is not likely to have any impact to this species due to the lack of suitable habitat in the API and only a limited number of small trees (< 12-in dbh, unsuitable for Sonoma Tree Voles) which are expected to be removed as a result of this Project.

The API does not provide suitable foraging or denning habitat for the North American Porcupine or American Badger. However, habitat within the greater BSA may serve as suitable habitat for these species. The API does not include late seral stage forest and thus impacts to Fisher are unlikely. However, the following avoidance and minimization measures are recommended to further reduce the potential for impacts to the species.

Avoidance and Minimization Efforts

The Project footprint shall be restricted to the minimum necessary. Deep steep-sided excavations will be covered or ramped if left overnight, to avoid the risk of a nocturnally dispersing terrestrial mammals (e.g., North American Porcupine, American Badger, or Fisher) becoming trapped. Food waste and other trash shall be removed from the site at the end of each work day to avoid attractants. Pets (e.g., dogs) will not be permitted on the construction site.

Compensatory Mitigation

The proposed Project has been designed such that Project-specific conservation measures and avoidance and minimization measures shall effectively avoid or minimize to the greatest extent feasible, affects to terrestrial mammals and their habitat. It is not anticipated that other compensatory mitigation will be required.

Cumulative Impacts

The proposed Project will not facilitate further development in the area. In addition, with implementation of the recommended avoidance and minimization measures, the Project would not contribute to cumulative impacts to terrestrial mammals.

Discussion of Special Status Bats

As discussed in **Chapter 3**, based on the USFWS Official Species List generated for this Project (**Appendix E**), no federally-listed bat species are expected to occur within the Project vicinity. There are four special status bat species recorded in the CNDDB as known to occur nearby: Townsend's Big-eared Bat, Western Red Bat, Long-eared Myotis, and Yuma Myotis A discussion of the habitat requirements, potential for species occurrence, applicable impact avoidance and minimization measures, potential Project-related effects, and cumulative effects to mammalian species is provided below.

The BSA likely provides suitable roosting habitat for foliage and tree roosting bats (will roost in woodpecker holes, under loose bark, and basal hollows as well as other cavities). In addition, open water in the vicinity (Mattole River) likely serves as a foraging area for several species (and sources of water for species that need to drink freshwater regularly).

Townsend's Big-eared Bat (SSC)

Townsend's Big-eared Bats are medium-sized bats, distinguished from other co-occurring bat species by their large ears and a two-pronged horseshoe-shaped lump on the muzzle. The species occurs throughout the western U.S. and Canada. In California, the species is found throughout the state with the exception of the high elevations in the Sierra Nevada Mountain Range (CDFW 2016). Townsends' Big-eared Bats are typically associated with coastal redwood forests, foothill oak woodlands, inland deserts, pinyon-juniper and pine forests, and mixed coniferous-deciduous forests (Erickson et al. 2002, CDFW 2016). The species roosts colonially in a variety of structures including hollow trees, buildings (barns), mines, and lava tubes. Roost site fidelity is high. Maternity colonies (of females) occur between March and June (CDFW 2016). Males roost singly (Erickson et al. 2002). Females give birth to a single pup per year between May and July. The species winters in mixed sex groups in caves and lava tubes. Townsend's Big-eared Bats feed primarily on moths (Erickson et al. 2002, CDFW 2016).

The closest known record is from 1956 near Cole, approximately 10 miles south (CDFW 2021). The closest known recent record is from 2018 near Fickle Hill, approximately 20.75 miles north of the API (BAMVT 2021). Suitable roosting habitat may be present in the BSA, and foraging habitat may be present in the API and BSA.

Western Red Bat (SSC)

Western Red Bats are primarily found at low elevations in the Central Valley or along the coast of California, with most occurrences west of the Sierras. The species engages in seasonal movements from breeding areas (primarily in the valley) to wintering areas (along the coast; Pierson et al. 2004). Western Red Bats are closely associated with extensive stands of mature cottonwood and sycamore riparian forest (roosting and foraging habitat). The species roosts singly (except in the case of family groups) in the tree canopy in leaves (Erickson et al. 2002, Harris et al. 2008a). However, in areas where riparian forest has been lost to human development, this species will also roost in orchards (Pierson et al. 2004). Roosts are commonly located along a habitat edge (e.g., adjacent to a creek or field). Breeding occurs in the fall, with delayed fertilization until the following spring. Pups are born in the summer and litters may include up to five young (Harris et al 2008a). Western Red Bats feed on a variety of insect prey including cicadas, crickets, and beetles. They catch prey in flight by capturing insects in their wing or tail membranes (Harris et al. 2008da).

The closest known record is from 2015, approximately 10.4 miles northeast in Humboldt Redwoods State Park (CDFW 2021c). Suitable roosting habitat may be present in the BSA, and foraging habitat may be present in the API and BSA.

Long-eared Myotis (SAL)

The Long-eared Myotis is a medium-sized bat with pale brown colored fur that is lighter on the belly (SBDWG 2004). They are found throughout California and commonly associated with high desert, mixed coniferous/hardwood forests, pinyon-juniper, mesquite scrub, pine/oak woodland, sequoia forests, and residential areas. This species will roost in caves, mines, trees, crevices, buildings, and bridges (Erickson et al. 2002). Caves in Northern California serve as winter hibernacula (Erickson et al. 2002). Females form small maternity colonies during the summer and give birth from one pup from June through July each year (NatureServe 2021). The Long-eared Myotis is a hovering gleaner and feeds on a variety of insects including months, flies, and beetles by plucking prey from foliage or off the ground (Western Bat Working Group 2020).

The closest known record is from 2015, approximately 10.4 miles northeast in Humboldt Redwoods State Park (CDFW 2021c). Suitable roosting habitat may be present in the BSA, and foraging habitat may be present in the API and BSA.

Yuma Myotis (SAL)

The Yuma Myotis is a medium-sized bat with light to dark brown fur and a paler underbelly (NorCalBats 2017). The species is widespread and common throughout western North America from southern British Columbia to southern Mexico (NatureServe 2021). In California, the species is widespread throughout the state except for the desert regions. The species is thought to engage in seasonal and possibly elevational migratory movements (Harris et al. 2008b). The species feeds on moths and insects over water and other open habitat types (NatureServe 2021). Roosts include bridges, swallow nests, rock crevices, tunnels, tree cavities, and buildings (NatureServe 2021). The species mates during the fall. Females form maternity roosts in April and give birth to one pup between May through July (NatureServe 2021). Maternity roots may include several thousand individuals and are most common in mines and caves (Harris et al. 2008b). Threats to the species include roost disturbance, roosting habitat loss, and reduced prey from over application of pesticides (NatureServe 2021).

The closest known record is from 1999 in Humboldt Redwoods State Park, approximately 15 miles north (CDFW 2021c). Suitable roosting habitat may be present in the BSA, and foraging habitat may be present in the API and BSA. It is anticipated that there is moderate potential for this species to occur in the API and BSA.

Survey Results

No special status bats were observed during the February 2021 site visit. However, the site visit occurred during daylight hours when bat activity is known to be very low, and the survey methods were not focused on documenting bat presence. No data collection has occurred in the immediate Project vicinity (nearest bat monitoring efforts have occurred in Humboldt Redwoods State Park, approximately 12 linear miles east of the API; BAMVT 2021). Nonetheless, the BSA contains suitable habitat for a variety of special status bat species, and it is anticipated that there is moderate potential for this species to occur in the API and BSA during Project implementation.

The API and BSA do not overlap designated or proposed critical habitat for any federally-listed bat species.

Project Impacts

The API is unlikely to provide high-quality foraging and roosting habitat for sensitive bat species. However, the greater BSA is likely to provide foraging and roosting habitat for bats. As only small trees (<12-in dbh) will be removed during Project implementation, it is unlikely that any physical impacts to bat or bat roosting sites will occur. However, to minimize any potential for impacts to roosting habitat, trees that will be removed or limbed will be inspected for evidence of bat roosting (particularly foliage roosters, as some of the trees are riparian species). Additional avoidance and minimization measures for sensitive bat species and roosts are detailed below.

Avoidance and Minimization Efforts

Vegetation immediately outside of the API may serve as roosting habitat for a variety of special status bat species. Vegetation removal will be limited to minor roadside vegetation and on the landslide surface to install the drains and RSP and to for construction access. Vegetation removal will include minor mowing and minor brush removal. Small trees and shrubs presently leaning on the hillside will be removed (< 12-in dbh). Should tree removal or limbing occur during the bat maternity season (May 1 through August 30), these trees would be inspected for evidence of roosting bats. If tree and vegetation removal occur outside of the bat maternity season (September 1 through April 30), no inspection would be required, as no potential impact to maternity colonies would occur.

No nighttime work is currently proposed, however should it occur, Project-related lighting shall be minimized, either contained within structures or limited by appropriate reflectors or shrouds, and focused on areas needed for safety, security or other essential requirements.

Compensatory Mitigation

The proposed Project has been designed such that Project-specific conservation measures and avoidance and minimization measures shall effectively avoid or minimize to the greatest extent feasible, affects to special status bats and their habitat. It is not anticipated that other compensatory mitigation will be required.

Cumulative Impacts

The proposed Project will not facilitate further development in the area. With implementation of the recommended avoidance and minimization measures, the proposed Project would not contribute to cumulative impacts to special status bats.

Chapter 5 – Conclusions and Regulatory Determinations

Federal Endangered Species Act Consultation Summary

The proposed Project may affect federally-listed species including anadromous salmonids. It is anticipated that Caltrans shall initiate formal consultation with NMFS in compliance with Section 7 of the ESA. The API includes areas within designated critical habitat for SONCC Coho Salmon, CC Chinook Salmon, and Steelhead (northern California DPS).

Essential Fish Habitat (EFH) Consultation Summary

As a result of construction activities, the following adverse effects could potentially occur to CC Chinook Salmon and SONCC Coho Salmon EFH:

- Elimination of potential rearing habitat during construction;
- Increased turbidity and suspended sediment.

Due to the nature of the Project, there is a potential for adverse effects to CC Chinook Salmon and SONCC Coho Salmon EFH from loss of aquatic habitat, and potential sediment or contaminant releases into the intermittent stream. However, the Project makes up a very small portion of aquatic habitat within the watershed. In addition, removal of vegetation will be minimal and temporary, and proposed dewatering will be limited to a small area directly adjacent to the bank. Construction activities will also be of a short duration and limited to the dry season. Conservation measures will be implemented to ensure that the Project avoids and/or minimizes any adverse effects. Proposed Project effects on EFH would be negligible.

California Endangered Species Act (CESA) Consultation Summary

The CESA states that all native species of fishes, amphibians, reptiles, birds, mammals, invertebrates, and plants, and their habitats, threatened with extinction and those experiencing a significant decline which, if not halted, would lead to a threatened or endangered designation, will be protected or preserved. The CDFW is mandated to protect and preserve such sensitive resources and their habitats. However, CESA also allows for take incidental to otherwise lawful development projects. CESA emphasizes early consultation to avoid potential impacts to rare, endangered, and threatened species and to develop appropriate mitigation planning to offset Project-related losses of listed species. One CESA-listed species, the Bank Swallow, could be present nearby and could occasionally enter the BSA. With avoidance measures described above, no incidental take of Bank Swallows would occur. State listed Coho Salmon are present in the Mattole River and may be relocated during dewatering; thus, CESA compliance with CDFW would be required.

Wetlands and Other Waters Coordination Summary

Delineated wetlands and waters are present within the API and may be permanently or temporarily impacted by the Project (final area of impacts to be determined concurrent with 100% design plans). As a result, compensatory mitigation may be required and is expected. The following permits and approvals are anticipated.:

- CDFW Streambed Alteration Agreement
- NCRWQCB CWS Section 401 Water Quality Certification
- USACE CWA Section 404 Permit
- NMFS ESA Section 7 Consultation
- State Water Board Construction General Permit

Invasive Species

Implementation of Prevention of Spread of Invasive Species measures (see **Chapter 4 – Special Status Plants**) will avoid and minimize the spread of invasive species as required by Executive Order 13112.

Other

Migratory Bird Treaty Act (MBTA)

Several avian species protected under the MBTA have the potential to nest within the BSA. Avoidance and minimization measures (detailed in Chapter 4) will be implemented to avoid adverse effects on migratory birds.

California Fish and Game Code

In addition to being protected by the MBTA, avian species are protected under California Fish and Game Code Sections 3503 and 3503.5 (protection of birds' nests) and 3513 (taking Migratory Bird Treaty Act birds). Several species have the potential to nest within the BSA. Avoidance and minimization measures (detailed in Chapter 4) will be implemented to avoid adverse effects on migratory birds.

The proposed Project includes work within the Mattole River, which has the potential to alter the bed, channel, or bank of said stream, whereby the County will provide notification of streambed alteration to the CDFW. The County will obtain a Streambed Alteration Agreement and will ensure that all conditions of the agreement are implemented. Avoidance and minimization measures would be implemented to avoid adverse effects on downstream fisheries resources.

Senate Bill (SB) 857

The Project does not involve any existing barriers to fish passage and would not result in any new barriers to fish passage. The Project is thus consistent with SB 857.

Chapter 6 – References

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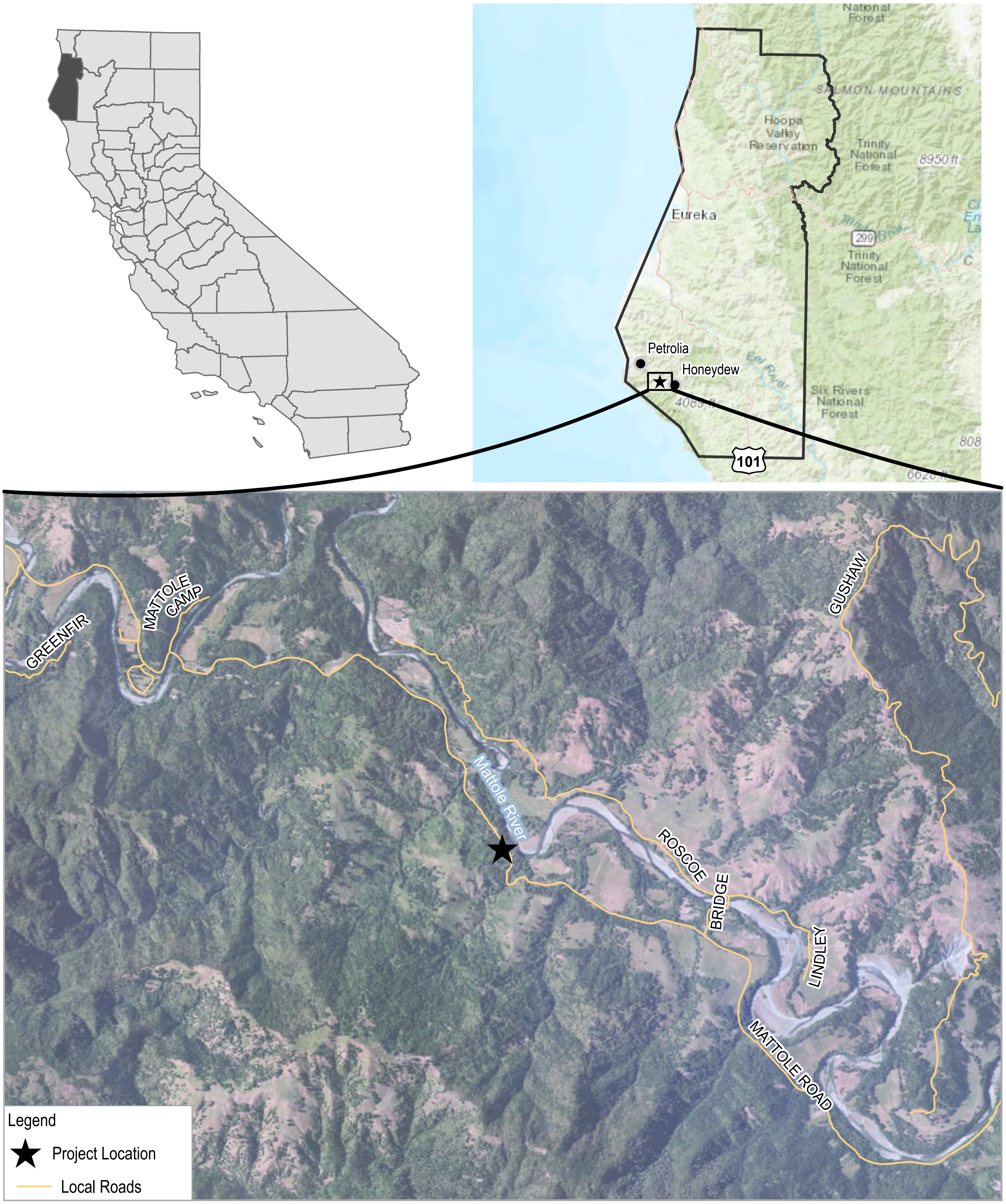
Appendix A - Figures



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GHD

Humboldt County Dept. of Public Works
Mattole Road PM 5.25 Storm Damage Repair

Project No. **11222901**
Revision No. **-**
Date **6/8/2021**

Project Vicinity Map

FIGURE 1

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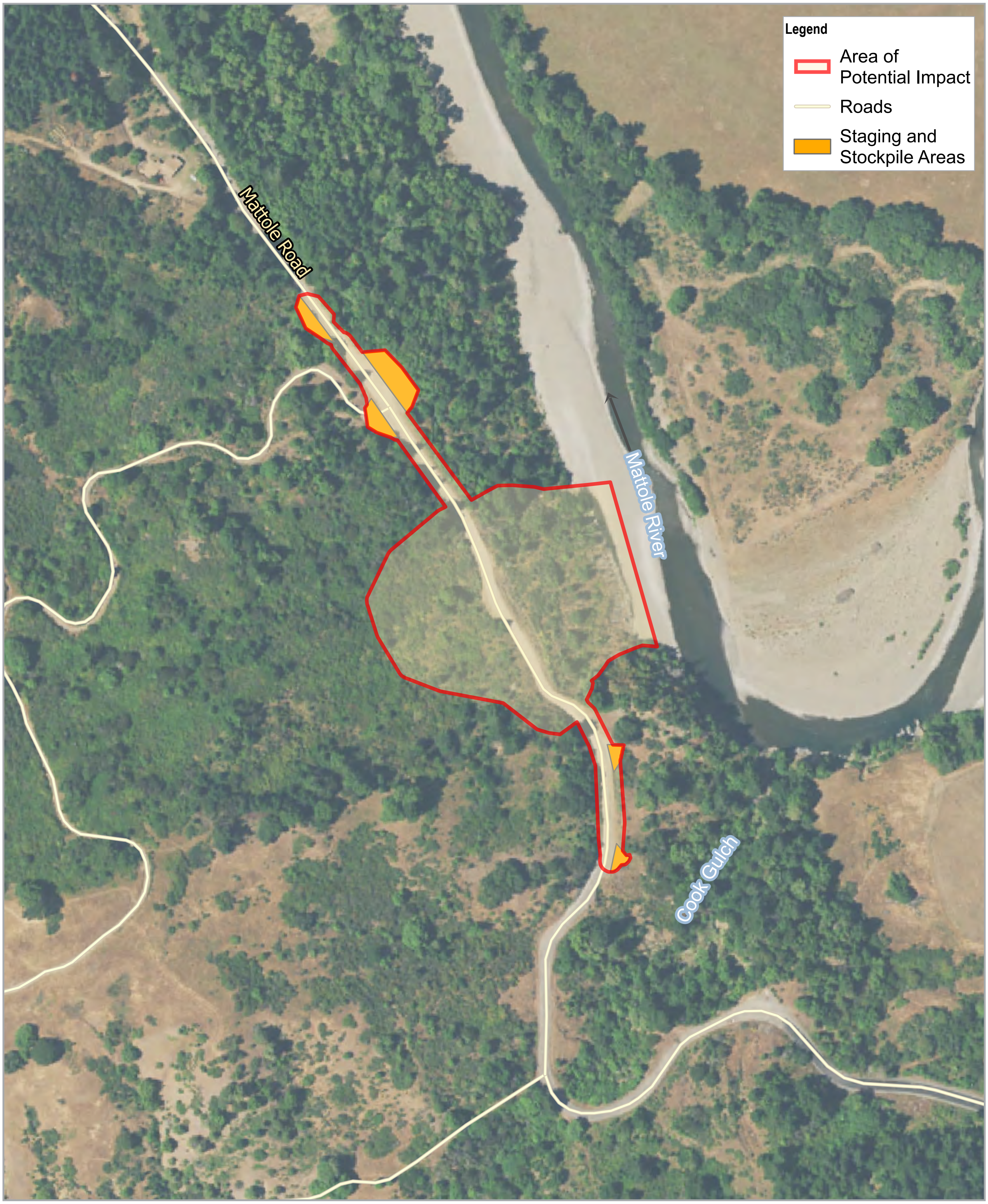
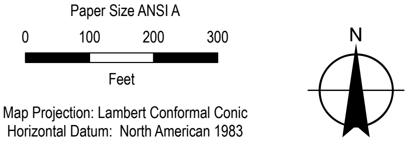
World_Transportation: Esri, HERE. Created by: jlopez4





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Humboldt County Dept. of Public Works
Mattole Road PM 5.25
Storm Damage Repair

Project No. **11222901**
Revision No. **-**
Date **6/7/2021**

Area of Potential Impact

FIGURE 2

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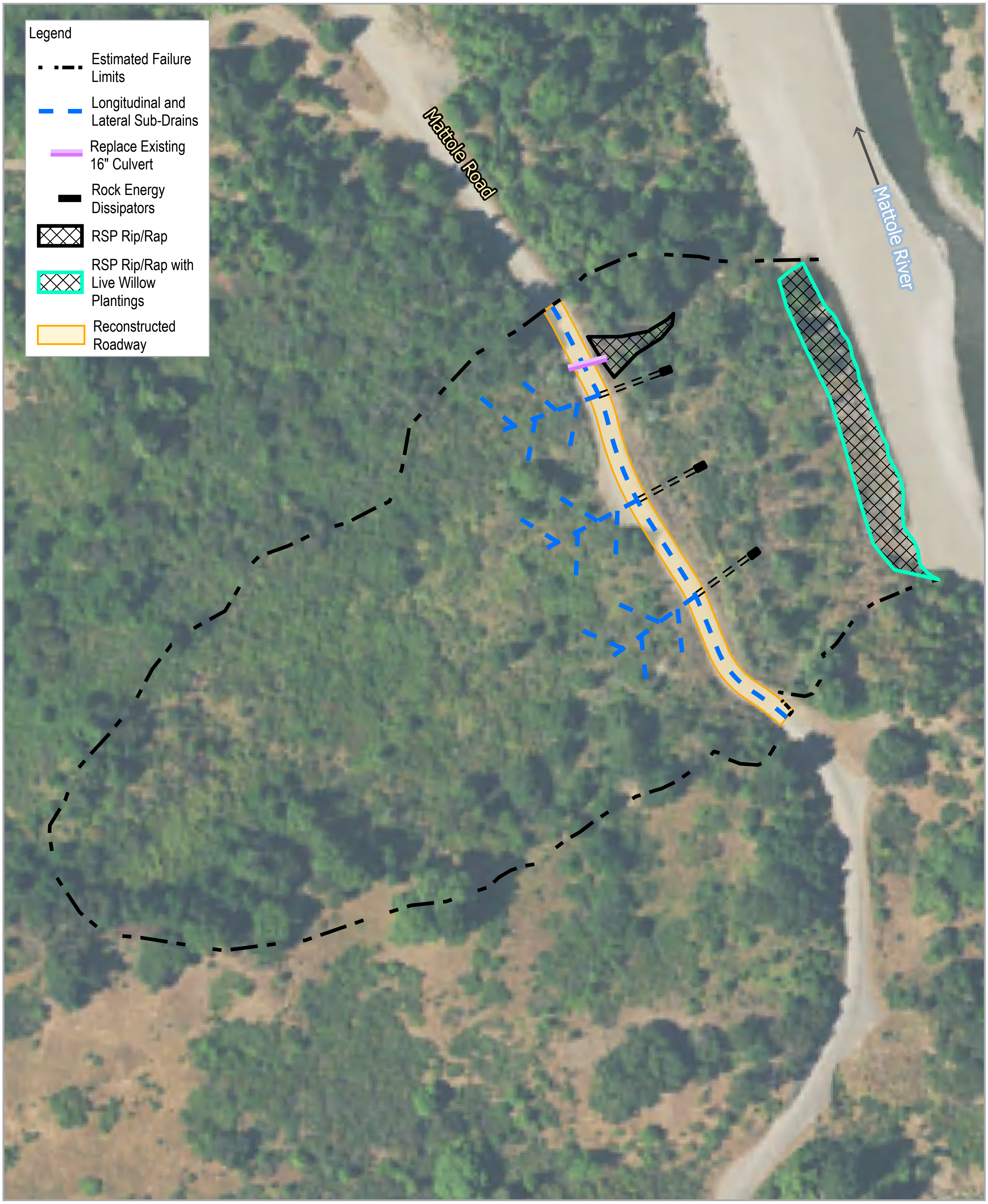

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GHD

Humboldt County Dept. of Public Works
Mattole Road PM 5.25
Storm Damage Repair

Project Overview

Project No. **11222901**
Revision No. **-**
Date **6/7/2021**

FIGURE 3

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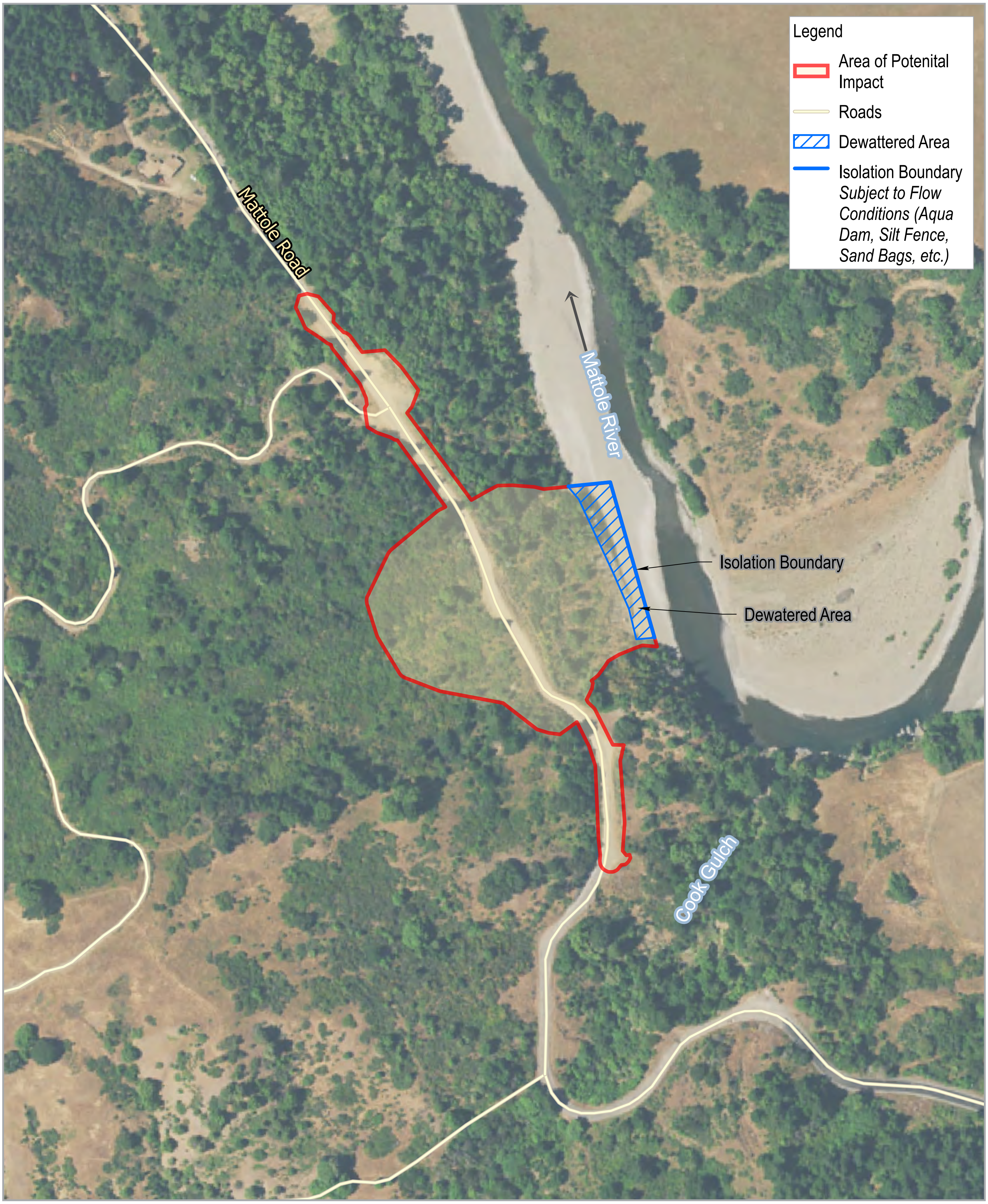

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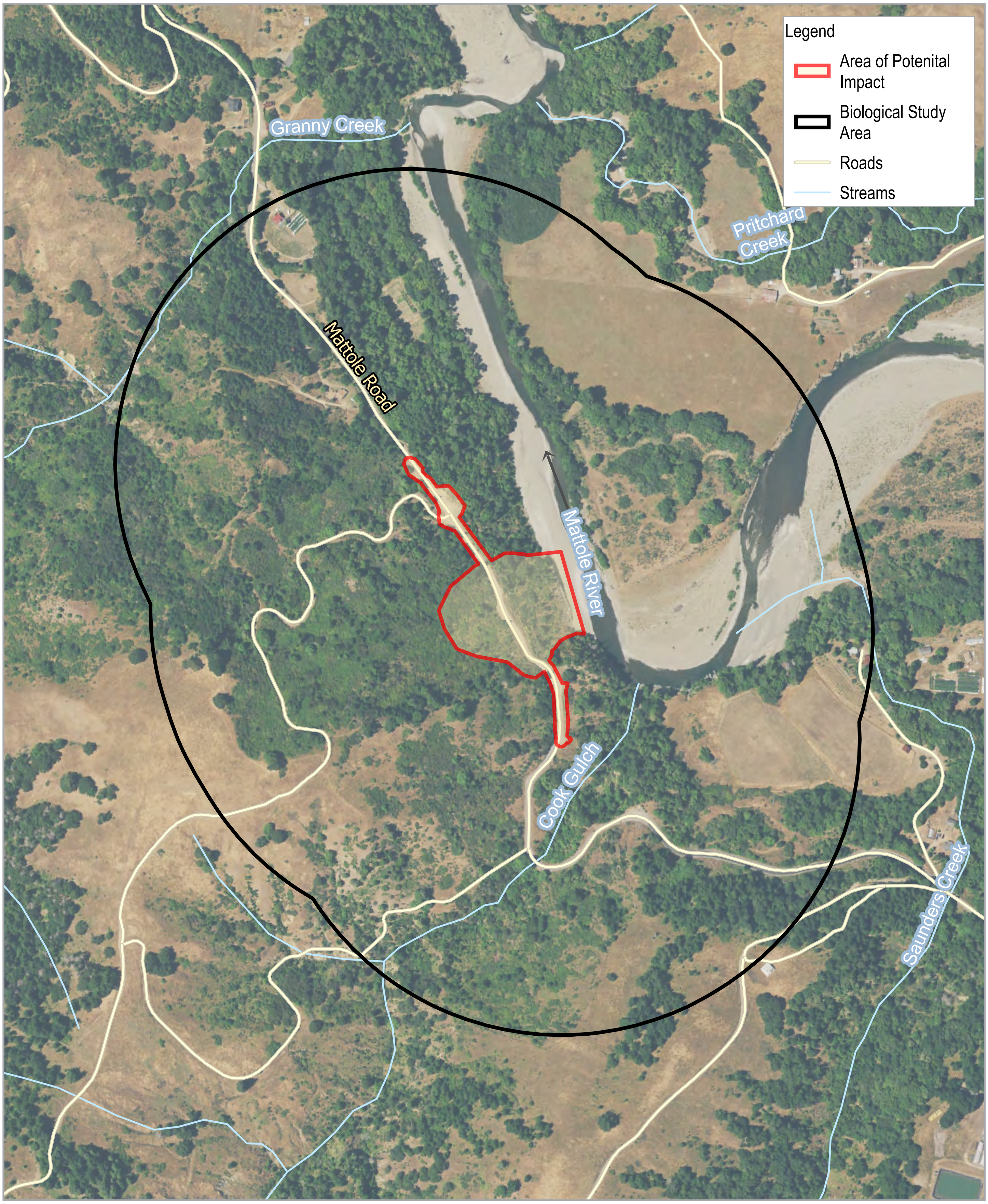
Humboldt County Dept. of Public Works
Mattole Road PM 5.25
Storm Damage Repair

Dewatering Plan

Project No. **11222901**
Revision No. **-**
Date **6/7/2021**

FIGURE 4



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Humboldt County Dept. of Public Works
Mattole Road PM 5.25
Storm Damage Repair

Biological Study Area

Project No. **11222901**
Revision No. **-**
Date **6/7/2021**

FIGURE 5

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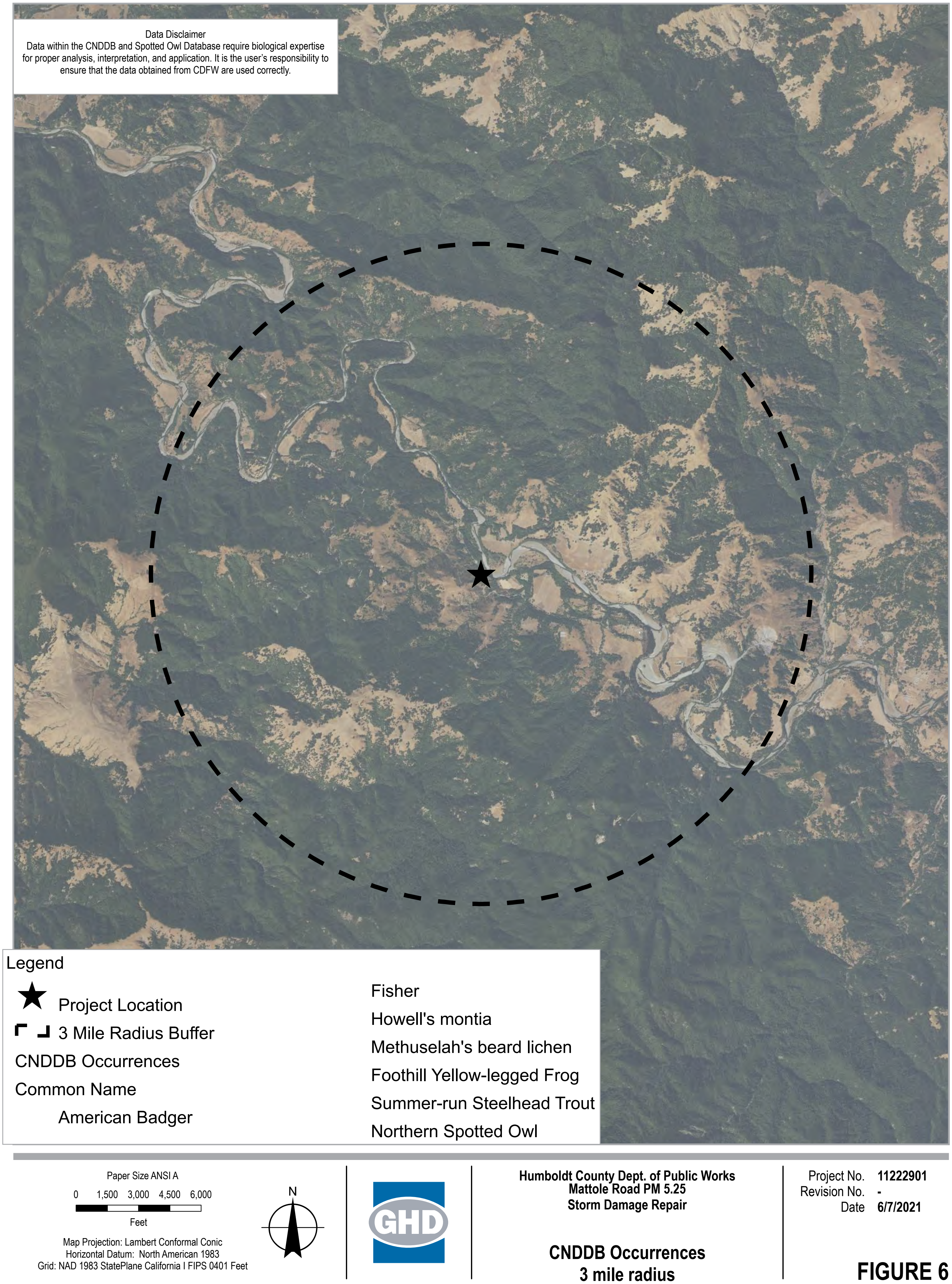


GHD

Humboldt County Dept. of Public Works
Mattole Road PM 5.25
Storm Damage Repair

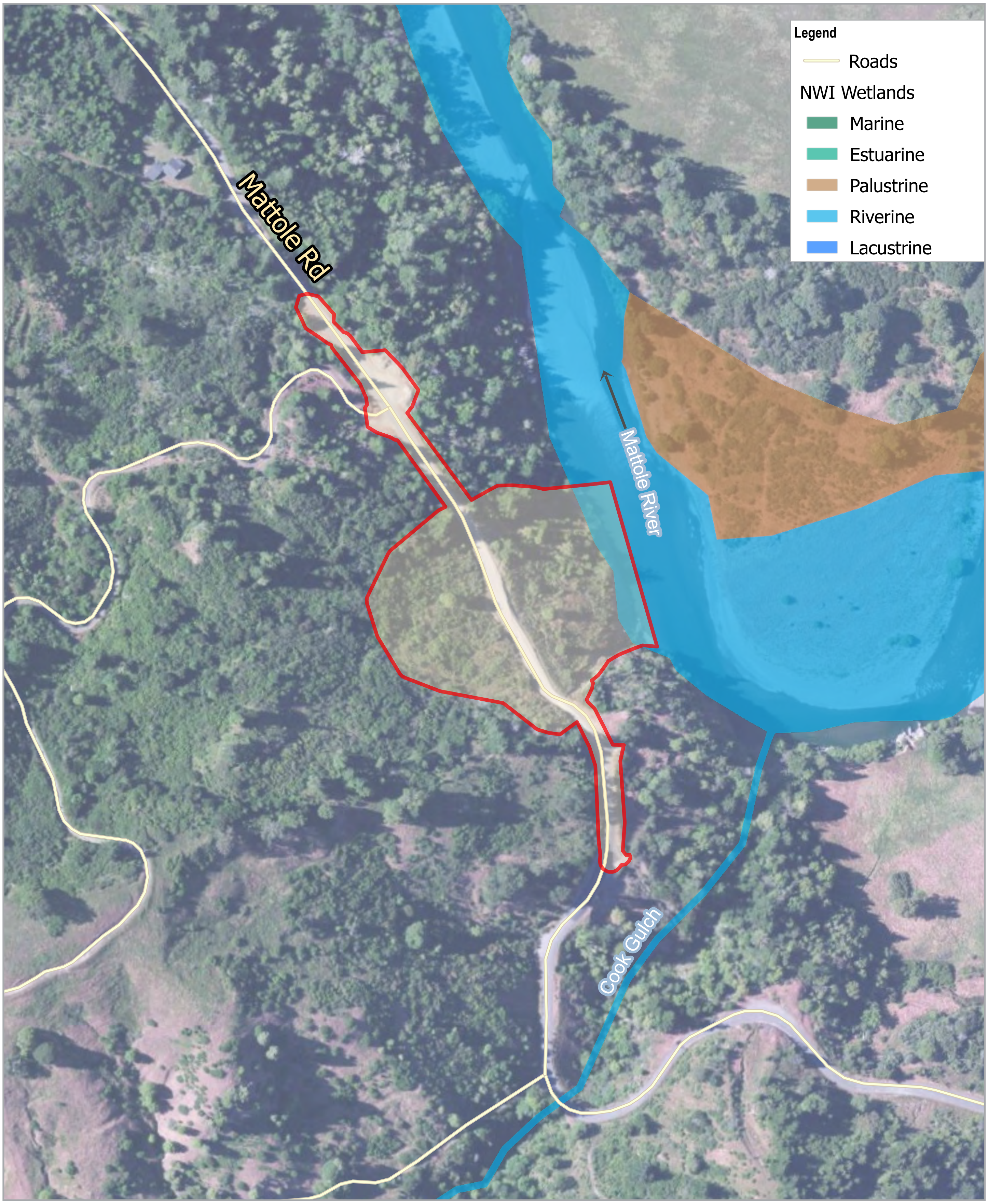
CNDDB Occurrences
3 mile radius

Project No. **11222901**
Revision No. **-**
Date **6/7/2021**

FIGURE 6

N:\US\Santa Rosa\Projects\561\11222901\GIS\Maps\Deliverables\Mattole_RD_NES\11222901_MattoleRoad_NES.aprx - 11222901_006_CNDDB
Print date: 07 Jun 2021 - 17:11

Data source: CNDDB, Dec 2020; USA NAIP Imagery: Natural Color: Esri, USDA Farm Service Agency. Created by: jlopez4



Paper Size ANSI A

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Feet

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

N

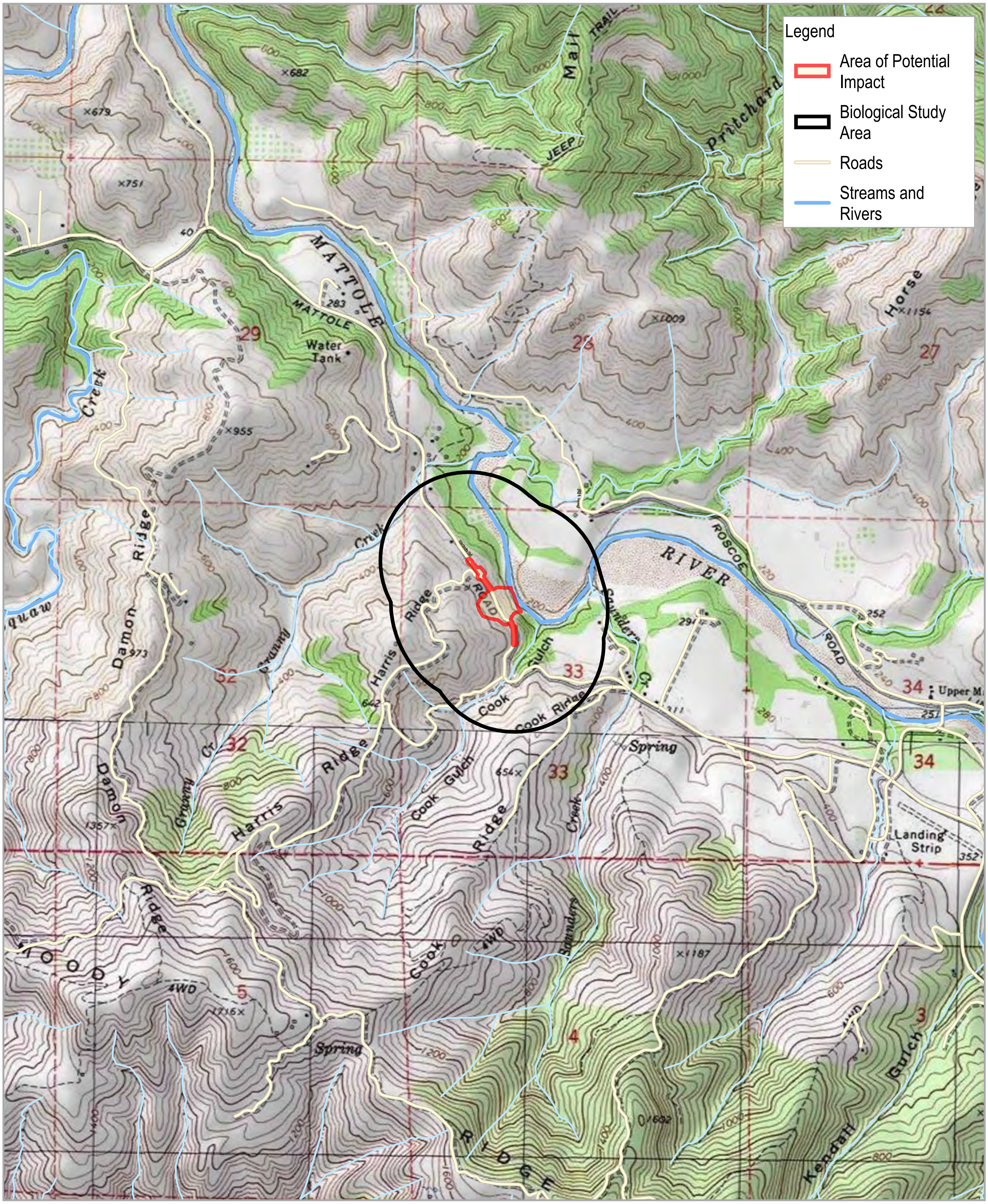
Humboldt County Dept. of Public Works
Mattole Road PM 5.25
Storm Damage Repair

Project No. **11222901**
Revision No. **-**
Date **6/7/2021**

NWI Wetlands

FIGURE 7

N:\US\Santa Rosa\Projects\561\11222901\GIS\Maps\Deliverables\Mattole_RD_NES\11222901_MattoleRoad_NES.aprx -Data source: NWI Wetlands: Source: US Fish and Wildlife Service, Esri;World Imagery (Clarity): Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. Created by: jlopez4
11222901_007_NWI
Print date: 07 Jun 2021 - 17:17



Paper Size ANSI A

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Feet

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

N

GHD

Humboldt County Dept. of Public Works
Mattole Road PM 5.25
Storm Damage Repair

Topographic Map

Project No. **11222901**
Revision No. **-**
Date **6/8/2021**

FIGURE 8

N:\US\Santa Rosa\Projects\561\11222901\GIS\Maps\Deliverables\Mattole_RD_NES\11222901_MattoleRoad_NES.aprx - 11222901_008_Topo
Print date: 08 Jun 2021 - 08:49

Data source: World Imagery (Clarity): Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community;USA_Topo_Maps: Copyright:© 2013 National Geographic Society, i-cubed. Created by: jlopez4

Appendix B - CNDDB Database Search Results

Appendix B. Mattole Road PM 5.25 Storm Damage Repair – 9-Quad Database Search of CDFW CNDDB RareFind5 centered on project quad (Buckeye Mountain) on 2.21.2021. Quads include Capetown, Taylor Peak, Scotia, Petrolia, Buckeye Mtn., Bull Creek, Cooskie Creek, Shubrick Peak, and Honeydew.

ComName	SciName	FedList	CalList	GRank	SRank	CRPR	OthrStatus	Habitats	GenHab	MicroHab
Cooper's hawk	*Accipiter cooperii*	None	None	G5	S4		CDFW_WL-Watch List | IUCN_LC-	Cismontane woodland | Riparian	Woodland, chiefly of open,	Nest sites mainly in riparian
sharp-shinned hawk	*Accipiter striatus*	None	None	G5	S4		CDFW_WL-Watch List | IUCN_LC-	Cismontane woodland | Lower	Ponderosa pine, black oak, riparian	North-facing slopes with plucking
Humboldt mountain beaver	*Aplodontia rufa humboldtiana*	None	None	G5TNR	SNR			Coastal scrub | Redwood | Riparian	Coast Range in southwestern	Variety of coastal habitats, including
golden eagle	*Aquila chrysaetos*	None	None	G5	S3		BLM_S-Sensitive | CDF_S-	Broadleaved upland forest | Cismontane	Rolling foothills, mountain	Cliff-walled canyons provide nesting habitat
Sonoma tree vole	*Arborimus pomo*	None	None	G3	S3		CDFW_SSC-Species of Special	North coast coniferous forest |	North coast fog belt from Oregon	Feeds almost exclusively on Douglas-fir
great egret	*Ardea alba*	None	None	G5	S4		CDF_S-Sensitive | IUCN_LC-	Brackish marsh | Estuary |	Colonial nester in large trees.	Rookery sites located near marshes, tide-
great blue heron	*Ardea herodias*	None	None	G5	S4		CDF_S-Sensitive | IUCN_LC-	Brackish marsh | Estuary |	Colonial nester in tall trees,	Rookery sites in close proximity to foraging
Pacific tailed frog	*Ascaphus truei*	None	None	G4	S3S4		CDFW_SSC-Species of Special	Aquatic | Klamath/North coast	Occurs in montane hardwood-	Restricted to perennial montane

coastal marsh milk-vetch	*Astragalus pycnostachyus var.*	None	None	G2T2	S2	1B.2	BLM_S-Sensitive | SB_CalBG/R	Coastal dunes | Coastal scrub	Coastal dunes,marshes and	Mesic sites in dunes or along streams or
western bumble bee	*Bombus occidentalis*	None	Candidate Endangered	G2G3	S1		USFS_S-Sensitive		Once common & widespread,	
marbled murrelet	*Brachyramphus marmoratus*	Threatened	Endangered	G3	S2		CDF_S-Sensitive | IUCN_EN-	Lower montane coniferous	Feeds near-shore; nests inland along	Nests in old-growth redwood-
leafy reed grass	*Calamagrostis foliosa*	None	Rare	G3	S3	4.2		Coastal bluff scrub | North coast	Coastal bluff scrub, north coast	Rocky cliffs and ocean-facing bluffs. 0-1220
Oregon coast paintbrush	*Castilleja litoralis*	None	None	G3	S3	2B.2		Coastal bluff scrub | Coastal	Coastal bluff scrub, coastal dunes, coastal	Sandy sites. 5-255 m.
Coastal and Valley Freshwater	*Coastal and Valley Freshwater*	None	None	G3	S2.1			Marsh & swamp | Wetland		
Coastal Douglas Fir Western	*Coastal Douglas Fir Western*	None	None	G4	S2.1			North coast coniferous forest		
Townsend's big-eared bat	*Corynorhinus townsendii*	None	None	G4	S2		BLM_S-Sensitive | CDFW_SSC-	Broadleaved upland forest | Chaparral |	Throughout California in a wide variety	Roosts in the open, hanging from walls and
western pond turtle	*Emys marmorata*	None	None	G3G4	S3		BLM_S-Sensitive | CDFW_SSC-	Aquatic | Artificial flowing	A thoroughly aquatic turtle of ponds,	Needs basking sites and suitable (sandy
Pacific lamprey	*Entosphenus tridentatus*	None	None	G4	S4		AFS_VU-Vulnerable | BLM_S-	Aquatic | Klamath/North coast	Found in Pacific Coast streams north	Swift-current gravel-bottomed areas

North American porcupine	*Erethizon dorsatum*	None	None	G5	S3		IUCN_LC-Least Concern	Broadleaved upland forest | Cismontane	Forested habitats in the Sierra	Wide variety of coniferous and mixed
bluff wallflower	*Erysimum concinnum*	None	None	G3	S2	1B.2	BLM_S-Sensitive	Coastal bluff scrub | Coastal	Coastal dunes, coastal bluff scrub,	More or less a coastal generalist
giant fawn lily	*Erythronium oregonum*	None	None	G4G5	S2	2B.2		Cismontane woodland | Meadow &	Cismontane woodland, meadows and	Openings. Sometimes on serpentine;
coast fawn lily	*Erythronium revolutum*	None	None	G4G5	S3	2B.2		Bog & fen | Broadleaved upland forest	Bogs and fens, broadleafed	Mesic sites; streambanks. 60-1405 m.
Steller (=northern) sea-lion	*Eumetopias jubatus*	Delisted	None	G3	S2		IUCN_EN-Endangered | MMC_SSC-	Marine intertidal & splash zone	Breeds on Ano Nuevo, San Miguel	Needs haul-out and breeding sites with
Pacific gilia	*Gilia capitata ssp. pacifica*	None	None	G5T3	S2	1B.2		Chaparral | Coastal bluff scrub |	Coastal bluff scrub, chaparral,	5-1345 m.
dark-eyed gilia	*Gilia millefoliata*	None	None	G2	S2	1B.2	BLM_S-Sensitive	Coastal dunes	Coastal dunes.	1-60 m.
western ridged mussel	*Gonidea angulata*	None	None	G3	S1S2			Aquatic	Primarily creeks & rivers & less	
mountain shoulderband	*Helminthoglypta arrosa monticola*	None	None	G2G3T1	S1			Chaparral | Talus slope	Known only from the King Range in	Found in talus slopes.
short-leaved evax	*Hesperevax sparsiflora var. brevifolia*	None	None	G4T3	S3	1B.2	BLM_S-Sensitive	Coastal bluff scrub | Coastal	Coastal bluff scrub, coastal dunes, coastal	Sandy bluffs and flats. 0-640 m.

western red bat	*Lasiurus blossevillii*	None	None	G4	S3		CDFW_SSC-Species of Special	Cismontane woodland | Lower	Roosts primarily in trees, 2-40 ft	Prefers habitat edges and mosaics with
beach layia	*Layia carnosa*	Endangered	Endangered	G2	S2	1B.1	SB_CalBG/R SABG-California/R	Coastal dunes | Coastal scrub	Coastal dunes, coastal scrub.	On sparsely vegetated, semi-stabilized
running-pine	*Lycopodium clavatum*	None	None	G5	S3	4.1		Lower montane coniferous	Lower montane coniferous	Forest understory, edges,
Howell's montia	*Montia howellii*	None	None	G3G4	S2	2B.2		Meadow & seep | North coast	Meadows and seeps, north coast	Vernally wet sites; often on compacted soil.
long-eared myotis	*Myotis evotis*	None	None	G5	S3		BLM_S-Sensitive | IUCN_LC-		Found in all brush, woodland and	Nursery colonies in buildings,
Yuma myotis	*Myotis yumanensis*	None	None	G5	S4		BLM_S-Sensitive | IUCN_LC-	Lower montane coniferous	Optimal habitats are open forests	Distribution is closely tied to bodies of water.
Wolf's evening-primrose	*Oenothera wolfii*	None	None	G2	S1	1B.1	SB_BerrySB-Berry Seed Bank	Coastal bluff scrub | Coastal	Coastal bluff scrub, coastal dunes, coastal	Sandy substrates; usually mesic
coho salmon - southern Oregon /	*Oncorhynchus kisutch pop. 2*	Threatened	Threatened	G5T2Q	S2		AFS_TH-Threatened	Aquatic | Klamath/North coast	Federal listing refers to populations	State listing refers to populations
steelhead - northern California DPS	*Oncorhynchus mykiss irideus pop. 16*	Threatened	None	G5T2T3Q	S2S3		AFS_TH-Threatened	Aquatic | Sacramento/San Joaquin	Coastal basins from Redwood	
summer-run steelhead trout	*Oncorhynchus mykiss irideus pop. 36*	None	Candidate Endangered	G5T4Q	S2		CDFW_SSC-Species of Special	Aquatic | Klamath/North coast	No. Calif coastal streams south	Cool, swift, shallow water & clean loose

seacoast ragwort	*Packera bolanderi var. bolanderi*	None	None	G4T4	S2S3	2B.2		Coastal scrub | North coast coniferous	Coastal scrub, north coast coniferous	Sometimes along roadsides. 30-915 m.
osprey	*Pandion haliaetus*	None	None	G5	S4		CDF_S-Sensitive | CDFW_WL-	Riparian forest	Ocean shore, bays, freshwater	Large nests built in tree-tops within 15 miles
Fisher	*Pekania pennanti*	None	None	G5	S2S3		BLM_S-Sensitive | CDFW_SSC-	North coast coniferous forest |	Intermediate to large-tree stages of	Uses cavities, snags, logs and rocky areas for
white-flowered rein orchid	*Piperia candida*	None	None	G3	S3	1B.2		Broadleaved upland forest | Lower	North Coast coniferous forest, lower	Sometimes on serpentine. Forest duff,
Oregon polemonium	*Polemonium carneum*	None	None	G3G4	S2	2B.2		Coastal prairie | Coastal scrub	Coastal prairie, coastal scrub,	15-1525 m.
northern red-legged frog	*Rana aurora*	None	None	G4	S3		CDFW_SSC-Species of Special	Klamath/North coast flowing	Humid forests, woodlands,	Generally near permanent water, but can
foothill yellow-legged frog	*Rana boylii*	None	Endangered	G3	S3		BLM_S-Sensitive | CDFW_SSC-	Aquatic | Chaparral | Cismontane	Partly-shaded, shallow	Needs at least some cobble-sized substrate
southern torrent salamander	*Rhyacotriton variegatus*	None	None	G3G4	S2S3		CDFW_SSC-Species of Special	Lower montane coniferous	Coastal redwood, Douglas-fir,	Cold, well-shaded, permanent
bank swallow	*Riparia riparia*	None	Threatened	G5	S2		BLM_S-Sensitive | IUCN_LC-	Riparian scrub | Riparian	Colonial nester; nests primarily in	Requires vertical banks/cliffs
maple-leaved checkerbloom	*Sidalcea malachroides*	None	None	G3	S3	4.2		Broadleaved upland forest | Coastal	Broadleafed upland forest, coastal	Woodlands and clearings near coast; often in

Siskiyou checkerbloom	*Sidalcea malviflora ssp. patula*	None	None	G5T2	S2	1B.2		Coastal bluff scrub | Coastal	Coastal bluff scrub, coastal prairie, north	Open coastal forest; roadcuts. 5-
Hitchcock's blue-eyed grass	*Sisyrinchium hitchcockii*	None	None	G2	S1	1B.1		Cismontane woodland | Valley &	Cismontane woodland, valley and	Openings in woodland or in grassland. 305
red-bellied newt	*Taricha rivularis*	None	None	G2	S2		CDFW_SSC-Species of Special	Broadleaved upland forest | North coast	Coastal drainages from	Lives in terrestrial habitats,
American badger	*Taxidea taxus*	None	None	G5	S3		CDFW_SSC-Species of Special	Alkali marsh | Alkali playa | Alpine |	Most abundant in drier open	Needs sufficient food, friable soils and open,
Upland Douglas Fir Forest	*Upland Douglas Fir Forest*	None	None	G4	S3.1			North coast coniferous forest		
Methuselah's beard lichen	*Usnea longissima*	None	None	G4	S4	4.2	BLM_S-Sensitive	Broadleaved upland forest | North coast	North coast coniferous forest,	Grows in the "redwood zone" on tree

Appendix C - CNPS Database Search Results

Appendix C. Mattole Road PM 5.25 Storm Damage Repair – 9-Quad Database Search of CNPS Rare Plant Inventory centered on project quad (Buckeye Mountain) on 2.21.2021. Quads include Capetown, Taylor Peak, Scotia, Petrolia, Buckeye Mtn., Bull Creek, Cooskie Creek, Shubrick Peak, and Honeydew.

Common Name	Scientific Name	FESA	CESA	CRPR	Habitat	Micro Habitat
coastal marsh milk-vetch	*Astragalus pycnostachyus var. pycnostachyus*	None	None	1B.2	Coastal dunes (mesic), Coastal scrub, Marshes and swamps (coastal salt, streamsides)	
leafy reed grass	*Calamagrostis foliosa*	None	CR	4.2	Coastal bluff scrub, North Coast coniferous forest	rocky
Oregon coast paintbrush	*Castilleja litoralis*	None	None	2B.2	Coastal bluff scrub, Coastal dunes, Coastal scrub	sandy
bluff wallflower	*Erysimum concinnum*	None	None	1B.2	Coastal bluff scrub, Coastal dunes, Coastal prairie	
giant fawn lily	*Erythronium oregonum*	None	None	2B.2	Cismontane woodland, Meadows and seeps	sometimes serpentinite, rocky, openings
coast fawn lily	*Erythronium revolutum*	None	None	2B.2	Bogs and fens, Broadleafed upland forest, North Coast coniferous forest	Mesic, streambanks
Pacific gilia	*Gilia capitata ssp. pacifica*	None	None	1B.2	Coastal bluff scrub, Chaparral (openings), Coastal prairie, Valley and foothill grassland	
dark-eyed gilia	*Gilia millefoliata*	None	None	1B.2	Coastal dunes	
short-leaved evax	*Hesperevax sparsiflora var. brevifolia*	None	None	1B.2	Coastal bluff scrub (sandy), Coastal dunes, Coastal prairie	
coast iris	*Iris longipetala*	None	None	4.2	Coastal prairie, Lower montane coniferous forest, Meadows and seeps	mesic
sticky pea	*Lathyrus glandulosus*	None	None	4.3	Cismontane woodland	
beach layia	*Layia carnosa*	FE	CE	1B.1	Coastal dunes, Coastal scrub (sandy)	
redwood lily	*Lilium rubescens*	None	None	4.2	Broadleafed upland forest, Chaparral, Lower montane coniferous forest, North Coast coniferous forest, Upper montane coniferous forest	Sometimes serpentinite, sometimes roadsides
heart-leaved twayblade	*Listera cordata*	None	None	4.2	Bogs and fens, Lower montane coniferous forest, North Coast coniferous forest	

running-pine	*Lycopodium clavatum*	None	None	4.1	Lower montane coniferous forest (mesic), Marshes and swamps, North Coast coniferous forest (mesic)	often edges, openings, and roadsides
leafy-stemmed mitrewort	*Mitellastra caulescens*	None	None	4.2	Broadleafed upland forest, Lower montane coniferous forest, Meadows and seeps, North Coast coniferous forest	mesic, sometimes roadsides
Howell's montia	*Montia howellii*	None	None	2B.2	Meadows and seeps, North Coast coniferous forest, Vernal pools	vernally mesic, sometimes roadsides
Wolf's evening-primrose	*Oenothera wolfii*	None	None	1B.1	Coastal bluff scrub, Coastal dunes, Coastal prairie, Lower montane coniferous forest	sandy, usually mesic
seacoast ragwort	*Packera bolanderi var. bolanderi*	None	None	2B.2	Coastal scrub, North Coast coniferous forest	Sometimes roadsides
white-flowered rein orchid	*Piperia candida*	None	None	1B.2	Broadleafed upland forest, Lower montane coniferous forest, North Coast coniferous forest	sometimes serpentinite
California pinefoot	*Pityopus californicus*	None	None	4.2	Broadleafed upland forest, Lower montane coniferous forest, North Coast coniferous forest, Upper montane coniferous forest	mesic
nodding semaphore grass	*Pleuropogon refractus*	None	None	4.2	Lower montane coniferous forest, Meadows and seeps, North Coast coniferous forest, Riparian forest	Mesic
Oregon polemonium	*Polemonium carneum*	None	None	2B.2	Coastal prairie, Coastal scrub, Lower montane coniferous forest	
hoary gooseberry	*Ribes roezlii var. amictum*	None	None	4.3	Broadleafed upland forest, Cismontane woodland, Lower montane coniferous forest, Upper montane coniferous forest	
maple-leaved checkerbloom	*Sidalcea malachroides*	None	None	4.2	Broadleafed upland forest, Coastal prairie, Coastal scrub, North Coast coniferous forest, Riparian woodland	Often in disturbed areas
Siskiyou checkerbloom	*Sidalcea malviflora ssp. patula*	None	None	1B.2	Coastal bluff scrub, Coastal prairie, North Coast coniferous forest	often roadcuts
Hitchcock's blue-eyed grass	*Sisyrinchium hitchcockii*	None	None	1B.1	Cismontane woodland (openings), Valley and foothill grassland	

trifoliate laceflower	*Tiarella trifoliata var. trifoliata*	None	None	3.2	Lower montane coniferous forest, North Coast coniferous forest	edges, moist shady banks, streambanks
Methuselah's beard lichen	*Usnea longissima*	None	None	4.2	Broadleafed upland forest, North Coast coniferous forest	On tree branches; usually on old growth hardwoods and conifers

Appendix D - NMFS Official Species List

Quad Name **Buckeye Mountain**
Quad Number **40124-C2**

1. **ESA Anadromous Fish**

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

2. **ESA Anadromous Fish Critical Habitat**

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

3. **ESA Marine Invertebrates**

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

4. **ESA Marine Invertebrates Critical Habitat**

Black Abalone Critical Habitat -

5. **ESA Sea Turtles**

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

6. **ESA Whales**

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

7. **ESA Pinnipeds**

Guadalupe Fur Seal (T) -
Steller Sea Lion Critical Habitat -

8. **Essential Fish Habitat**

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

9. **MMPA Species (See list at left)**

10. **ESA and MMPA Cetaceans/Pinnipeds**

See list at left and consult the NMFS Long Beach office 562-980-4000

MMPA Cetaceans -
MMPA Pinnipeds -

Quad Name **Cooskie Creek**
Quad Number **40124-B3**

11. ESA Anadromous Fish

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

12. ESA Anadromous Fish Critical Habitat

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

13. ESA Marine Invertebrates

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

14. ESA Marine Invertebrates Critical Habitat

Black Abalone Critical Habitat -

15. ESA Sea Turtles

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

16. ESA Whales

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

17. ESA Pinnipeds

Guadalupe Fur Seal (T) - **X**
Steller Sea Lion Critical Habitat -

18. Essential Fish Habitat

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

19. MMPA Species (See list at left)

20. ESA and MMPA Cetaceans/Pinnipeds

See list at left and consult the NMFS Long Beach office 562-980-4000

MMPA Cetaceans - **X**
MMPA Pinnipeds - **X**

Quad Name **Shubrick Peak**
Quad Number **40124-B2**

21. ESA Anadromous Fish

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

22. ESA Anadromous Fish Critical Habitat

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

23. ESA Marine Invertebrates

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

24. ESA Marine Invertebrates Critical Habitat

Black Abalone Critical Habitat -

25. ESA Sea Turtles

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

26. ESA Whales

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

27. ESA Pinnipeds

Guadalupe Fur Seal (T) - X
Steller Sea Lion Critical Habitat -

28. Essential Fish Habitat

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

29. MMPA Species (See list at left)
30. ESA and MMPA Cetaceans/Pinnipeds

See list at left and consult the NMFS Long Beach office 562-980-4000

MMPA Cetaceans - X
MMPA Pinnipeds - X

Quad Name **Honeydew**
Quad Number **40124-B1**

31. ESA Anadromous Fish

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

32. ESA Anadromous Fish Critical Habitat

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

33. ESA Marine Invertebrates

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

34. ESA Marine Invertebrates Critical Habitat

Black Abalone Critical Habitat -

35. ESA Sea Turtles

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

36. ESA Whales

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

37. ESA Pinnipeds

Guadalupe Fur Seal (T) -
Steller Sea Lion Critical Habitat -

38. Essential Fish Habitat

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

39. MMPA Species (See list at left)

40. ESA and MMPA Cetaceans/Pinnipeds

See list at left and consult the NMFS Long Beach office
562-980-4000

MMPA Cetaceans -
MMPA Pinnipeds -

Quad Name **Petrolia**
Quad Number **40124-C3**

41. ESA Anadromous Fish

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

42. ESA Anadromous Fish Critical Habitat

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

43. ESA Marine Invertebrates

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

44. ESA Marine Invertebrates Critical Habitat

Black Abalone Critical Habitat -

45. ESA Sea Turtles

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

46. ESA Whales

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

47. ESA Pinnipeds

Guadalupe Fur Seal (T) -
Steller Sea Lion Critical Habitat -

48. Essential Fish Habitat

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

49. MMPA Species (See list at left)

50. ESA and MMPA Cetaceans/Pinnipeds

See list at left and consult the NMFS Long Beach office 562-980-4000

MMPA Cetaceans - X
MMPA Pinnipeds - X

Quad Name **Bull Creek**
Quad Number **40124-C1**

51. ESA Anadromous Fish

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

52. ESA Anadromous Fish Critical Habitat

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

53. ESA Marine Invertebrates

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

54. ESA Marine Invertebrates Critical Habitat

Black Abalone Critical Habitat -

55. ESA Sea Turtles

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

56. ESA Whales

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

57. ESA Pinnipeds

Guadalupe Fur Seal (T) -
Steller Sea Lion Critical Habitat -

58. Essential Fish Habitat

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

59. MMPA Species (See list at left)

60. ESA and MMPA Cetaceans/Pinnipeds

See list at left and consult the NMFS Long Beach office
562-980-4000

MMPA Cetaceans -
MMPA Pinnipeds -

Quad Name **Capetown**
Quad Number **40124-D3**

61. ESA Anadromous Fish

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

62. ESA Anadromous Fish Critical Habitat

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

63. ESA Marine Invertebrates

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

64. ESA Marine Invertebrates Critical Habitat

Black Abalone Critical Habitat -

65. ESA Sea Turtles

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

66. ESA Whales

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

67. ESA Pinnipeds

Guadalupe Fur Seal (T) -
Steller Sea Lion Critical Habitat -

68. Essential Fish Habitat

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

69. MMPA Species (See list at left)

70. ESA and MMPA Cetaceans/Pinnipeds

See list at left and consult the NMFS Long Beach office 562-980-4000

MMPA Cetaceans - X
MMPA Pinnipeds - X

Quad Name **Taylor Peak**
Quad Number **40124-D2**

71. ESA Anadromous Fish

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

72. ESA Anadromous Fish Critical Habitat

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

73. ESA Marine Invertebrates

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

74. ESA Marine Invertebrates Critical Habitat

Black Abalone Critical Habitat -

75. ESA Sea Turtles

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

76. ESA Whales

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

77. ESA Pinnipeds

Guadalupe Fur Seal (T) -
Steller Sea Lion Critical Habitat -

78. Essential Fish Habitat

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

79. MMPA Species (See list at left)

80. ESA and MMPA Cetaceans/Pinnipeds

See list at left and consult the NMFS Long Beach office
562-980-4000

MMPA Cetaceans -
MMPA Pinnipeds -

Quad Name **Scotia**
Quad Number **40124-D1**

81. **ESA Anadromous Fish**

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

82. **ESA Anadromous Fish Critical Habitat**

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

83. **ESA Marine Invertebrates**

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

84. **ESA Marine Invertebrates Critical Habitat**

Black Abalone Critical Habitat -

85. **ESA Sea Turtles**

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

86. **ESA Whales**

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

87. **ESA Pinnipeds**

Guadalupe Fur Seal (T) -
Steller Sea Lion Critical Habitat -

88. **Essential Fish Habitat**

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

89. **MMPA Species (See list at left)**

90. **ESA and MMPA Cetaceans/Pinnipeds**

See list at left and consult the NMFS Long Beach office 562-980-4000

MMPA Cetaceans -
MMPA Pinnipeds -

Appendix E - USFWS IPAC Official Species List

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Arcata Fish And Wildlife Office
1655 Heindon Road
Arcata, CA 95521-4573
Phone: (707) 822-7201 Fax: (707) 822-8411

In Reply Refer To: January 15, 2021
Consultation Code: 08EACT00-2021-SLI-0114
Event Code: 08EACT00-2021-E-00250
Project Name: Mattole Road PM 5.25 Storm Damage Repair

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

To Whom It May Concern:

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

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

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

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

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

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

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

Attachment(s):

- Official Species List

Official Species List

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

This species list is provided by:

Arcata Fish And Wildlife Office
1655 Heindon Road
Arcata, CA 95521-4573
(707) 822-7201

Project Summary

Consultation Code: 08EACT00-2021-SLI-0114
Event Code: 08EACT00-2021-E-00250
Project Name: Mattole Road PM 5.25 Storm Damage Repair
Project Type: TRANSPORTATION
Project Description: Storm damage repair along Mattole Road at PM 5.25
Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@40.31374015,-124.18720936803291,14z

Counties: Humboldt County, California

Endangered Species Act Species

There is a total of 10 threatened, endangered, or candidate species on this species list.

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

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

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

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

Birds

NAME	STATUS
Marbled Murrelet *Brachyramphus marmoratus* Population: U.S.A. (CA, OR, WA) There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4467	Threatened
Northern Spotted Owl *Strix occidentalis caurina* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1123	Threatened
Short-tailed Albatross *Phoebastria (=Diomedea) albatrus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/433	Endangered
Western Snowy Plover *Charadrius nivosus nivosus* Population: Pacific Coast population DPS-U.S.A. (CA, OR, WA), Mexico (within 50 miles of Pacific coast) There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/8035	Threatened
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **proposed** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

Reptiles

NAME	STATUS
Green Sea Turtle *Chelonia mydas* Population: East Pacific DPS No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6199	Threatened

Fishes

NAME	STATUS
Tidewater Goby *Eucyclogobius newberryi* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/57	Endangered

Flowering Plants

NAME	STATUS
Beach Layia *Layia carnosa* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6728	Endangered
Menzies' Wallflower *Erysimum menziesii* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2935	Endangered
Western Lily *Lilium occidentale* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/998	Endangered

Critical habitats

There are 2 critical habitats wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
Marbled Murrelet *Brachyramphus marmoratus* https://ecos.fws.gov/ecp/species/4467#crithab	Final
Northern Spotted Owl *Strix occidentalis caurina* https://ecos.fws.gov/ecp/species/1123#crithab	Final

Appendix F - Site Visit Photographs

Photo 1 - Adjacent storm damage site at edge of project staging area on Mattole Road

Photo 2 - View of staging area along Mattole Road

Site Photographs

Photo 3 - View of staging area along Mattole Road

Photo 4 - View of Mattole Road

Photo 5 - View of Mattole Road

Photo 6 - View of Mattole Road overlooking Mattole River

Site Photographs

Photo 7 - View overlooking slope

Photo 8 - View of eroding slope at edge of Mattole River

Site Photographs

Photo 9 - View of eroding slope at edge of Mattole River

Photo 10 - View of eroding slope at edge of Mattole River

Site Photographs

Photo 11 - View of Mattole River

Photo 12 - View of slope from Mattole River

Photo 13 - View of toe of slope from Mattole River

Photo 14 - View of ponded water within API at edge of Mattole River during April 28, 2021 site visit

Site Photographs

Photo 15 - View of Foothill Yellow-legged Frog (*Rana boylii*) within the API during the April 28, 2021 site visit

Photo 16 - View of Rough-skinned Newt breeding male (*Taricha granulosa*, a common species with no special status) within the API during the April 28, 2021 site visit

Appendix G - Aquatic Resources Delineation Report

Humboldt County Department of Public Works

Mattole Road PM 5.25 Storm Damage Repair Project

Aquatic Resources Delination Report

June 2021

Table of Contents

Tables

Appendices

1. Introduction

GHD prepared this aquatic resources delineation report and accompanying appendices on behalf of the Humboldt County Department of Public Works (County), in support of the proposed Mattole Road PM 5.25 Storm Damage Repair Project (Project) near the unicorporated community of Honeydew, Humboldt County, CA (**Appendix A, Figure 1**). The Project is located outside of the Coastal Zone, and is therefore not subject to policies of the Coastal Act or Local Coastal Plan. This report supports the Project's environmental documentation, permitting, and construction planning as deemed appropriate. The proposed Project Area (denoted as **Area of Potential Impact** in **Appendix A, Figure 2**) includes the area around access routes, staging areas, the restored roadway, improved slope and roadway drainage, and slope toe armoring along the Mattole River (**Appendix A, Figure 3**). This report is subject to, and must be read in conjunction with, the limitations set out in Section 5, Special Terms and Conditions, and the assumptions and qualifications contained throughout the report.

1.1 Project Description

The Project proposes to stabilize an existing landslide (hillslope failure) to the greatest extent possible, restore the roadway, improve roadway drainage, reduce erosion potential along the toe of the slide adjacent to the Mattole River, and increase roadway safety and local access. The Project includes lateral sub-drains with subsurface drainage, culvert replacement, and a restored roadway to improve drainage and stabilize the existing landslide. The Project also includes armoring including the installation of rock slope protection (RSP), soil, and live willow plantings at the toe of the landslide, along the bank of the Mattole River. Dewatering and fish relocation is anticipated to be necessary.

1.2 Summary

GHD conducted the aquatic resources delineation fieldwork on April 28th and May 12th, 2021. The delineation was conducted within the Project Area, as shown in **Appendix A Figure 2**. United States Army Corps of Engineers (USACE) three-parameter wetlands, and Other Waters of the United States (Other Waters) were mapped based on wetland indicative vegetation, hydric soils, and wetland hydrology and observation of the high water mark(**Appendix A Figure 4**). No one-parameter wetlands were mapped because the Project is located outside of the Coastal Zone.

The aquatic resources delineation resulted in ten USACE-jurisdictional aquatic resources including five Other Waters, and five three-parameter wetlands. Four three-parameter wetlands and three ephemeral drainages were observed west of Mattole Road. One ephemeral drainage, one three-parameter wetland, and a seasonal side channel of the Mattole River were observed east of Mattole Road. All delinated aquatic resources are intermittently hydrologically connected the Mattole River.

The total area of three-parameter wetlands within the Project Area is 3,788 ft^2 (0.086 acres). Other Waters delinated at the Ordinary High Water Mark (OHWM) occupies 11,064 ft^2 (0.254 acres) of the Project Area (**Appendix A Figure 4**). The total area of all delineated aquatic resources are 14,851 ft^2 (0.340 acres) within the Project Area.

1.3 Regulatory Background

1.3.1 Federal

Waters of the United States

The Code of Federal Regulations (CFR), 40 CFR § 230.3 states the following:

The term waters of the United States means:

(1) All 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;
(2) All interstate waters including interstate wetlands;
(3) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:
(i) Which are or could be used by interstate or foreign travelers for recreational or other purposes; or
(ii) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
(iii) Which are used or could be used for industrial purposes by industries in interstate commerce;
(4) All impoundments of waters otherwise defined as waters of the United States under this definition;
(5) Tributaries of waters identified in paragraphs (s)(1) through (4) of this section;
(6) The territorial sea;
(7) Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (s)(1) through (6) of this section; waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 CFR 423.11(m) which also meet the criteria of this definition) are not waters of the United States. (40 CFR § 230.3).

Wetlands Definition

40 CFR § 230.3 continues and defines, "(t) 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" (40 CFR § 230.3).

Wetlands Delineation Manual

The 1987 U.S. Army Corps of Engineers (USACE) Weltand Delineation Manual provides guidelines and methods to determine whether an area is a wetland subject to federal regulation under Section 404 of the Clean Water Act. The manual specifies that wetland hydrology, soil, and vegetation indicators must be present to identify a wetland (USACE 1987, p. 10). In addition, the Wetlands Delineation Manual states, "If hydrophytic vegetation is being maintained only because of man-induced wetland hydrology that would no longer exist if the activity (e.g., irrigation) were to be terminated, the area should not be considered a wetland," (USACE 1987).

Federal Geographic Data Committee (FGDC) Wetland Classification Standard

The Classification of Wetlands and Deepwater Habitats of the United States (FGDC 2013), based on Cowardin et al. (1979), states that wetlands must have at least one of the three wetland attributes: predominantly hydrophytic vegetation, predominantly hydric soil, and hydrology. However, they state that all available information should be used, and all three attributes should be considered if they are present (FGDC 2013).

1.3.2 State

The State Water Resources Control Board's (SWRCB) April 2019 *Procedures for Discharges of Dredged or Fill Material to Waters of the State* says the following:

> *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 Water Code defines "waters of the state" broadly to include "any surface water or groundwater, including saline waters, within the boundaries of the state." "Waters of the state" includes all "waters of the U.S." The following wetlands are waters of the state:*
>
> *1. Natural wetlands,*
> *2. Wetlands created by modification of a surface water of the state, and*
> *3. Artificial wetlands that meet any of the following criteria:*
> *a. Approved by an agency as compensatory mitigation for impacts to other waters of the state, 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 one 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 waters of the state unless they also satisfy the criteria set forth in 2, 3a, or 3b):*
> *i. Industrial or municipal wastewater treatment or disposal,*
> *ii. Settling of sediment,*
> *iii. 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,*
> *iv. Treatment of surface waters,*
> *v. Agricultural crop irrigation or stock watering,*
> *vi. Fire suppression,*
> *vii. Industrial processing or cooling,*
> *viii. Active surface mining – even if the site is managed for interim wetlands functions and values,*
> *ix. Log storage,*
> *x. Treatment, storage, or distribution of recycled water, or*
> *xi. Maximizing groundwater recharge (this does not include wetlands that have incidental groundwater recharge benefits); or*
> *xii. 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 waters of the state. 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" (SWRCB 2019).

The February 2020 *Draft Guidance State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State* further clarifies as follows:

Human activity can cause changes to the surrounding landscape (e.g., grading activities, road construction, direct hydromodification) such that wetlands form where wetlands did not previously exist. Where such artificial wetlands are now a relatively permanent part of the natural landscape, and are not subject to ongoing operation and maintenance, they are waters of the state. By requiring that the wetlands are relatively permanent, the framework excludes wetlands that are temporary or transitory. That they are part of the natural landscape also indicates the relative permanence of the wetlands and suggests that the wetland is self-sustaining without ongoing operation and maintenance activities, and provides similar ecosystem services as natural wetlands. By way of example, this category of wetlands includes situations where water flow is permanently redirected as the result of human activity, such as grading in another area, such that new wetlands form in areas that were previously dry. These wetlands may not be natural wetlands because they result from human activity and they were not formed by modifying a water of the state (rather they were an indirect result), but nevertheless they take on the function of natural wetlands such that they should be considered waters of the state. This category would not include artificial wetlands constructed for specific purposes listed in section II.3.d because the construction of the artificial wetlands would be too recent to be deemed "historic" and the artificial wetland would likely require ongoing maintenance such that they would not be deemed "relatively permanent," and/or the artificial wetland is not part of the "natural landscape" (SWRCB 2020).

2. Methodology

2.1 Wetland Delineation Approach

GHD botanist and a GHD soil scientist conducted the wetland delineation on April 28th and May 12th, 2021. To define a wetland, the USACE requires that vegetation, soil, and hydrology (three-parameters) all show wetland attributes (USACE 1987; USACE 2010). The wetland delineation used USACE criteria from the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys and Coast Region* (USACE 2010). The current standard field forms provided by the USACE (2010) were used to collect vegetation, soils, and hydrology data (**Appendix B)**.

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

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

Each three-parameter wetland area was designated with a number (e.g., W1). The wetland points were also labeled with their respective wetland number. In addition to the wetland sampling points, two upland sampling points were described. These were labeled beginning with a "U" and numbered in sequence (e.g., U1, U2). The upland sampling points were completed to confirm and document the absence of any wetland indicators (soils, hydrology, and vegetation). **Appendix B** contains all datasheets recorded during the delineation.

2.2 Botanical methodology

Vegetation data collection consisted of listing the dominant species in the herbaceous, shrub, and tree layer within a standard-sized plot determined by the strata layer. Nomenclature follows *The Jepson Manual* (Baldwin et al. 2012), which was cross-walked to federal standard nomenclature to identify the indicator status. The species' wetland indicator status for the Western Mountains, Valleys, and Coast Region was denoted in the respective column, using the standard reference: *State of California 2016 Wetland Plant List* (Lichvar et al. 2016). This list classifies species based on the probability that they are found in wetlands (USACE 1987) as follows:

- Obligate (OBL): almost always in wetlands (99% probability)
- Facultative Wetland (FACW): usually occurring in wetlands (67% to 99% probability)
- Facultative (FAC): commonly occurring in wetlands and uplands (34% to 66% probability of occurring in wetlands)
- Facultative Upland (FACU): usually occurring in uplands (1% to 33% probability of occurring in wetlands)
- Upland (UPL): upland obligate, rarely in wetlands (1% in wetlands)

Species that do not appear on the list are considered to be in the upland category (Lichvar et al. 2016). Standard procedures for documenting hydrophytic vegetation indicators were used per the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)* (USACE 2010). A complete list of plants documented at the site with respective wetland indicator status is included as **Appendix C**. Site photographs have been included as **Appendix D.**

2.3 Soils Methodology

Hydric soils were defined based on the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0) (*USACE 2010) procedures in combination with the Natural Resources Conservation Service's (NRCS) definitions presented in *Field Indicators of Hydric Soils in the United States* (Version 8.2) (USDA/NRCS 2018). Soil pits were dug to an approximate depth of 13 ito 15 nches. Data on soil color, texture, and redoximorphic features were recorded. Any observed redoximorphic features (iron concentrations) were noted along with their percentage within the soil matrix, and care was taken to distinguish chromas of 1 and 2 indicative of an iron-depleted soil within 12 inches of the soil surface (USACE 2010; USDA/NRCS 2016).

The *Munsell Soil Color Book* (COLOR, M. 2000) was used to describe the soil colors for the entire depth of the test pit. Moist, natural soil aggregate (ped) surfaces, which had not been crushed, were used to determine the soil's color. Soils with low chroma were verified as being hydric or upland with *Field Indicators of Hydric Soils in the United States* (Version 8.2, 2018).

2.3.1 Existing Soils Information

The U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) identifies four soil units within the Project Area (**Figure 5** and NRCS report in **Appendix E**). A brief map unit description, as generated by the NRCS, is provided for each soil unit below (NRCS 2020). Although NRCS soil mapping is informative, the scale is generally too broad to definitively characterize potential wetlands. Please see the full report included as **Appendix E** for complete details.

Water and Fluvents, 0 to 2% slopes

The Water and Fluvents map unit composition is as follows: 60% water, 35% Fluvants and similar soils, 5% minor components. Fluvent soils can be found on rivers and channels and the parent material is alluvium derived from mixed rock. Fluvent soils consist of gravelley fine sandy loam in the upper horizon (to approximately 13 inches), and extremely gravelly sandy loam in the lower horizon (to approximately 59 inches). Fluvents are characterized by repeated deposition of sediment in periodic floods. Fluvent soils are considered hydric soils. They are somewhat excessively drained, and depth to water table is zero inches.

Crazycoyote-Sproulish-Caperidge complex, 15 to 50% slopes

This soil map unit composition is as follows: 32% Crazycoyote and similar soils; 28% Sproulish and similar soils; 25% Caperidge and similar soils; 15% minor components. Crazycoyote, Sproulish, and Caperidge complex soils can be found on ridges, shoulders, summits, mountaintops, and the parent materials are colluvium and residuum derived from sandstone and mudstone. Crazycoyote soil contain a shallow layer of organic material, followed by loam to approximately 39 inches, and is underlain by very gravelly loam to an approximate depth of 63 inches. Sproulish soil contain a shallow layer of organic material (approximately 2 inches), followed by an upper horizon of loam (to approximately 11 inches), and underlain by horizons with paragravelly loam, paragravelly clay loam or very paragravelly loam (to a depth of approximately 71 inches). Caperidge soil contains a shallow organic material upper horizon (to approximately 2 inches), followed by horizons characterized as very gravelly loam (to approximately 47 inches) underlain by extremely gravelly sandy loam or very gravelly sandy loam (to approximately 79 inches). The Crazycoyote-Sproulish-Caperidge complex does not contain hydric soils. The soils within this complex are considered well drained, and the depth to water table is more than 80 inches. This soils complex is not considered prime farmland, and each soil contains a Land Capability Classification (LCC) of 6e, indicating it is not well suited for cultivation.

Yorknorth-Windynip complex, 15 to 50% slopes

This soil map unit composition is as follows: 70% Yorknorth, moist, and similar soils; 15% Windynip and similar soils; and 15% minor components. Yorknorth and Windynip soils occur on mountain slopes, particularly on the backslope. Yorknorth originates from colluvium derived from sandstone and/or earthflow deposits derived from schist, and Windynip from colluvium and residuum derived from sandstone and mudstone. Typical Yorknorth horizons include an upper horizon of silt loam (to approximately 10 inches), followed by silty clay loam (to approximately 51 inches), and underlain by clay loam (to approximately 71 inches). Windynip typically contains two upper horizons of loam (to approximately 20 inches), followed by gravelly clay loam horizons (to approximately 43 inches), underlain by paragravelly clay loam (to approximately 79 inches). In general, Yorknorth is primarily comprised of silty clay loam, and Windnip comprised of loam and gravelly clay loam. The Yorknorth-Windynip complex does not contain hydric soils, and soils within this complex are either moderate or well drained, and typical depth to water table is more than 80 inches. This soils complex is not considered prime farmland, and each soil contains an LCC of 6e indicating it is not well suited for cultivation.

Crazycoyote-Sproulish-Canoecreek complex, 30 to 50% slopes

This soil map unit composition is as follows: 35% Crazycoyote and similar soils, 30% Sproulish and similar soils, 20% Canoecreek and siliar soils, and 15% minor components. Crazycoyote, Sproulish, and Canoecreek soils can be found on mountain slopes, backslopes, and mountain flanks, and the parent materials are colluvium and residuum derived from sandstone and/or mudstone. The typical Crazycoyote soil profile within this complex includes a shallow gravelly organic material horizon (to approximately 2 inches), followed by horizons of gravelly loam (to approximately 25 inches), very paragravelly loam (to approximately 52 inches), underlain by paragravelly sandy loam (to approximately 79 inches). The typical Sproulish soil profile within this complex includes a shallow organic material horizon (to approximately 2 inches), followed by loam horizons (to approximately 24 inches), underlain by either gravelly or very gravelly clay loam (to approximately 79 inches).The Crazycoyote-Sproulish-Canoecreek complex does not contain hydric soils, and soils within the complex are all well drained, and the depth to water table is typically greater than 80 inches. This soils complex is not considered prime farmland, and each soil contains an LCC of 6e indicating it is not well suited for cultivation.

2.4 Hydrology Methodology

The delineation was conducted near the beginning of the dry season (late April and May). A WETS table showing climate data for the Scotia, CA, Station is provided in **Appendix F**. Aerial photography and the National Wetland Inventory Mapper were referenced before conducting fieldwork (**Appendix A Figure 6**) (NWI 2020). The flood hazard map is also included in **Appendix A Figure 7**. Wetland hydrology indicators, such as drainage patterns, material deposits, soil saturation, high water table, or surface water presence, were recorded in the field. The Project Area is hydrologically connected to the Mattole River watershed via multiple seasonal ditches that run along the road and seasonal drainages that run down the hillside.

3. Results

GHD performed the delineation on April 28th and May 12th, 2021. Weather conditions were clear and sunny and the survey took place during fairly dry conditions (0.66 inches of precipitation recorded within the last two weeks of the April 28th visit). The Project Area contains five three-parameter wetlands, and five Other Waters determined by the OHWM. Upland sampling points were also described within areas of planned disturbance to confirm and document the absence of wetland indicators in these areas**. Appendix A Figure 4** shows the results of the three-parameter wetland delineation, and Other Waters within the Project Area. All of the delineated aquatic resources are intermittently hydrologically connected to the Mattole River, a navigable waterway, and are therefore defined as and are likely both USACE-jurisdictional and Regional Water Quality Control Board (RWQCB) jurisdictional aquatic resources. Location and area of each aquatic resource is provided below in **Table 3.1**.

Table 3-1. Delineated Aquatic Resources within the Project Area

Aquatic Resource Name	Location (lat/long)	Aquatic Resource Size
W1 (W1T1)	(40.256817, -124.192131)	195 ft^2
W2 (W2T1)	(40.255735, -124.190972)	1,304 ft^2
W3 (W3T1)	(40.254772, -124.190362)	186 ft^2
W4 (W4T1)	(40.253865, -124.189638)	681 ft^2
W5 (W5T1)	(40.255581, -124.189737)	1,421 ft^2
Ditch 1	(40.256697, -124.191906)	535 ft^2
Ditch 2	(40.254774, -124.190312)	927 ft^2
Watercourse 1	(40.255825, -124.189957)	275 ft^2
Watercourse 2	(40.254937, -124.190531)	185 ft^2
Mattole River Seasonal Side Channel	(40.255543, -124.189652)	9,142 ft^2
Total Aquatic Resources in Project Area		**14,851 ft^2 (0.340 acres)**

3.1 Three-Parameter Wetlands

Three-parameter wetlands occur directly adjacent to and along the west side of Mattole Road and adjacent to the Mattole River at the slope toe of the existing landslide. A summary of each three-parameter wetland is provided below. Please see the USACE Data Forms in **Appendix B** for more details.

3.1.1 Wetland 1 (W1)

Wetland 1 was identified west of Mattole Road in the northwest corner of the Project Area and occupies 195 ft^2. The area is free of rooted woody vegetation, and is classified according to the Cowardin system as a Palustrine Emergent wetland with persistent vegetation (PEM1) (FGDC 2013). Wetland 1 consists of saturated soil with hydrophytic vegetation along a natural ephemeral channel that originates west of the Project Area and is hydrologically connected to Ditch 1 (Ditch 1 was delinated using OHWM, **Figure 4**). Wetland 1 dominant vegetation consisted of iris leaved rush (*Juncus xiphoides*, OBL) and northern giant horsetail (*Equisetum telmateia*, FACW). Soils met the criteria for hydric soil indicator Redox Dark Surface (F6). The soil horizon consisted of a top horizon (0-3”) of very gravelly loam with a matrix color of 10YR 3/2, a middle horizon (3-10”) of very gravelly loam and mixed organic matter with a matrix color of 10YR 3/2 and 15% redox features with a color of 7.5YR 4/6, and a bottom horizon (10-14”) of very gravelly loam with a matrix color of 10YR 3/1 and 20% redox features with a color of 5YR 4/6. Indicators of wetland hydrology at the site included drainage patterns. Wetland 1 is hydrologically connected to the Mattole River via Ditch 1 and is therefore considered USACE and RWQCB-jursidictional. Please see attached data form for sample point W1T1-W in **Appendix B** for additional details.

3.1.2 Wetland 2 (W2)

Wetland 2 was observed along the western side of Mattole Road and occupies 1,304 ft^2 of the Project Area. It can be considered a vegetated wetland ditch. Wetland 2 is free of rooted woody rather contains herbaceous vegetation and is classified according to the Cowardin system as a Palustrine Emergent wetland with persistent vegetation (PEM1) (FGDC 2013). Wetland 2 dominant vegatation consistsed of California gray rush (*Juncus patens*, FACW), oregon ash (*Fraxinus latifolia*, FACW), poision oak (*Toxicodendron diversilobum*, FAC), birdsfoot trefoil (*Lotus corniculatus*, FAC), and colonial bentgrass (*Agrostis capilaris*, FAC). Soil in Wetland 2 emitted a Hydrogen Sulfide odor and consisted of saturated soil with hydrophytic vegetation, and therefore met the criteria for the hydric soil indicator Hydrogen Sulfide (A4). Soil consisted of a top layer of muck with a matrix color of 10YR 2/2 on top of compacted gravel. Wetland hydrology indicators included surface water, presence of the water table (in certain areas), soil saturation, algal mat, drainage patterns, and geomorphic position. Wetland 2 is hydrologically connected to a culvert that runs underneath Mattole Road and drains directly into Watercourse 1 (**Figure 4**) which was delinated using OHWM and drains directly to the Mattole River. Therefore, Wetland 2 is considered USACE and RWQCB-jursidictional. Please see attached data form for sample point W2T1-W and W2T2-W in **Appendix B** for additional details.

3.1.3 Wetland 3 (W3)

Wetland 3 was observed west side of Mattole Road, at the slope toe of the existing hillslope failure located above the road, and occupies 186 ft^2 of the Project Area. Wetland 3 is free of rooted trees, rather contains herbaceous vegetation and is classified according to the Cowardin system as a Palustrine Emergent wetland with persistent vegetation (PEM1) (FGDC 2013). Wetland 3 dominant vegtation consistsed of California gray rush (*Juncus patens*, FACW), poision oak (FAC), and colonial bentgrass (FAC). Soils met the criteria for hydric soil indicator Redox Dark Surface (F6). The entire soil profile (0-12”) consisted of gravelly clay loam with a matrix color of 10YR 3/2 and 15% redoximorphic features with a color of 5YR 4/6. Wetland hydrology was indicated by the presence of saturated soil and a visible drainage pattern. Wetland 3 is hydrologically connected to Ditch 2 (**Figure 4**) which eventually flows into the Mattole River, and is therefore USACE and RWQCB-jurisdictional. Please see attached data form for sample point W3T1-W in **Appendix B** for additional details.

3.1.4 Wetland 4 (W4)

Wetland 4 was identified along the western side of Mattole Road and it occupies 680 ft^2 of the Project Area. It can be described as a vegetated wetland ditch. Wetland 4 is free of rooted woody vegetation, rather it contains herbaceous vegetation, and is classified according to the Cowardin system as a Palustrine Emergent wetland with persistent vegetation (PEM1) (FGDC 2013). Wetland 4 dominant vegtation consistsed of California gray rush (FACW) and creeping bentgrass (*Agrostis stolonifera*, FAC). Soils met the criteria for hydric soil indicator Redox Dark Surface (F6). Soil contained an upper horizon (0-5”) of silt loam with a matrix color of 10YR 4/2 and 25% redoximorphic features with a color of 7.5YR 4/6. The lower horizon (5-13”) was characterized as a sandy loam, with a matrix color of 10YR 3/2 and 15% redoximorphic features with a color of 7.5YR 4/6. Wetland hydrology secondary indicators include geomorphic position and hydrophytic vegetation. Wetland 4 is hydrologically connected to the Mattole River via Ditch 2 to the north and via a drainage to the south located outside of the Project Area boundary, and is therefore USACE and RWQCB-jurisdictional. Please see attached data form for sample point W4T1-W in **Appendix B** for additional details.

3.1.5 Wetland 5 (W5)

Wetland 5 was identified east of Mattole Road, near the slope toe located at the bottom of hillslope failure, directly above the Mattole River (**Figure 4)**. Wetland 5 occupies 1,367 ft^2 of the Project Area. This area contains rooted woody vegetation less than approximately 20 feet in height, and is classified according to the Cowardin system as a Palustrine Scrub-Shrub wetland with broad-leaved deciduous vegetation (PSS1) (FGDC 2013). Wetland 5 dominant vegetation consisted of Arroyo willow (*Salix lasiolepis*, FACW), and tall fescue grass (*Festuca arundinacea*, FAC). Wetland 5 qualifies as a wetland under hydric soil indicator Redox Dark Surface (F6). The entire soil profile (0-13”) is comprised of of clay loam with a matrix color of 2.5YR 3/2 and 5% redoximorphic features with a color of 10YR 5/6. Wetland 5 contained surface water, saturated soil and hydrophytic vegetation as wetland hydrology indicators. Wetland 5 is immediately adjacent to and hydrologically connected to the Mattole Seasonal Side Channel (delinated using OHWM), and is therefore considered USACE and RWQCB-judrisdictional. Please see attached data form for sample point W5T1-W in **Appendix B** for additional details.

3.2 Other Waters of the U.S.

Other Waters occur along the west side of Mattole Road and along the western bank of the Mattole River below the existing hillslope failure. A summary of each Other Waters is provided below.

3.2.1 Ditch 1

Ditch 1 is located in the northern most corner of the Project Area, along the western side of Mattole Road and occupies 535 ft^2 of the Project Area. Ditch 1 was mapped using OHWM indicators in the field. Ditch 1 is an unvegetated ephemeral ditch and is classified according to the Cowardin system as Palustrine Unconsolidated Bottom with Cobble Gravel (PUB1) (FGDC 2013). Ditch 1 is hydrologically connected to the Mattole River via a natural drainage that runs through Wetland 1 and connects north of the Project Area, underneath Mattole Road to the Mattole River, and is therefore a USACE and RWQCB-jurisdictional aquatic resource.

3.2.2 Ditch 2

Ditch 2 is located along the western side of Mattole Road, at the slope toe directly underneath the upper portion of the existing hillside failure, and occupies 927 ft^2 of the Project Area. Ditch 2 was mapped using OHWM indicators in the field. Ditch 2 is an unvegetated ephemeral ditch and is classified according to the Cowardin system as Palustrine Unconsolidated Bottom with cobble-gravel substrate (PUB1). Ditch 2 is hydrologically connected to Wetland 2 which flows into the Mattole River via culvert underneath Mattole Road, and is therefore a USACE and RWQCB-jurisdictional aquatic resource.

3.2.3 Watercourse 1

Watercourse 1 is located below the existing Mattole Road culvert outlet along the bank of the Mattole River within the Project Area. The channel comprising Watercourse 1 was delinated using OHWM, based on slope-break and vegetation indicators to mark the extent of waters. A total of 275 ft^2 of ephemeral waters comprise Watercourse 1, which may be classified according to the Cowardin system as Riverine Intermittent Unconsolidated Bottom with cobble-gravel substrate (R4SB3). Watercourse 1 drains directly to the Mattole River during precipitation events, and is therefore hydrologically connected and a USACE and RWQCB-jursidictional aquatic resource.

3.2.4 Watercourse 2

Watercourse 2 is located west of Mattole Road, along a natural vegetated ephemeral drainage channel within the existing hillside failure (located above Mattole Road). This ephemeral drainage was delinated using OHWM, based on slope-break and vegetation indicators to mark the extent of waters, and occupies 185 ft^2 of the Project Area. Watercourse 2 is classified according to the Cowardin system as Palustrine Unconsolidated Bottom with cobble-gravel substrate (PUB1). Watercourse 2 drains into Ditch 2, which is hydrologically connected to the Mattole River. Therefore Watercourse 2 is a USACE and RWQCB-jursidictional aquatic resource.

3.2.5 Mattole River Seasonal Side Channel

The Mattole River Seasonal Side Channel is a component of the Mattole River and occupies 9,142 ft^2 of the Project Area. It is located at the slope toe along the lower portion of the hillside failure, east of Mattole Road. A gravel bar was observed above the OHWM east of the Seasonal Side Channel, which separates it from the Mattole River. The Mattole Seasonal Side Channel was delinated using OHWM based on slope-break, a change in sediment, and vegetation indicators to mark the extent of waters. The Mattole Seasonal Side Channel is classified according to the Cowardin system as Riverine Upper Perennial Streambed dominated by cobble-gravel substrate (R3SB3). The Mattole Seasonal Side Channel is hydrologically connected to the Mattole River during high flow events, and is therefore a USACE and RWQCB-jursidictional aquatic resource. Please see attached datasheet OHWM1 in **Appendix B**.

3.3 Uplands Sampling Points

A stand-alone upland sampling point was collected to characterize areas that are likely to be affected by the Project. No wetlands were detected within the areas characterized by the following upland point (**Table 3.2**). A series of upland points were also taken in tandem with each wetland point to determine the wetland boundary (see Section 2.1 – Methodology).

Table 3-2. Upland Sampling Point Locations

Sampling Point Name	Location (lat/long)
Upland 1 (Up1)	(40.254753, -124.190597)

3.3.1 Upland 1

The Upland 1 sample point was located in the middle of the upper hillslope failure, west of Mattole Road. This location is fairly steep at 25% slope and contained hydrophytic vegetation including: Pacific blackberry (*Rubus ursinus*, FACU), California gray rush (FACW), and colonial bentgrass (FAC). Soils did not exhibit hydric soil characteristics, and included a gravelly loam with a matrix color of 10YR 3/2 (0-7”) and 10YR 3/1 (7-14”). No indications of wetland hydrology was observed at Upland 1. Please see attached data form for sample point UP1 in **Appendix B** for additional details.

4. Conclusions

The aquatic resources delineation for the Mattole Road PM 5.25 Storm Damage Repair Project, conducted on April 28th and May 12th, 2021, determined the extent of aquatic resources including three-parameter wetlands and Other Waters that occur within the Project Area. Aquatic resources were delineated based upon hydrophytic vegetation, hydric soils, and wetland hydrology using methods and indicators outlined in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys and Coast Region* (USACE 2010). A total of 3,788 ft^2 (0.086 acres) of three-parameter wetlands occur within the Project Area, which are intermittently hydrologically connected to the the Mattole River, and therefore are likely under the jurisdiction of the USACE and the RWQCB (**Appendix A Figure 4**). Additionally, there were 11,064 ft^2 (0.254 acres) of Other Waters which are intermittently hydrologically connected to the Mattole River and are therefore defined as and are likely both USACE and RWQCB-jurisdictional aquatic resources. In total, 14,851 ft^2 (0.340 acres) of USACE and RWQCB-jursidictional aquatic resources were observed within the Project Area. Data forms are attached showing transects across wetland boundaries and additional upland sampling points (**Appendix B**).

5. Special Terms and Conditions

5.1 Purpose of this Report

GHD prepared this report for the County, and the County may only use and rely on this report for the purpose agreed upon between GHD and the County, as set out in the scope and contract for work effort reported herein. GHD Inc. is not liable for any action arising out of the reliance of any third party on the information contained within this report. GHD otherwise disclaims responsibility to any entity other than the County arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

5.1 Scope and Limitations

This report does not authorize any individuals to develop, fill, or alter the delineated wetlands. Verification of the delineation by jurisdictional agencies is necessary prior to the use of this report for planning and development purposes. A USACE, agency-stamped, delineation map, and a jurisdictional approval letter are required to signify confirmation of delineation results. In situations where a field investigation determines that no jurisdictional wetlands occur, jurisdictional concurrence with these findings is recommended.

The delineation conclusions were based on the information available during the period of the investigation, which took place April 28th and May 12th, 2021. The opinions, conclusions, and any recommendations in this report are based on conditions encountered and information reviewed by the date of preparation of the report. Site conditions may change after the date of this report. GHD does not accept responsibility arising from, or in connection with, any change to the site conditions. GHD is also not responsible for updating this report if the site conditions change unless contracted to do so.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions, and any recommendations in this report are based on the information obtained from and testing undertaken at or in connection with specific sample points. Conditions at other locations of the site may be different from the conditions found at the specific sample points.

6. References

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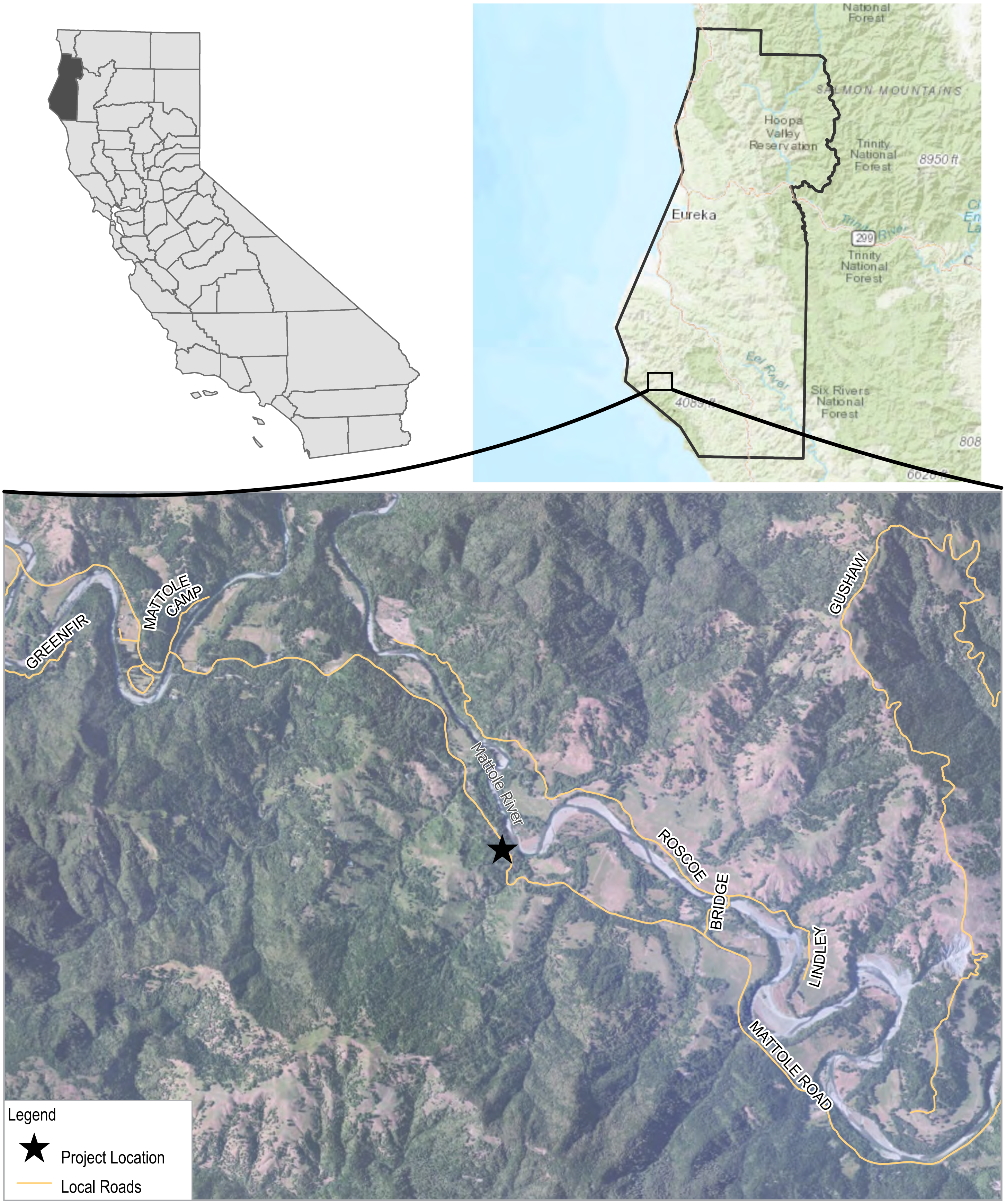
Appendices

Appendix A – Figures



Paper Size ANSI A

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Feet

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

N

GHD

Humboldt County Dept. of Public Works
Mattole Road PM 5.25 Storm Damage Repair

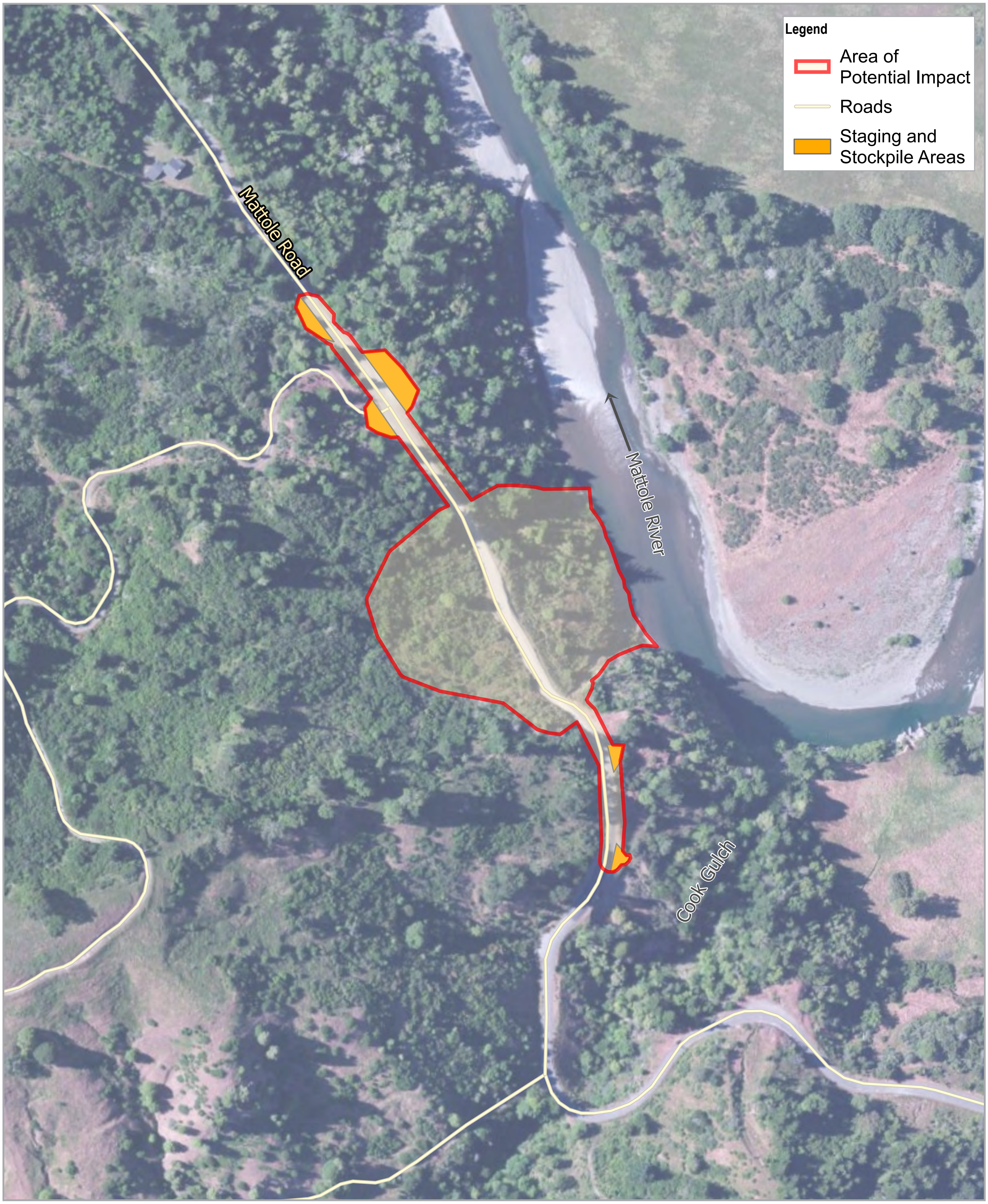
Project No. **11222901**
Revision No. **-**
Date **6/7/2021**

Project Vicinity Map

FIGURE 1

N:\US\Santa Rosa\Projects\561\11222901\GIS\Maps\Deliverables\Mattole_Road_Project_Description\11222901_00X_APE_MattoleRoad_Project_Description.a - 11222901_001_Vicinty

Data source: World Imagery (Clarity): Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
World Topographic Map: Esri, HERE, Garmin, FAO, USGS, EPA, NPS
World_Transportation: Esri, HERE. Created by: jlopez4



Paper Size ANSI A

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Feet

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

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Humboldt County Dept. of Public Works
Mattole Road PM 5.25
Storm Damage Repair

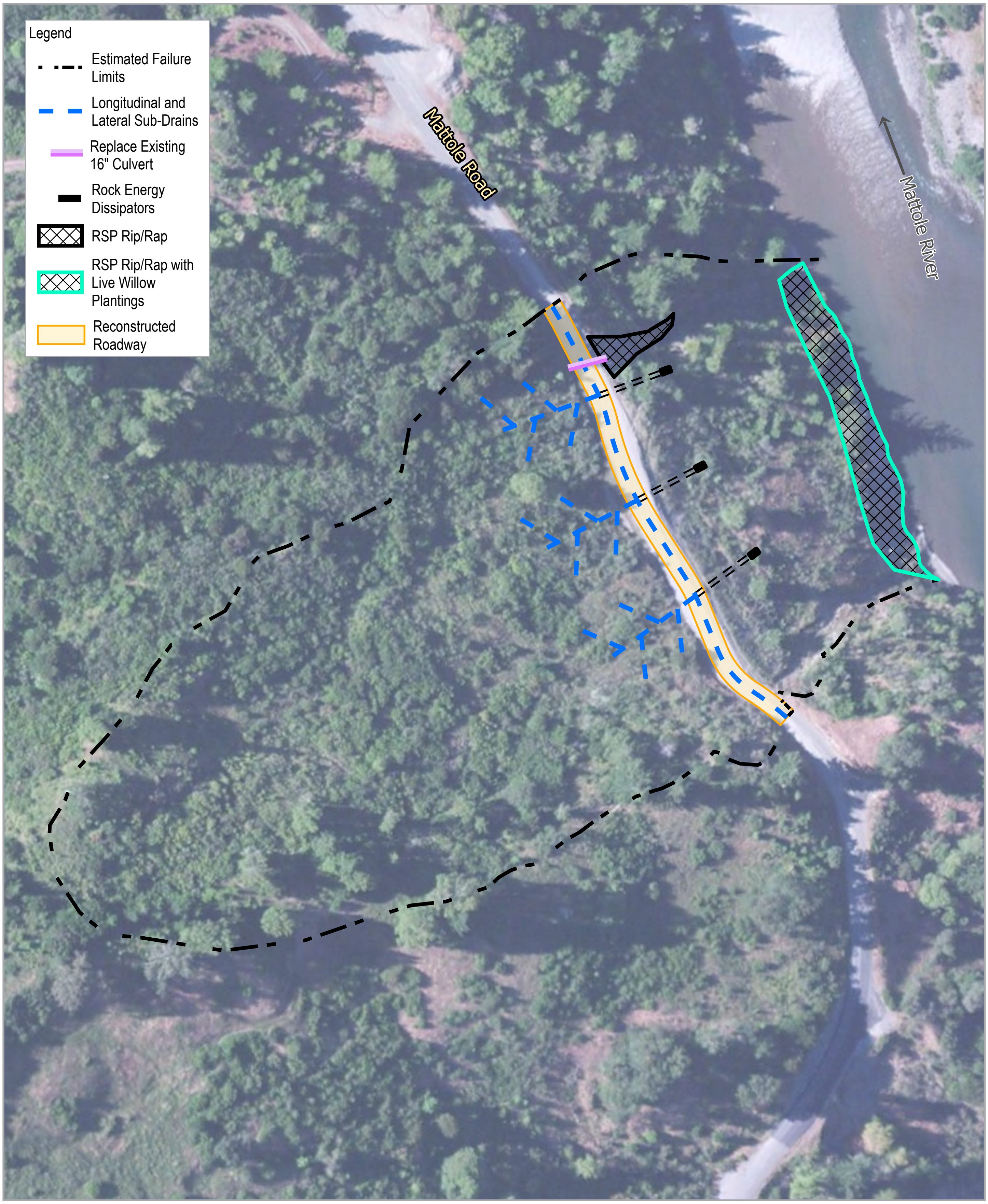
Project No. **11222901**
Revision No. **-**
Date **5/3/2021**

Area of Potential Impact

FIGURE 2

N:\US\Santa Rosa\Projects\561\11222901\GIS\Maps\Deliverables\Mattole_RD_NES\11222901_MattoleRoad_NES.aprx - 11222901_002_API
Print date: 03 May 2021 - 10:07

Data source: World Imagery (Clarity): Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. Created by: jlopez4



Paper Size ANSI A

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Feet

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

N

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Humboldt County Dept. of Public Works
Mattole Road PM 5.25
Storm Damage Repair

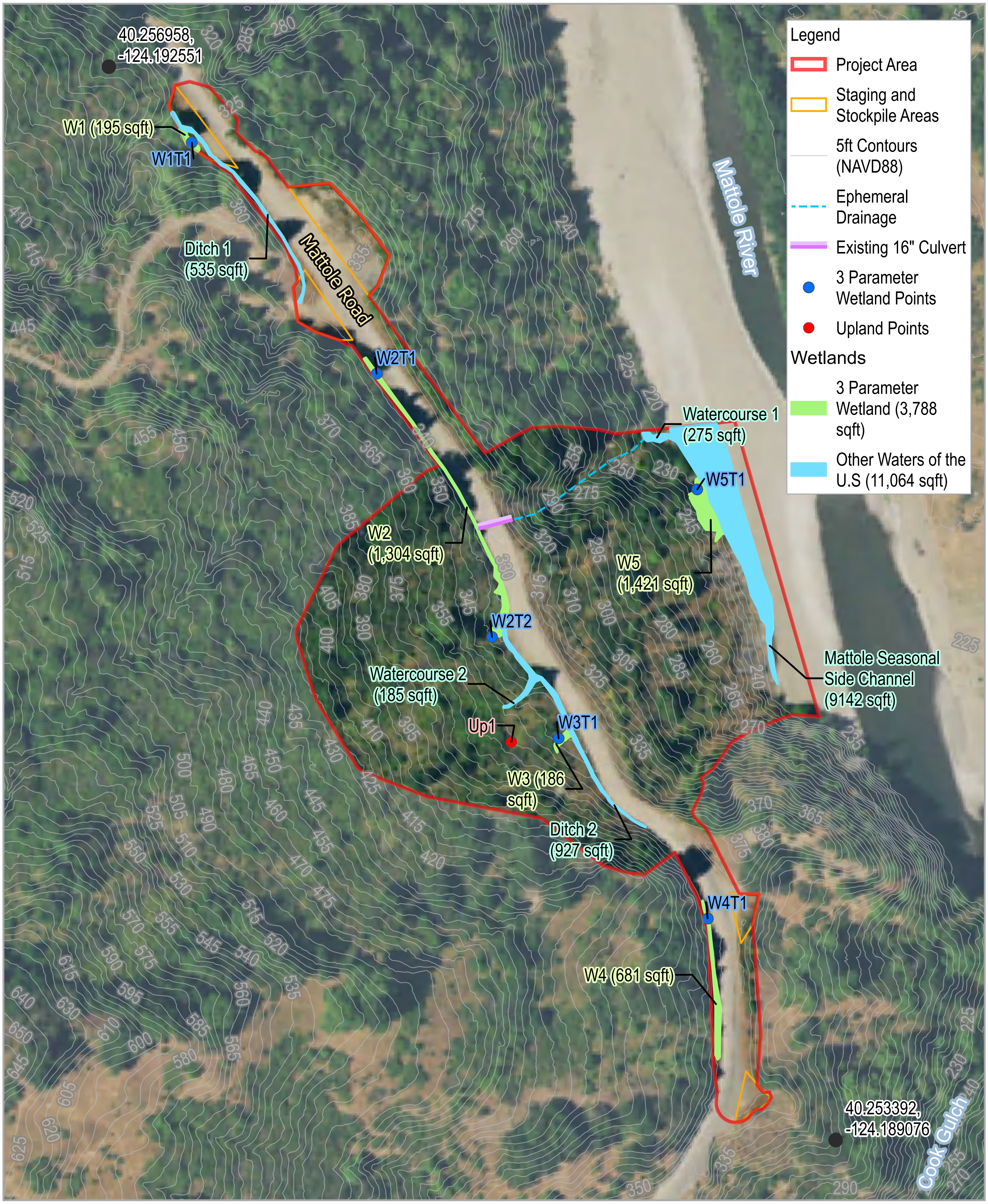
Project Overview

Project No. **11222901**
Revision No. **-**
Date **5/3/2021**

FIGURE 3

N:\US\Santa Rosa\Projects\561\11222901\GIS\Maps\Deliverables\Mattole_RD_NES\11222901_MattoleRoad_NES.aprx - 11222901_003_Overview
Print date: 03 May 2021 - 09:27

Data source: World Imagery (Clarity): Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.
Created by: jlopez4



Paper Size ANSI A

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Feet

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

N

Humboldt County Dept. of Public Works
Mattole Road PM 5.25 Storm Damage Repair

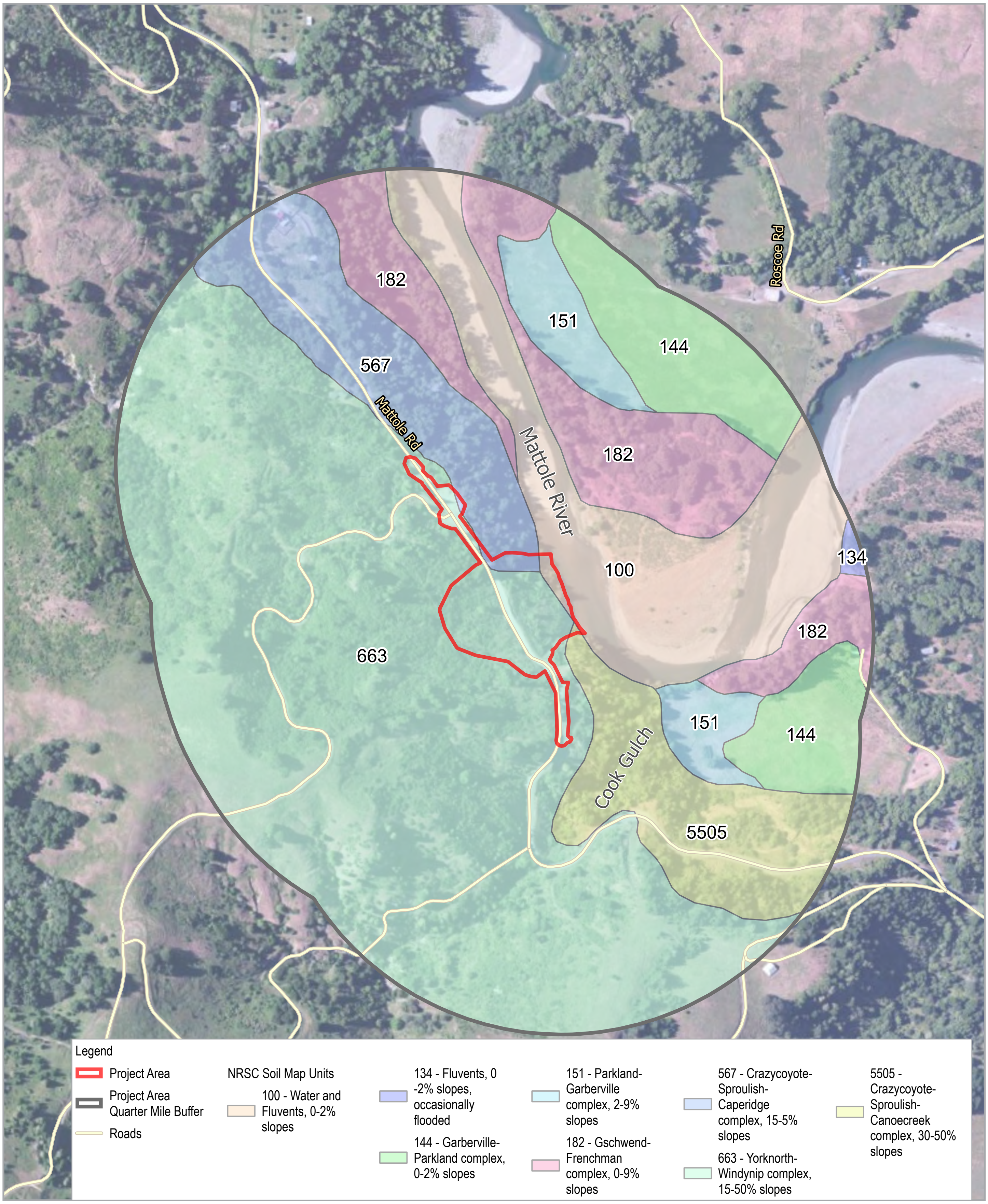
Project No. **11222901**
Revision No. **-**
Date **6/7/2021**

Aquatic Resources Delineation Map

FIGURE 4

N:\US\Santa Rosa\Projects\561\11222901\GIS\Maps\Deliverables\Aquatic_Resources_Delineation\11222901_Wetland_Delineation.aprx - 11222901_004_Wetland_Delineation
Print date: 07 Jun 2021 - 09:00

Data source: NAIP_ortho_Ca023_2020: . Created by: jlopez4



Paper Size ANSI A

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Feet

N

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

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Humboldt County Dept. of Public Works
Mattole Road PM 5.25 Storm Damage Repair

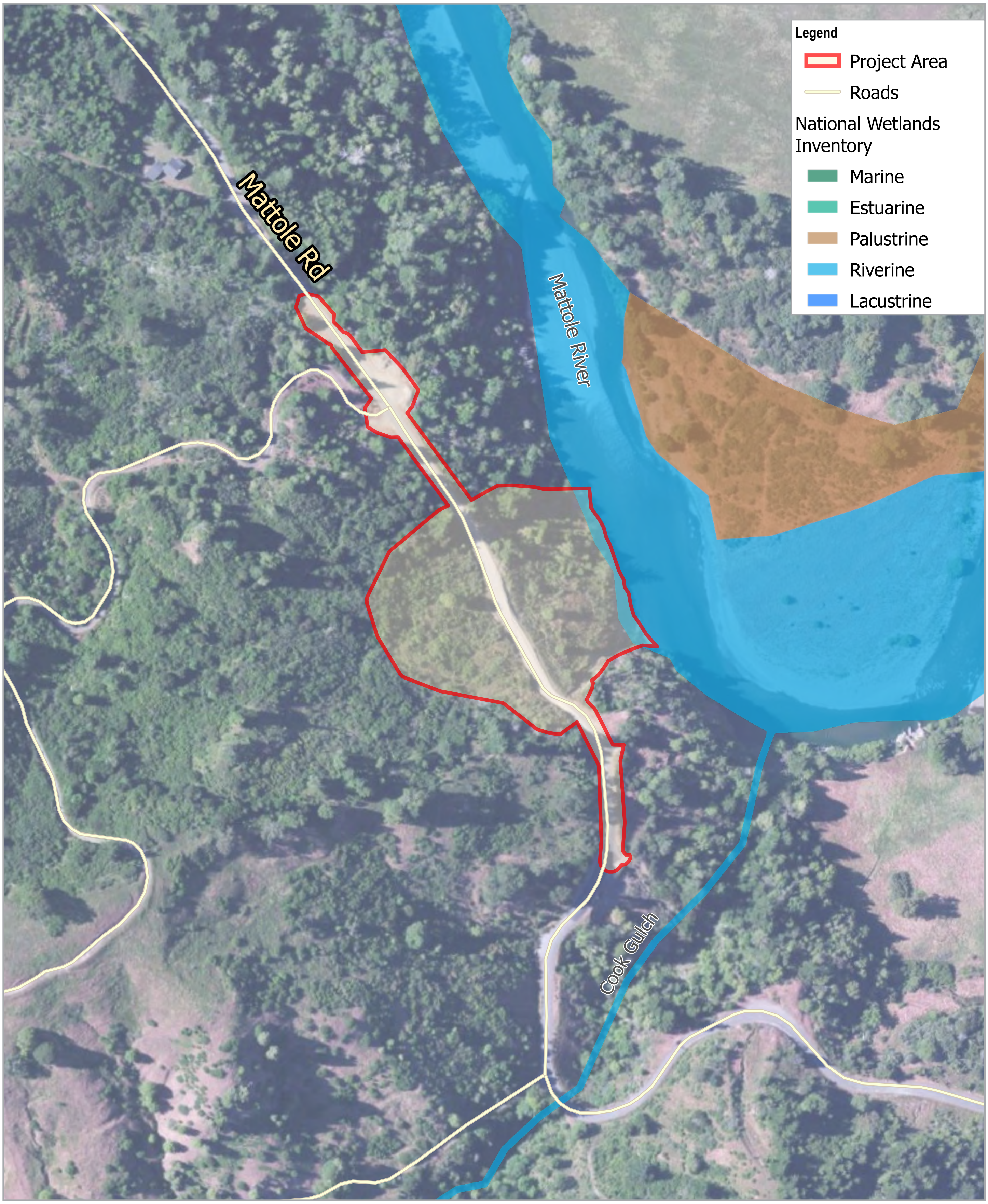
NRCS Soils

Project No. **11222901**
Revision No. **-**
Date **5/19/2021**

FIGURE 5

N:\US\Santa Rosa\Projects\561\11222901\GIS\Maps\Deliverables\Aquatic_Resources_Delineation\11222901_Wetland_Delineation.aprx - 11222901_005_NRCS_Soils
Print date: 19 May 2021 - 15:10

Data source: World Imagery (Clarity): Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. Created by: jlopez4



Paper Size ANSI A

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Feet

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

N

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Humboldt County Dept. of Public Works
Mattole Road PM 5.25 Storm Damage Repair

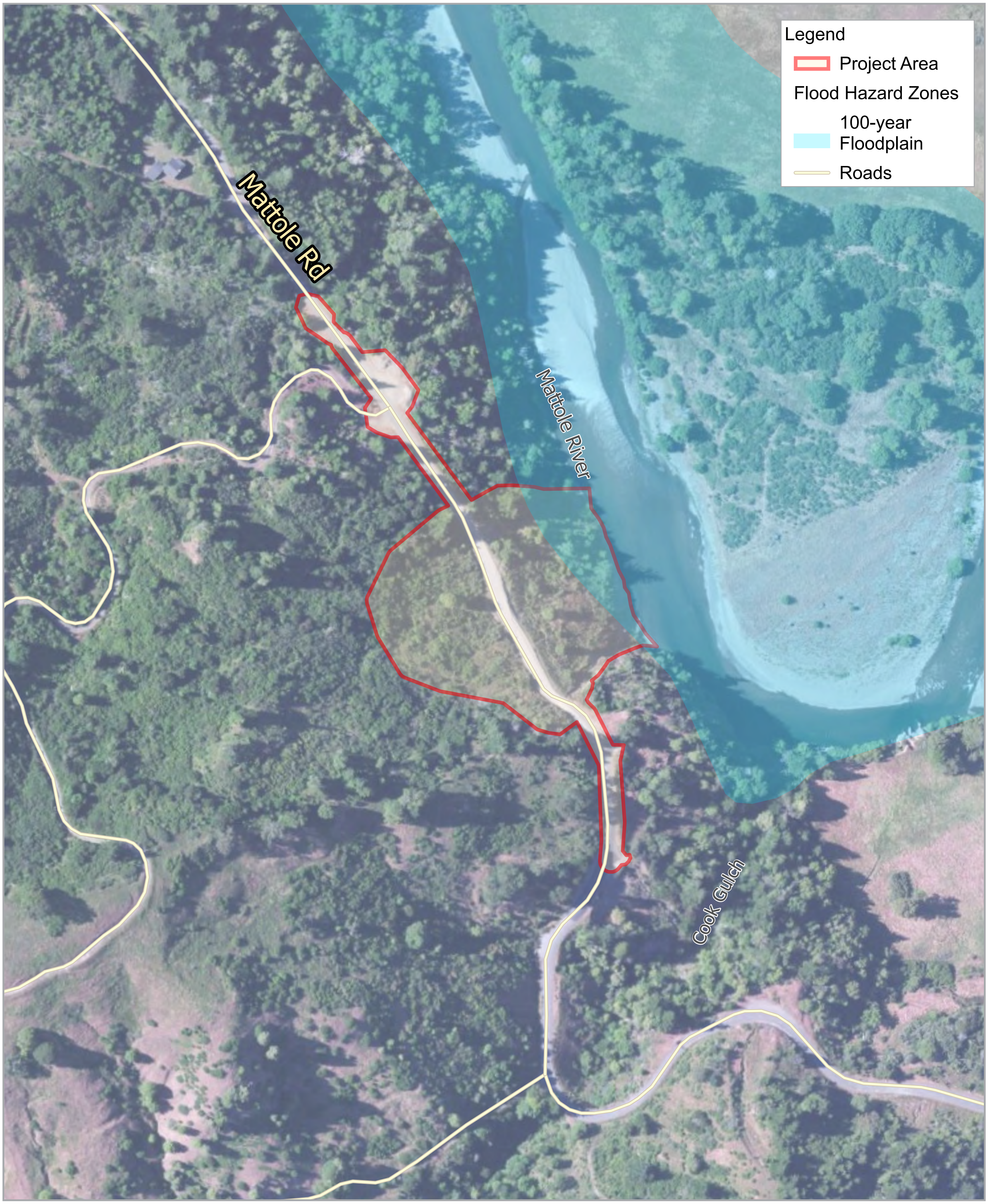
Project No. **11222901**
Revision No. **-**
Date **5/19/2021**

Wetlands (NWI)

FIGURE 6

N:\US\Santa Rosa\Projects\561\11222901\GIS\Maps\Deliverables\Aquatic_Resources_Delineation\11222901_Wetland_Delineation.aprx - 11222901_006_NWI
Print date: 19 May 2021 - 15:03

Data source: CNDDB, November 5th, 2018; World Imagery (Clarity): Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
National Wetlands Inventory : Source: US Fish and Wildlife Service, Esri. Created by: jlopez4



Paper Size ANSI A
0 100 200 300
Feet

N

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

GHD

Humboldt County Dept. of Public Works
Mattole Road PM 5.25 Storm Damage Repair

Project No. **11222901**
Revision No. **-**
Date **5/19/2021**

FEMA Flood Zones

FIGURE 7

N:\US\Santa Rosa\Projects\561\11222901\GIS\Maps\Deliverables\Aquatic_Resources_Delineation\11222901_Wetland_Delineation.aprx - 11222901_007_FEMA
Print date: 19 May 2021 - 15:04

Data source: World Imagery (Clarity): Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. Created by: jlopez4

Appendix B – Data Sheets

U.S. Army Corps of Engineers **WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region** See ERDC/EL TR-07-24; the proponent agency is CECW-CO-R	*OMB Control #: 0710-xxxx, Exp: Pending* *Requirement Control Symbol EXEMPT:* *(Authority: AR 335-15, paragraph 5-2a)*

Project/Site: Mattole Stormwater City/County: Eureka/Humboldt Sampling Date: 4/28/2021

Applicant/Owner: GHD for Humboldt County Department of Public Works State: CA Sampling Point: W1T1-W

Investigator(s): Kelsey McDonald, Rose E. Dana Section, Township, Range: S33 T2S R1W

Landform (hillside, terrace, etc.): Slope toe Local relief (concave, convex, none): Concave Slope (%): 2-5

Subregion (LRR): LRR A Lat: 40.256817 Long: -124.192131 Datum: WGS 84

Soil Map Unit Name: Yorknorth-Windynip complex, 15-20% slopes 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 ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

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

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

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

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: 1 sq meter)			
1. *Juncus xiphioides*	55	Yes	OBL
2. *Equisetum telmateia*	12	No	FACW
3. *Anthoxanthum odoratum*	5	No	FACU
4. *Holcus lanatus*	5	No	FAC
5. *Mentha pulegium*	1	No	OBL
6.			
7.			
8.			
9.			
10.			
11.			
	78	=Total Cover	
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
		=Total Cover	
% Bare Ground in Herb Stratum 25			

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:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	56	x 1 =	56
FACW species	12	x 2 =	24
FAC species	5	x 3 =	15
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	78 (A)		115 (B)

Prevalence Index = B/A = 1.47

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks:

SOIL

Sampling Point: W1T1-W

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/2	100					Loamy/Clayey	Very gravelly loam
3-10	10YR 3/2	85	7.5YR 4/6	15	C	PL/M	Loamy/Clayey	Very gravelly loam, predominant redox, mixed OM
10-14	10YR 3/2	80	7.5YR 4/6	20	C	PL/M	Loamy/Clayey	Very gravelly loam, predominant redox

[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)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
X Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ 2 cm Muck (A10)
___ 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:
Less than 5% redox within 8" of the surface does not meet F6.

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)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Sparsely Vegetated Concave Surface (B8)
___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Stunted or Stressed Plants (D1) (**LRR A**)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water-Stained Leaves (B9) (**MLRA 1, 2 4A, and 4B**)
X Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Saturation Visible on Aerial Imagery (C9)
___ Geomorphic Position (D2)
___ Shallow Aquitard (D3)
X FAC-Neutral Test (D5)
___ Raised Ant Mounds (D6) (**LRR A**)
___ Frost-Heave Hummocks (D7)

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:
~2 feet from flowing channel, drains from natural ephemeral water course into ditch below (joins with Ditch 1, marked with OHWM).

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region
See ERDC/EL TR-07-24; the proponent agency is CECW-CO-R

OMB Control #: 0710-xxxx, Exp: Pending
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Mattole Stormwater City/County: Eureka/Humboldt Sampling Date: 4/28/2021
Applicant/Owner: GHD for Humboldt County Department of Public Works State: CA Sampling Point: W1T1-U
Investigator(s): Rose E. Dana, Kelsey McDonald Section, Township, Range: S33 T2S R1W
Landform (hillside, terrace, etc.): Slope toe Local relief (concave, convex, none): Concave Slope (%): 15
Subregion (LRR): LRR A Lat: 40.256817 Long: -124.192131 Datum: WGS84
Soil Map Unit Name: Yorknorth-Windynip complex, 15-20% slopes 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 ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

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

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: 1 sq meter)			
1. *Trifolium subterraneum*	15	Yes	UPL
2. *Briza maxima*	5	No	UPL
3. *Festuca bromodies*	20	Yes	UPL
4. *Cynosurus echinatus*	2	No	UPL
5. *Geranium dissectum*	1	No	UPL
6. *Plantago lanceolata*	8	No	FACU
7. *Mentha pulegium*	1	No	OBL
8. *Plantago erecta*	1	No	UPL
9. *Bromus hordeaceus*	10	No	FACU
10.			
11.			
	63	=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
		=Total Cover	
% Bare Ground in Herb Stratum 7			

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:	0.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	1	x 1 =	1
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	18	x 4 =	72
UPL species	44	x 5 =	220
Column Totals:	63 (A)		293 (B)

Prevalence Index = B/A = 4.65

Hydrophytic Vegetation Indicators:
____ 1 - Rapid Test for Hydrophytic Vegetation
____ 2 - Dominance Test is >50%
____ 3 - Prevalence Index is ≤3.0[1]
____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ 5 - Wetland Non-Vascular Plants[1]
____ Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks:

SOIL

Sampling Point: W1T1-U

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
0-4	10YR 3/2	100					Loamy/Clayey	Gravelly Loam
4-8	10YR 3/2	98	7.5YR 4/6	2	C	M	Loamy/Clayey	Very Gravelly Loam
8-12	10YR 3/2	99	7.5YR 4/6	1	C	M	Loamy/Clayey	Aggregate Base

[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)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ 2 cm Muck (A10)
___ 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:
Less than 5% redox within 8" of the surface does not meet F6.

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)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Sparsely Vegetated Concave Surface (B8)
___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Stunted or Stressed Plants (D1) (**LRR A**)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water-Stained Leaves (B9) (**MLRA 1, 2 4A, and 4B**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Saturation Visible on Aerial Imagery (C9)
___ Geomorphic Position (D2)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)
___ Raised Ant Mounds (D6) (**LRR A**)
___ Frost-Heave Hummocks (D7)

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:
Mixed roadside gravel; roadside is near wetland.

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region
See ERDC/EL TR-07-24; the proponent agency is CECW-CO-R

OMB Control #: 0710-xxxx, Exp: Pending
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Mattole Stormwater City/County: Eureka/Humboldt Sampling Date: 4/28/2021

Applicant/Owner: GHD for Humboldt County Department of Public Works State: CA Sampling Point: W2T1-W

Investigator(s): Rose E. Dana, Kelsey McDonald Section, Township, Range: S33 T2S R1W

Landform (hillside, terrace, etc.): Slope toe, between hillside & road Local relief (concave, convex, none): convex Slope (%): 2

Subregion (LRR): LRR A Lat: 40.256026 Long: -124.191252 Datum: WGS 84

Soil Map Unit Name: Yorknorth-Windynip complex, 15-20% slopes 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 ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

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

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

Hydrophytic Vegetation Present?	Yes X	No ___
Hydric Soil Present?	Yes X	No ___
Wetland Hydrology Present?	Yes X	No ___

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

Remarks:
Vegetated ditch with areas of standing water, seasonally drains through culvert to ephemeral drainage and into the Mattole River.

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: 1 sq. meter)			
1. *Juncus patens*	50	Yes	FACW
2. *Festuca arundinacea*	15	No	FAC
3. *Mentha pulegium*	15	No	OBL
4. *Mentha pulegium*	5	No	OBL
5. *Anthoxanthum odoratum*	3	No	FACU
6. *Equisetum telmateia*	2	No	FACW
7.			
8.			
9.			
10.			
11.			
	90 =Total Cover		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
	=Total Cover		
% Bare Ground in Herb Stratum 10			

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: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	20	x 1 =	20
FACW species	52	x 2 =	104
FAC species	15	x 3 =	45
FACU species	3	x 4 =	12
UPL species	0	x 5 =	0
Column Totals:	90 (A)		181 (B)

Prevalence Index = B/A = 2.01

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
X 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ 5 - Wetland Non-Vascular Plants[1]
___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes X No ___

Remarks:

SOIL

Sampling Point: W2T1-W

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 2/2	100					Muck	High OM
3-14		100						Compacted Gravel

[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)
- X Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ 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: Compacted gravel

Depth (inches): 3

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

Remarks:
Restrictive layer is from road construction. Inboard ditch on uphill side of road.

HYDROLOGY

Wetland Hydrology Indicators:

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

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- X Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2 4A, and 4B**)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes X	No ___	Depth (inches): 0
Water Table Present?	Yes X	No ___	Depth (inches): 0
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:

Remarks:
Vegetated ditch with mucky soils.

U.S. Army Corps of Engineers

WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region

See ERDC/EL TR-07-24; the proponent agency is CECW-CO-R

OMB Control #: 0710-xxxx, Exp: Pending
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Mattole Stormwater City/County: Eureka/Humboldt Sampling Date: 4/28/2021

Applicant/Owner: GHD for Humboldt County Department of Public Works State: CA Sampling Point: W2T1-U

Investigator(s): Rose E. Dana, Kelsey McDonald Section, Township, Range: S33 T2S R1W

Landform (hillside, terrace, etc.): road Local relief (concave, convex, none): convex Slope (%): 2

Subregion (LRR): LRR A Lat: 40.256026 Long: -124.191252 Datum: WGS 84

Soil Map Unit Name: Yorknorth-Windynip complex, 15-20% slopes 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 ___, Soil ___, or Hydrology ___ significantly disturbed? Are “Normal Circumstances” present? Yes X No ___

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

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

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

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

Remarks:
Vegetated ditch with areas of standing water, seasonally drains through culvert to ephemeral drainage and into the Mattole River.

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: 1 sq. meter)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	=Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	=Total Cover		
% Bare Ground in Herb Stratum 100			

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: ___ (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:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ 5 - Wetland Non-Vascular Plants[1]
___ Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks:

SOIL

Sampling Point: W2T1-U

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-14		100						Compacted Gravel Road

[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)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ 2 cm Muck (A10)
___ 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: Compacted gravel
Depth (inches): 0

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

Remarks:
The wetland was directly next to the road, which was compacted gravel. There is no upland soil sample for this location. There are two transects on this wetland, but this particular location did not have a good spot to sample upland soils.

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)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Sparsely Vegetated Concave Surface (B8)
___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Stunted or Stressed Plants (D1) (**LRR A**)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water-Stained Leaves (B9) (**MLRA 1, 2 4A, and 4B**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Saturation Visible on Aerial Imagery (C9)
___ Geomorphic Position (D2)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)
___ Raised Ant Mounds (D6) (**LRR A**)
___ Frost-Heave Hummocks (D7)

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 – Western Mountains, Valleys, and Coast Region** See ERDC/EL TR-07-24; the proponent agency is CECW-CO-R	*OMB Control #: 0710-xxxx, Exp: Pending* *Requirement Control Symbol EXEMPT:* *(Authority: AR 335-15, paragraph 5-2a)*

Project/Site: Mattole Stormwater City/County: Eureka/Humboldt Sampling Date: 4/28/2021

Applicant/Owner: GHD for Humboldt County Department of Public Works State: CA Sampling Point: W2T2-W

Investigator(s): Rose E. Dana, Kelsey McDonald Section, Township, Range: S33 T2S R1W

Landform (hillside, terrace, etc.): Slope toe Local relief (concave, convex, none): Concave Slope (%): 2

Subregion (LRR): LRR A Lat: 40.256026 Long: -124.191252 Datum: WGS 84

Soil Map Unit Name: Yorknorth-Windynip complex, 15-20% slopes 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 ___, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

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

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

Hydrophytic Vegetation Present?	Yes 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:
Seeping area just above roadside ditch. Naturally disturbed by landslide, anthropogenically mixed by roadwork.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 3 meters)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus latifolia*	10	Yes	FACW
2.			
3.			
4.			
	10	=Total Cover	
Sapling/Shrub Stratum (Plot size: 3 meters)			
1. *Toxicodendron diversilobum*	30	Yes	FAC
2. *Baccharis pilularis*	2	No	UPL
3. *Salix lasiolepis*	1	No	FACW
4. *Rubus ursinus*	5	No	FACU
5. *Genista monspessulana*	1	No	UPL
	39	=Total Cover	
Herb Stratum (Plot size: 1 meter)			
1. *Cyperus eragrostis*	5	No	FACW
2. *Juncus patens*	15	Yes	FACW
3. *Rumex crispus*	5	No	FAC
4. *Carex harfordii*	1	No	OBL
5. *Geranium dissectum*	10	Yes	UPL
6. *Bromus diandrus*	5	No	UPL
7. *Trifolium dubium*	5	No	FACU
8. *Lotus corniculatus*	10	Yes	FAC
9. *Mentha pulegium*	5	No	OBL
10. *Agrostis capillaris*	15	Yes	FAC
11.			
	76	=Total Cover	
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
		=Total Cover	
% Bare Ground in Herb Stratum 24			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 83.3% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	6	x 1 =	6
FACW species	31	x 2 =	62
FAC species	60	x 3 =	180
FACU species	10	x 4 =	40
UPL species	18	x 5 =	90
Column Totals:	125 (A)		378 (B)

Prevalence Index = B/A = 3.02

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ 5 - Wetland Non-Vascular Plants[1]
___ Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks:

SOIL

Sampling Point: W2T2-W

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
0-3	10YR 3/2	100					Loamy/Clayey	Clay loam, patches of clay and sandy clay
3-14	10YR 3/2	95	10YR 3/6	5	C	M	Loamy/Clayey	Clay

[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)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
_X_ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ 2 cm Muck (A10)
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (F22)
_X_ 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:
Problematic soil, a great deal of distrubance. Possibly recently developed. It appears that the soils have been mixed. Was challenging to estimate percent redox and color.

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)
_X_ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Sparsely Vegetated Concave Surface (B8)
___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Stunted or Stressed Plants (D1) (**LRR A**)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water-Stained Leaves (B9) (**MLRA 1, 2 4A, and 4B**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Saturation Visible on Aerial Imagery (C9)
___ Geomorphic Position (D2)
___ Shallow Aquitard (D3)
_X_ FAC-Neutral Test (D5)
___ Raised Ant Mounds (D6) (**LRR A**)
___ Frost-Heave Hummocks (D7)

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:
Roadside ditch.

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region
See ERDC/EL TR-07-24; the proponent agency is CECW-CO-R

OMB Control #: 0710-xxxx, Exp: Pending
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Mattole Stormwater City/County: Eureka/Humboldt Sampling Date: 4/28/2021

Applicant/Owner: GHD for Humboldt County Department of Public Works State: CA Sampling Point: W2T2-U

Investigator(s): Kelsey McDonald, Rose E. Dana Section, Township, Range: S33 T2S R1W

Landform (hillside, terrace, etc.): Hillside Local relief (concave, convex, none): undulating Slope (%): 50

Subregion (LRR): LRR A Lat: 40.256026 Long: -124.191252 Datum: WGS 84

Soil Map Unit Name: Yorknorth-Windynip complex, 15-20% slopes 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 ____, 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** X **No** ____

Remarks:
Mesic hummocky slide area. Upland plot above steep cut on upper landslide.

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: 3 meters)			
1. *Toxicodendron diversilobum*	30	Yes	FAC
2. *Rubus ursinus*	25	Yes	FACU
3. *Symphoricarpos albus*	15	Yes	FACU
4. *Galium divaricatum*	1	No	FACU
5.			
	71	=Total Cover	
Herb Stratum (Plot size: 1 meter)			
1. *Agrostis capillaris*	30	Yes	FAC
2. *Festuca arundinacea*	25	Yes	FAC
3. *Bellis perennis*	12	No	UPL
4. *Vicia sativa*	3	No	UPL
5. *Carex harfordii*	3	No	OBL
6. *Ranunculus californicus*	2	No	FAC
7.			
8.			
9.			
10.			
11.			
	75	=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
		=Total Cover	

% Bare Ground in Herb Stratum 1

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	5	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	60.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	3	x 1 =	3
FACW species	0	x 2 =	0
FAC species	87	x 3 =	261
FACU species	41	x 4 =	164
UPL species	15	x 5 =	75
Column Totals:	146 (A)		503 (B)

Prevalence Index = B/A = 3.45

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
____ 3 - Prevalence Index is ≤3.0[1]
____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ 5 - Wetland Non-Vascular Plants[1]
____ Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks:

SOIL

Sampling Point: W2T2-U

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/2	100					Loamy/Clayey	
6-10	10YR 3/2	99	10YR 3/6	1	C	M	Loamy/Clayey	
10-12	10YR 3/2	95	10YR 3/6	5	C	PL/M	Loamy/Clayey	Prominent redox concentrations

[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)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ 2 cm Muck (A10)
___ 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)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Sparsely Vegetated Concave Surface (B8)
___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Stunted or Stressed Plants (D1) (**LRR A**)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water-Stained Leaves (B9) (**MLRA 1, 2 4A, and 4B**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Saturation Visible on Aerial Imagery (C9)
___ Geomorphic Position (D2)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)
___ Raised Ant Mounds (D6) (**LRR A**)
___ Frost-Heave Hummocks (D7)

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:

Remarks:

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region
See ERDC/EL TR-07-24; the proponent agency is CECW-CO-R

OMB Control #: 0710-xxxx, Exp: Pending
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Mattole Stormwater   City/County: Eureka/Humboldt   Sampling Date: 4/28/2021

Applicant/Owner: GHD for Humboldt County Department of Public Works   State: CA   Sampling Point: W3T1-W

Investigator(s): Kelsey McDonald   Section, Township, Range: S33 T2S R1W

Landform (hillside, terrace, etc.): Hillside, slide   Local relief (concave, convex, none): Convex   Slope (%): 15

Subregion (LRR): LRR A   Lat: 40.254770   Long: -124.190383   Datum: WGS 84

Soil Map Unit Name: Yorknorth-Windynip complex, 15-20% slopes   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 ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

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

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

Hydrophytic Vegetation Present?	Yes 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:
Wetlands on south side of upper slide above the Mattole road.

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: 3 meters)			
1. *Toxicodendron diversilobum*	15	Yes	FAC
2. *Rubus ursinus*	2	No	FACU
3. *Rosa rubiginosa*	2	No	UPL
4. *Lonicera hispidula*	1	No	FACU
5.			
	20	=Total Cover	
Herb Stratum (Plot size: 1 meter)			
1. *Juncus patens*	70	Yes	FACW
2. *Agrostis capillaris*	20	Yes	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	90	=Total Cover	
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
		=Total Cover	
% Bare Ground in Herb Stratum	2		

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	70	x 2 =	140
FAC species	35	x 3 =	105
FACU species	3	x 4 =	12
UPL species	2	x 5 =	10
Column Totals:	110 (A)		267 (B)

Prevalence Index = B/A = 2.43

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
X 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ 5 - Wetland Non-Vascular Plants[1]
___ Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks:

SOIL

Sampling Point: W3T1-W

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	85	5YR 4/6	15	C	M	Loamy/Clayey	Gravelly clay loam

[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)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
X Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ 2 cm Muck (A10)
___ 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)
X Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Sparsely Vegetated Concave Surface (B8)
___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Stunted or Stressed Plants (D1) (**LRR A**)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water-Stained Leaves (B9) (**MLRA 1, 2 4A, and 4B**)
X Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Saturation Visible on Aerial Imagery (C9)
X Geomorphic Position (D2)
___ Shallow Aquitard (D3)
X FAC-Neutral Test (D5)
___ Raised Ant Mounds (D6) (**LRR A**)
___ Frost-Heave Hummocks (D7)

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): 10

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

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

Remarks:

U.S. Army Corps of Engineers **WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region** See ERDC/EL TR-07-24; the proponent agency is CECW-CO-R	*OMB Control #: 0710-xxxx, Exp: Pending* *Requirement Control Symbol EXEMPT:* *(Authority: AR 335-15, paragraph 5-2a)*

Project/Site: Mattole Stormwater City/County: Eureka/Humboldt Sampling Date: 4/28/2021

Applicant/Owner: GHD for Humboldt County Department of Public Works State: CA Sampling Point: W3T1-U

Investigator(s): Kelsey McDonald, Rose E. Dana Section, Township, Range: S33 T2S R1W

Landform (hillside, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 10

Subregion (LRR): LRR A Lat: 40.254770 Long: -124.190383 Datum: WGS 84

Soil Map Unit Name: Yorknorth-Windynip complex, 15-20% slopes 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 ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

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

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 3 meters)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Pseudotsuga menziesii*	15	Yes	FACU
2.			
3.			
4.			
	15	=Total Cover	
Sapling/Shrub Stratum (Plot size: 3 meters)			
1. *Toxicodendron diversilobum*	35	Yes	FAC
2.			
3.			
4.			
5.			
	35	=Total Cover	
Herb Stratum (Plot size: 1 meter)			
1. *Leucanthemum vulgare*	18	Yes	FACU
2. *Agrostis capillaris*	15	Yes	FAC
3. *Juncus patens*	12	Yes	FACW
4. *Vicia sativa*	10	No	UPL
5. *Plantago lanceolata*	6	No	FACU
6. *Holcus lanatus*	5	No	FAC
7. *Bellis perennis*	5	No	UPL
8. *Bromus sitchensis*	5	No	UPL
9. *Equisetum telmateia*	2	No	FACW
10. *Geranium dissectum*	2	No	UPL
11.			
	80	=Total Cover	
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
		=Total Cover	
% Bare Ground in Herb Stratum 10			

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 60.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	14	x 2 =	28
FAC species	55	x 3 =	165
FACU species	39	x 4 =	156
UPL species	22	x 5 =	110
Column Totals:	130 (A)		459 (B)

Prevalence Index = B/A = 3.53

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ 5 - Wetland Non-Vascular Plants[1]
___ Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks:
6 feet from wetland boundary. Not in wetland, but vegetation is influenced by it. Ontop of slide uphill of Mattole road.

SOIL

Sampling Point: W3T1-U

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-7	10YR 3/2	100					Loamy/Clayey	Silty clay
7-12	10YR 4/2	100					Loamy/Clayey	Sandy clay

[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)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ 2 cm Muck (A10)
___ 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)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Sparsely Vegetated Concave Surface (B8)
___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Stunted or Stressed Plants (D1) (**LRR A**)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water-Stained Leaves (B9) (**MLRA 1, 2 4A, and 4B**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Saturation Visible on Aerial Imagery (C9)
___ Geomorphic Position (D2)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)
___ Raised Ant Mounds (D6) (**LRR A**)
___ Frost-Heave Hummocks (D7)

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:

Remarks:

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region
See ERDC/EL TR-07-24; the proponent agency is CECW-CO-R

OMB Control #: 0710-xxxx, Exp: Pending Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)

Project/Site: Mattole Stormwater City/County: Eureka/Humboldt Sampling Date: 5/12/2021
Applicant/Owner: GHD for Humboldt County Department of Public Works State: CA Sampling Point: W4T1-W
Investigator(s): Misha Schwarz, Kelsey McDonald Section, Township, Range: S33 T2S R1W
Landform (hillside, terrace, etc.): Ditch Local relief (concave, convex, none): Concave Slope (%): 2
Subregion (LRR): LRR A Lat: 40.254154 Long: -124.189683 Datum: WGS 84
Soil Map Unit Name: Yorknorth-Windynip complex, 15-20% slopes 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 ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:
Wetland ditch with hydrophytic plants.

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: 1 sq. meter)			
1. *Juncus patens*	38	Yes	FACW
2. *Agrostis stolonifera*	26	Yes	FAC
3. *Festuca arundinacea*	12	No	FAC
4. *Bromus hordeaceus*	5	No	FACU
5. *Medicago polymorpha*	5	No	FACU
6. *Trifolium repens*	2	No	FAC
7. *Mentha pulegium*	2	No	OBL
8.			
9.			
10.			
11.			
	90	=Total Cover	
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
		=Total Cover	
% Bare Ground in Herb Stratum 10			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (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	2	x 1 =	2
FACW species	38	x 2 =	76
FAC species	40	x 3 =	120
FACU species	10	x 4 =	40
UPL species	0	x 5 =	0
Column Totals:	90 (A)		238 (B)

Prevalence Index = B/A = 2.64

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
X 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ 5 - Wetland Non-Vascular Plants[1]
___ Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks:
Passed FAC-Neutral

SOIL

Sampling Point: W4T1-W

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
0-5	10YR 4/2	75	7.5YR 4/6	25	C	M	Loamy/Clayey	Silt loam
5-13	10YR 3/2	85	7.5YR 4/6	15	C	M	Loamy/Clayey	Sandy loam

[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)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ 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)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

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 moist, standing water observed on 04/22/2021.

U.S. Army Corps of Engineers

WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region

See ERDC/EL TR-07-24; the proponent agency is CECW-CO-R

OMB Control #: 0710-xxxx, Exp: Pending
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Mattole Stormwater   City/County: Eureka/Humboldt   Sampling Date: 5/12/2021

Applicant/Owner: GHD for Humboldt County Department of Public Works   State: CA   Sampling Point: W4T1-U

Investigator(s): Misha Schwarz, Kelsey McDonald   Section, Township, Range: S33 T2S R1W

Landform (hillside, terrace, etc.): Ditch   Local relief (concave, convex, none): Convex   Slope (%): 5

Subregion (LRR): LRR A   Lat: 40.254154   Long: -124.189683   Datum: WGS 84

Soil Map Unit Name: Yorknorth-Windynip complex, 15-20% slopes   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 ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

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

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

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

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

Remarks:
Roadside above ditch

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: 1 sq. meter)			
1. *Plantago lanceolata*	5	Yes	FACU
2. *Trifolium repens*	4	Yes	FAC
3. *Bromus hordeaceus*	3	Yes	FACU
4. *Medicago polymorpha*	3	Yes	FACU
5. *Lupinus bicolor*	2	No	UPL
6. *Hordeum marinum*	1	No	FAC
7.			
8.			
9.			
10.			
11.			
	18	=Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
		=Total Cover	
% Bare Ground in Herb Stratum	82		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	25.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	5	x 3 =	15
FACU species	11	x 4 =	44
UPL species	2	x 5 =	10
Column Totals:	18 (A)		69 (B)
Prevalence Index = B/A =			3.83

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ 5 - Wetland Non-Vascular Plants[1]
___ Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks:

SOIL

Sampling Point: W4T1-U

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-14								Road shoulder - compacted as base

[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)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ 2 cm Muck (A10)
___ 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:
Road is compacted gravel.

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)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Sparsely Vegetated Concave Surface (B8)
___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Stunted or Stressed Plants (D1) (**LRR A**)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water-Stained Leaves (B9) (**MLRA 1, 2 4A, and 4B**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Saturation Visible on Aerial Imagery (C9)
___ Geomorphic Position (D2)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)
___ Raised Ant Mounds (D6) (**LRR A**)
___ Frost-Heave Hummocks (D7)

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** ___

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

Remarks:

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region
See ERDC/EL TR-07-24; the proponent agency is CECW-CO-R

OMB Control #: 0710-xxxx, Exp: Pending
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Mattole Stormwater City/County: Eureka/Humboldt Sampling Date: 5/12/2021

Applicant/Owner: GHD for Humboldt County Department of Public Works State: CA Sampling Point: W5T1-W

Investigator(s): Misha Schwarz, Kelsey McDonald Section, Township, Range: S33 T2S R1W

Landform (hillside, terrace, etc.): Landslide seep Local relief (concave, convex, none): Concave / undulating Slope (%): 100

Subregion (LRR): LRR A Lat: 40.255650 Long: -124.189780 Datum: WGS 84

Soil Map Unit Name: Water and Fluvents, 0-2% slopes NWI classification: R3UBH

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 X , or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

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

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

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

Remarks:
Steep landslide face with wetland plants, seeping rill.

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 sq. meter)			
1. *Salix lasiolepis*	5	Yes	FACW
2. *Alnus rubra*	1	No	FAC
3.			
4.			
5.			
	6	=Total Cover	
Herb Stratum (Plot size: 1 sq. meter)			
1. *Festuca arundinacea*	20	Yes	FAC
2. *Juncus patens*	3	No	FACW
3. *Sonchus asper*	1	No	FACU
4. *Holcus lanatus*	1	No	FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	25	=Total Cover	
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
		=Total Cover	
% Bare Ground in Herb Stratum 70			

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 2 (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	8	x 2 =	16
FAC species	22	x 3 =	66
FACU species	1	x 4 =	4
UPL species	0	x 5 =	0
Column Totals:	31 (A)		86 (B)

Prevalence Index = B/A = 2.77

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
X 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ 5 - Wetland Non-Vascular Plants[1]
___ Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks:
Passing FAC-neutral

SOIL

Sampling Point: W5T1-W

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
0-13	2.5YR 3/2	95	10YR 5/6	5	C	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)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
_X_ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ 2 cm Muck (A10)
___ 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:
Road is compacted gravel.

HYDROLOGY

Wetland Hydrology Indicators:

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

_X_ Surface Water (A1)
___ High Water Table (A2)
_X_ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Sparsely Vegetated Concave Surface (B8)
___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Stunted or Stressed Plants (D1) (**LRR A**)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water-Stained Leaves (B9) (**MLRA 1, 2 4A, and 4B**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Saturation Visible on Aerial Imagery (C9)
___ Geomorphic Position (D2)
___ Shallow Aquitard (D3)
_X_ FAC-Neutral Test (D5)
___ Raised Ant Mounds (D6) (**LRR A**)
___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes _X_	No ___	Depth (inches): 1
Water Table Present?	Yes ___	No _X_	Depth (inches): ___
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:

Remarks:

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region
See ERDC/EL TR-07-24; the proponent agency is CECW-CO-R

OMB Control #: 0710-xxxx, Exp: Pending
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Mattole Stormwater City/County: Eureka/Humboldt Sampling Date: 5/12/2021

Applicant/Owner: GHD for Humboldt County Department of Public Works State: CA Sampling Point: W5T1-U

Investigator(s): Kelsey McDonald, Misha Schwarz Section, Township, Range: S33 T2S R1W

Landform (hillside, terrace, etc.): Steep side face Local relief (concave, convex, none): None Slope (%): 100

Subregion (LRR): LRR A Lat: 40.255650 Long: -124.189780 Datum: WGS 84

Soil Map Unit Name: Water and Fluvents, 0-2% slopes NWI classification: R3UBH

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 X , or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

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

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

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

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

Remarks:
Steep face along landslide, downslope of Mattole road. Adjacent to seeping rills with wetland plants.

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: 1 sq. meter)			
1. *Festuca arundinacea*	20	Yes	FAC
2. *Medicago polymorpha*	15	Yes	FACU
3. *Cynosurus echinatus*	2	No	UPL
4. *Equisetum telmateia*	2	No	FACW
5. *Vicia sativa*	1	No	UPL
6. *Sonchus asper*	1	No	FACU
7. *Genista monspessulana*	1	No	UPL
8.			
9.			
10.			
11.			
	42	=Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
		=Total Cover	
% Bare Ground in Herb Stratum	54		

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	0	x 1 =	0
FACW species	2	x 2 =	4
FAC species	20	x 3 =	60
FACU species	16	x 4 =	64
UPL species	4	x 5 =	20
Column Totals:	42 (A)		148 (B)

Prevalence Index = B/A = 3.52

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ 5 - Wetland Non-Vascular Plants[1]
___ Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks:

SOIL

Sampling Point: W5T1-U

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-6	2.5Y 3/1	100					Loamy/Clayey	Loam
6-14	2.5Y 3/3	100					Loamy/Clayey	Loam

[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)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ 2 cm Muck (A10)
___ 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:
No reaction to alpha alpha-dipyridyl.

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)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Sparsely Vegetated Concave Surface (B8)
___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Stunted or Stressed Plants (D1) (**LRR A**)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water-Stained Leaves (B9) (**MLRA 1, 2 4A, and 4B**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Saturation Visible on Aerial Imagery (C9)
___ Geomorphic Position (D2)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)
___ Raised Ant Mounds (D6) (**LRR A**)
___ Frost-Heave Hummocks (D7)

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:

Investigators: Kelsey McDonald, Misha Schwarz Sampling Date: 05/12/2021

Datasheet # 1 **OHWM Delineation Datasheet** Page 1 of 1

Transect (cross-section) drawing: (choose a location that is representative of the dominant stream characteristics over some distance; label the OHWM and other features of interest along the transect; include an estimate of transect length)

Looking North from south end

Break in Slope at OHWM: ☐ Sharp (> 60°) | ☑ Moderate (30–60°) | ☑ Gentle (< 30°) | ☐ None

Notes/Description: Mod-sharp to west of overflow Break in slope becomes gentle around gravel bar

Sediment Texture: Estimate percentages to describe the general sediment texture above and below the OHWM

	Clay/Silt <0.05mm	Sand 0.05 – 2mm	Gravel 2mm – 1cm	Cobbles 1 – 10cm	Boulders >10cm	Developed Soil Horizons (Y/N)
Above OHWM	25	10	15	20	30	N
Below OHWM	10	25	2	60	3	N

Notes/Description: Boulders and fine sediment deposition above OHWM

Vegetation: Estimate absolute percent cover to describe general vegetation characteristics above and below the OHWM

	Tree (%)	Shrub (%)	Herb (%)	Bare (%)
Above OHWM	2	5	30	63
Below OHWM	0	0	1	99

Notes/Description: Vegetation aligns closely with OHWM on west side (along the slide)

Other Evidence: List/describe any additional field evidence and/or lines of reasoning used to support your delineation

Water marks, deposited wrack, saturation

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region
See ERDC/EL TR-07-24; the proponent agency is CECW-CO-R

OMB Control #: 0710-xxxx, Exp: Pending
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Mattole Stormwater City/County: Eureka/Humboldt Sampling Date: 5/12/2021

Applicant/Owner: GHD for Humboldt County Department of Public Works State: CA Sampling Point: Up1

Investigator(s): Kelsey McDonald, Rose E. Dana Section, Township, Range: S33 T2S R1W

Landform (hillside, terrace, etc.): Hillslope Local relief (concave, convex, none): None Slope (%): 25

Subregion (LRR): LRR A Lat: 40.254753 Long: -124.190597 Datum: WGS 84

Soil Map Unit Name: Yorknorth-Windynip complex, 15-20% slopes 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 ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

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

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

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

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

Remarks:
Slump with rushes

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: 3 meters)			
1. *Rubus ursinus*	20	Yes	FACU
2.			
3.			
4.			
5.			
	20	=Total Cover	
Herb Stratum (Plot size: 1 sq. meter)			
1. *Juncus patens*	30	Yes	FACW
2. *Agrostis capillaris*	25	Yes	FAC
3. *Festuca arundinacea*	15	No	FAC
4. *Anthoxanthum odoratum*	5	No	FACU
5. *Carex harfordii*	2	No	OBL
6. *Vicia sativa*	1	No	UPL
7.			
8.			
9.			
10.			
11.			
	78	=Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
		=Total Cover	
% Bare Ground in Herb Stratum 5			

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	2	x 1 =	2
FACW species	30	x 2 =	60
FAC species	40	x 3 =	120
FACU species	25	x 4 =	100
UPL species	1	x 5 =	5
Column Totals:	98 (A)		287 (B)

Prevalence Index = B/A = 2.93

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ 5 - Wetland Non-Vascular Plants[1]
___ Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks:
Does not pass FAC-neutral.

SOIL

Sampling Point: Up1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-7	10YR 3/2	100					Loamy/Clayey	Gravelly loam
7-14	10YR 3/1	100					Loamy/Clayey	Gravelly loam

[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)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ 2 cm Muck (A10)
___ 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:
Dark soil, no redox

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)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Sparsely Vegetated Concave Surface (B8)
___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Stunted or Stressed Plants (D1) (**LRR A**)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water-Stained Leaves (B9) (**MLRA 1, 2 4A, and 4B**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Saturation Visible on Aerial Imagery (C9)
___ Geomorphic Position (D2)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)
___ Raised Ant Mounds (D6) (**LRR A**)
___ Frost-Heave Hummocks (D7)

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:

Remarks:
Weak potential drainage patterb. Does not pass FAC-neutral.

Appendix C – On-site Plant List

Scientific Name	Common Name	Status	Family	WMVC
Acer macrophyllum	Bigleaf maple	native	Sapindaceae	FACU
Achillea millefolium	Yarrow	native	Asteraceae	FACU
Acmispon parviflorus	Hill lotus	native	Fabaceae	UPL
Acmispon wrangelianus	Chilean trefoil	native	Fabaceae	UPL
Agrostis gigantea	Creeping bentgras	non-native	Poaceae	FAC
Alnus rubra	Red alder	native	Betulaceae	FAC
Anthriscus caucalis	Bur chevril	non-native	Apiaceae	UPL
Arbutus menziesii	Madrono	native	Ericaceae	UPL
Artemisia douglasiana	California mugwort	native	Asteraceae	FACW
Baccharis pilularis	Coyote brush	native	Asteraceae	UPL
Barbarea vulgaris	Yellow rocket	non-native	Brassicaceae	FAC
Bellis perennis	English lawn daisy	non-native	Asteraceae	UPL
Briza maxima	Rattlesnake grass	invasive non-native	Poaceae	UPL
Bromus diandrus	Ripgut brome	invasive non-native	Poaceae	UPL
Bromus hordeaceus	Soft chess	invasive non-native	Poaceae	FACU
Callitriche sp.			Plantaginaceae	
Calochortus tolmiei	Hairy star tulip	native	Liliaceae	UPL
Cardamine oligosperma	Idaho bittercress	native	Brassicaceae	FAC
Carduus pycnocephalus	Italian thistle	invasive non-native	Asteraceae	UPL
Carex gracilior	Slender sedge	native	Cyperaceae	UPL
Carex obnupta	Slough sedge	native	Cyperaceae	OBL
Ceanothus thyrsiflorus	Blueblossom	native	Rhamnaceae	UPL
Chlorogalum pomeridianum	Amole	native	Agavaceae	UPL
Claytonia perfoliata	Miner's lettuce	native	Montiaceae	FAC
Clinopodium douglasii	Yerba buena	native	Lamiaceae	UPL
Cynosurus echinatus	Dogtail grass	invasive non-native	Poaceae	UPL
Cyperus eragrostis	Tall cyperus	native	Cyperaceae	FACW
Dactylis glomerata	Orchardgrass	invasive non-native	Poaceae	FACU
Daucus carota	Carrot	non-native	Apiaceae	FACU
Dryopteris arguta	Wood fern	native	Dryopteridaceae	UPL
Elymus glaucus	Blue wildrye	native	Poaceae	FACU
Epilobium sp.			Onagraceae	
Equisetum laevigatum	Smooth scouring rush	native	Equisetaceae	FACW
Equisetum telmateia	Giant horsetail	native	Equisetaceae	FACW
Erigeron philadelphicus var. philadelphicus	Philadelphia fleabane	native	Asteraceae	UPL
Erodium cicutarium	Coastal heron's bill	invasive non-native	Geraniaceae	UPL
Eschscholzia californica	California poppy	native	Papaveraceae	UPL
Festuca arundinacea	Reed fescue	invasive non-native	Poaceae	UPL
Festuca bromoides	Brome fescue	non-native	Poaceae	UPL
Festuca californica	California fescue	native	Poaceae	FACU
Foeniculum vulgare	Fennel	invasive non-native	Apiaceae	UPL
Fragaria vesca	Wild strawberry	native	Rosaceae	UPL
Fraxinus latifolia	Oregon ash	native	Oleaceae	FACW
Galium aparine	Cleavers	native	Rubiaceae	FACU
Genista monspessulana	French broom	invasive non-native	Fabaceae	UPL

Scientific Name	Common Name	Status	Family	WMVC
Geranium dissectum	Wild geranium	invasive non-native	Geraniaceae	UPL
Grindelia sp.			Asteraceae	
Holodiscus discolor	Oceanspray	native	Rosaceae	FACU
Hypericum perforatum	Klamathweed	invasive non-native	Ericaceae	FACU
Iris douglasiana	Douglas iris	native	Iridaceae	UPL
Juncus bufonius	Common toad rush	native	Juncaceae	FACW
Juncus effusus	Common bog rush	native	Juncaceae	FACW
Juncus patens	Rush	native	Juncaceae	FACW
Lathyrus glandulosus	Sticky pea	rare, native	Fabaceae	UPL
Leucanthemum vulgare	Oxe eye daisy	invasive non-native	Asteraceae	FACU
Linum bienne	Flax	non-native	Linaceae	UPL
Lonicera hispidula	Pink honeysuckle	native	Caprifoliaceae	FACU
Lupinus bicolor	Lupine	native	Fabaceae	UPL
Lupinus rivularis	Riverbank lupine	native	Fabaceae	FAC
Luzula comosa	Hairy wood rush	native	Juncaceae	FAC
Lysimachia arvensis	Scarlet pimpernel	non-native	Myrsinaceae	FAC
Marah oregana	Coast man-root	native	Cucurbitaceae	UPL
Medicago polymorpha	California burclover	invasive non-native	Fabaceae	FACU
Mentha pulegium	Pennyroyal	invasive non-native	Lamiaceae	OBL
Montia fontana	Water montia	native	Montiaceae	FACW
Navarretia mellita	Skunk navarretia	native	Polemoniaceae	FAC
Notholithocarpus densiflorus	Tanoak	native	Fagaceae	UPL
Osmorhiza berteroi	Sweet cicely	native	Apiaceae	FACU
Pentagramma triangularis	Gold back fern	native	Pteridaceae	UPL
Petasites frigidus	Arctic sweet coltsfoot	native	Asteraceae	FACW
Phalaris aquatica	Harding grass	invasive non-native	Poaceae	FACU
Plantago erecta	California plantain	native	Plantaginaceae	UPL
Plantago lanceolata	Ribwort	invasive non-native	Plantaginaceae	FACU
Poa pratensis	Kentucky blue grass	invasive non-native	Poaceae	FAC
Polygonum aviculare	Prostrate knotweed	non-native	Polygonaceae	FAC
Polystichum munitum	Western sword fern	native	Dryopteridaceae	FACU
Prunella vulgaris	Self heal	native	Lamiaceae	FACU
Prunus sp.			Rosaceae	
Pseudotsuga menziesii	Douglas fir	native	Pinaceae	FACU
Pteridium aquilinum	Western brackenfern	native	Dennstaedtiaceae	FACU
Quercus garryana	Oregon oak	native	Fagaceae	FACU
Ranunculus californicus	Common buttercup	native	Ranunculaceae	FAC
Ranunculus sardous	Hairy buttercup	non-native	Ranunculaceae	FAC
Ribes roezlii	Sierra gooseberry	native	Grossulariaceae	UPL
Ribes sanguineum	Flowering currant	native	Grossulariaceae	FACU
Rosa cf. rubiginosa	Sweet brier	non-native	Rosaceae	
Rubus armeniacus	Himalayan blackberry	invasive non-native	Rosaceae	FAC
Rubus parviflorus	Thimbleberry	native	Rosaceae	FACU
Rubus ursinus	California blackberry	native	Rosaceae	FACU
Rumex crispus	Curly dock	invasive non-native	Polygonaceae	FAC
Salix lasiolepis	Arroyo willow	native	Salicaceae	FACW
Sanicula crassicaulis	Pacific sanicle	native	Apiaceae	UPL
Saxifraga mertensiana	Wood saxifrage	native	Saxifragaceae	FACW
Scoliopus bigelovii	Slink pod	native	Liliaceae	UPL
Sisyrinchium bellum	Blue eyed grass	native	Iridaceae	FACW

Scientific Name	Common Name	Status	Family	WMVC
Sonchus arvensis	Perennial sow thistle	non-native	Asteraceae	FACU
Stellaria media	Chickweed	non-native	Caryophyllaceae	FACU
Stellaria nitens	Shining chickweed	native	Caryophyllaceae	UPL
Symphoricarpos albus	Common snowberry	native	Caprifoliaceae	FACU
Taraxacum officinale	Red seeded dandelion	non-native	Asteraceae	FACU
Tellima grandiflora	Fringe cups	native	Saxifragaceae	FACU
Toxicodendron diversilobum	Poison oak	native	Anacardiaceae	FAC
Trifolium glomeratum	Clover	non-native	Fabaceae	UPL
Trifolium subterraneum	Subterranean clover	non-native	Fabaceae	UPL
Umbellularia californica	California bay	native	Lauraceae	FAC
Vicia hirsuta	Hairy vetch	non-native	Fabaceae	UPL
Vicia sativa	Spring vetch	non-native	Fabaceae	UPL
Vicia villosa	Hairy vetch	non-native	Fabaceae	UPL

Appendix D – Site Photographs

Photo 1. Wetland 1, observed west of Mattole Road in the northwest corner of the Project Area, in a natural ephemeral channel.

Photo 2. Wetland 2, a vegetated wetland ditch, observed along the western side of Mattole Road.

Photo 3. The southern extent of Wetland 2, transect W2T2.

Photo 4. Wetland 3. Wetland 3 was observed west side of Mattole Road, at the slope toe of the existing hillslope failure located above the road.

Photo 5. Wetland 5, identified east of Mattole Road, near the slope toe at the bottom of hillslope failure, directly above the Mattole River.

Photo 6. Ditch 1, observed in the northwestern corner of the Project Area, along the western side of Mattole Road. Wetland 1 flows into Ditch 1.

Photo 7. Ditch 2, observed along the western side of Mattole Road, directly below the hillside failure at the slope toe.

Photo 8. Watercourse 1, observed below the existing Mattole Road culvert outlet.

Photo 9. The Mattole Seasonal Side Channel is a seasonally connected component of the Mattole River observed at the base of the hillside failure. The gravel bar (above OHWM) separates the Seasonal Side Channel from the Mattole River.

Photo 10. Culvert outlet above ephemeral drainage.

Appendix E – NRCS Custom Soil Resource 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

Humboldt County, South Part, California

Mattole Road PM 5.25 Storm Damage Repair Project

May 25, 2021

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.

Soil Map


124° 11' 34" W
124° 11' 18" W
40° 15' 26" N
40° 15' 11" N
398590
398650
398710
398770
398830
398890
4456980
4456920
4456860
4456800
4456740
4456680
4456620
4456560
211
567
567
100
663
5505
Mattole River
State Hwy 211
Soil Map may not be valid at this scale.
Map Scale: 1:2,330 if printed on A portrait (8.5" x 11") sheet.
Meters
0 30 60 120 180
Feet
0 100 200 400 600
N
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

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

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

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

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

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

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

Soil Survey Area: Humboldt County, South Part, California
Survey Area Data: Version 9, Jun 1, 2020

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

Date(s) aerial images were photographed: May 8, 2019—Jun 21, 2019

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
100	Water and Fluvents, 0 to 2 percent slopes	0.4	5.5%
567	Crazycoyote-Sproulish-Caperidge complex, 15 to 50 percent slopes	0.5	7.0%
663	Yorknorth-Windynip complex, 15 to 50 percent slopes	6.2	87.0%
5505	Crazycoyote-Sproulish-Canoecreek complex, 30 to 50 percent slopes	0.0	0.5%
Totals for Area of Interest		**7.1**	**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.

Humboldt County, South Part, California

100—Water and Fluvents, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 1l9dm
Elevation: 10 to 50 feet
Mean annual precipitation: 40 to 75 inches
Mean annual air temperature: 50 to 59 degrees F
Frost-free period: 300 to 330 days
Farmland classification: Not prime farmland

Map Unit Composition

Water: 60 percent
Fluvents and similar soils: 35 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Water

Setting

Landform: Rivers on channels
Down-slope shape: Concave, linear
Across-slope shape: Linear

Description of Fluvents

Setting

Landform: Point bars on channels
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave, convex
Across-slope shape: Linear
Parent material: Alluvium derived from mixed

Typical profile

A - 0 to 13 inches: gravelly fine sandy loam
C - 13 to 59 inches: extremely gravelly sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: FrequentNone
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water capacity: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): 5w
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Other vegetative classification: Riparian & Wetland Vegetation (RNPR001CA)

Hydric soil rating: Yes

Minor Components

Typic udifluvents

Percent of map unit: 4 percent
Landform: Meandering channels
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Rock outcrop

Percent of map unit: 1 percent
Landform: Channels
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

567—Crazycoyote-Sproulish-Caperidge complex, 15 to 50 percent slopes

Map Unit Setting

National map unit symbol: 1lpq2
Elevation: 660 to 3,280 feet
Mean annual precipitation: 60 to 100 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 240 to 300 days
Farmland classification: Not prime farmland

Map Unit Composition

Crazycoyote and similar soils: 32 percent
Sproulish, warm, and similar soils: 28 percent
Caperidge, warm, and similar soils: 25 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Crazycoyote

Setting

Landform: Ridges
Landform position (two-dimensional): Shoulder, summit
Landform position (three-dimensional): Mountaintop
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Colluvium and residuum derived from sandstone and mudstone

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A1 - 1 to 7 inches: loam
A2 - 7 to 12 inches: loam
ABt - 12 to 20 inches: loam
Bt1 - 20 to 39 inches: loam
Bt2 - 39 to 63 inches: very gravelly loam

Properties and qualities

Slope: 15 to 50 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water capacity: Moderate (about 6.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Hydric soil rating: No

Description of Sproulish, Warm

Setting

Landform: Ridges
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Mountaintop
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Colluvium derived from mudstone and/or colluvium derived from sandstone and/or residuum weathered from mudstone and/or residuum weathered from sandstone

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 11 inches: loam
Bt1 - 11 to 26 inches: paragravelly loam
Bt2 - 26 to 39 inches: paragravelly clay loam
Bt3 - 39 to 55 inches: very paragravelly loam
Bt4 - 55 to 71 inches: very paragravelly loam

Properties and qualities

Slope: 15 to 50 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water capacity: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Hydric soil rating: No

Description of Caperidge, Warm

Setting

Landform: Ridges
Landform position (two-dimensional): Shoulder, summit
Landform position (three-dimensional): Mountaintop
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Parent material: Colluvium derived from sandstone and/or residuum weathered from sandstone

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A1 - 2 to 9 inches: very gravelly loam
A2 - 9 to 23 inches: very gravelly loam
Bw1 - 23 to 33 inches: very gravelly loam
Bw2 - 33 to 47 inches: very gravelly loam
C1 - 47 to 65 inches: extremely gravelly sandy loam
C2 - 65 to 79 inches: very gravelly sandy loam

Properties and qualities

Slope: 15 to 50 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water capacity: Moderate (about 6.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Canoecreek

Percent of map unit: 8 percent
Landform: Mountain slopes, ridges
Landform position (two-dimensional): Backslope, summit, shoulder
Landform position (three-dimensional): Mountainflank, mountaintop
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Wirefence

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Backslope, summit
Landform position (three-dimensional): Mountaintop
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Rock outcrop

Percent of map unit: 2 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Center third of mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

663—Yorknorth-Windynip complex, 15 to 50 percent slopes

Map Unit Setting

National map unit symbol: 1lpqb
Elevation: 200 to 3,280 feet
Mean annual precipitation: 60 to 90 inches
Mean annual air temperature: 48 to 57 degrees F
Frost-free period: 240 to 280 days
Farmland classification: Not prime farmland

Map Unit Composition

Yorknorth, moist, and similar soils: 70 percent
Windynip and similar soils: 15 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Yorknorth, Moist

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Concave, linear
Across-slope shape: Linear, concave
Parent material: Colluvium derived from sandstone and/or earthflow deposits derived from schist

Typical profile

A - 0 to 10 inches: silt loam

BAt - 10 to 26 inches: silty clay loam
Bt1 - 26 to 35 inches: silty clay loam
Bt2 - 35 to 51 inches: silty clay loam
BCt - 51 to 71 inches: clay loam

Properties and qualities
Slope: 15 to 50 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: About 20 to 39 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water capacity: High (about 10.2 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Hydric soil rating: No

Description of Windynip

Setting
Landform: Mountain slopes
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Colluvium and residuum derived from sandstone and mudstone

Typical profile
A1 - 0 to 4 inches: loam
A2 - 4 to 20 inches: loam
Bt1 - 20 to 30 inches: gravelly clay loam
Bt2 - 30 to 43 inches: gravelly clay loam
BCt - 43 to 79 inches: paragravelly clay loam

Properties and qualities
Slope: 15 to 50 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water capacity: Moderate (about 8.8 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Coyoterock

Percent of map unit: 8 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Center third of mountainflank
Down-slope shape: Linear, concave
Across-slope shape: Concave, linear
Hydric soil rating: No

Crazycoyote

Percent of map unit: 3 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Center third of mountainflank
Down-slope shape: Linear, concave, convex
Across-slope shape: Linear
Hydric soil rating: No

Devilshole

Percent of map unit: 2 percent
Landform: Mountain slopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Upper third of mountainflank
Down-slope shape: Convex, linear
Across-slope shape: Linear, convex
Hydric soil rating: No

Rock outcrop

Percent of map unit: 2 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Center third of mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

5505—Crazycoyote-Sproulish-Canoecreek complex, 30 to 50 percent slopes

Map Unit Setting

National map unit symbol: 2mhhg
Elevation: 200 to 3,280 feet
Mean annual precipitation: 60 to 100 inches
Mean annual air temperature: 48 to 57 degrees F

Frost-free period: 240 to 300 days
Farmland classification: Not prime farmland

Map Unit Composition

Crazycoyote and similar soils: 35 percent
Sproulish and similar soils: 30 percent
Canoecreek and similar soils: 20 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Crazycoyote

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex, linear, concave
Across-slope shape: Linear
Parent material: Colluvium derived from sandstone and/or residuum weathered from sandstone

Typical profile

Oi - 0 to 2 inches: gravelly slightly decomposed plant material
A1 - 2 to 5 inches: gravelly loam
A2 - 5 to 15 inches: gravelly loam
Bt1 - 15 to 25 inches: gravelly loam
Bt2 - 25 to 35 inches: very paragravelly loam
BCt - 35 to 52 inches: very paragravelly loam
C - 52 to 79 inches: paragravelly sandy loam

Properties and qualities

Slope: 30 to 50 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water capacity: Moderate (about 7.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Hydric soil rating: No

Description of Sproulish

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Linear

Parent material: Colluvium derived from mudstone and/or sandstone and/or residuum weathered from mudstone and/or sandstone

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 4 inches: loam
Bt1 - 4 to 24 inches: loam
Bt2 - 24 to 39 inches: gravelly clay loam
Bt3 - 39 to 55 inches: very gravelly clay loam
BCt - 55 to 79 inches: gravelly clay loam

Properties and qualities

Slope: 30 to 50 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water capacity: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Hydric soil rating: No

Description of Canoecreek

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Colluvium derived from mudstone and/or sandstone and/or residuum weathered from mudstone and/or sandstone

Typical profile

Oi - 0 to 2 inches: gravelly slightly decomposed plant material
A - 2 to 12 inches: very gravelly loam
Bw - 12 to 24 inches: very gravelly loam
C1 - 24 to 35 inches: very gravelly loam
C2 - 35 to 71 inches: extremely gravelly loam

Properties and qualities

Slope: 30 to 50 percent
Surface area covered with cobbles, stones or boulders: 1.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches

Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water capacity: Low (about 4.6 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Windynip
Percent of map unit: 7 percent
Landform: Mountain slopes
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Kingrange
Percent of map unit: 6 percent
Landform: Mountain slopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Rock outcrop
Percent of map unit: 2 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Center third of mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

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Appendix F – Record of Climatological Observations and WETS Table

WETS Station: SCOTIA, CA								
Requested years: 1971 - 2000								
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	55.7	39.6	47.6	8.45	4.55	10.32	11	0.1
Feb	57.4	40.9	49.1	7.70	4.40	9.37	11	0.3
Mar	58.3	41.9	50.1	7.40	4.84	8.89	12	0.0
Apr	60.4	43.5	52.0	3.38	2.02	4.10	7	0.0
May	63.0	46.9	55.0	1.72	0.83	2.11	4	0.0
Jun	66.1	50.2	58.2	0.55	0.21	0.67	1	0.0
Jul	69.0	52.3	60.7	0.12	0.03	0.12	0	0.0
Aug	70.4	52.9	61.6	0.34	0.06	0.29	1	0.0
Sep	70.7	50.5	60.6	0.82	0.17	0.73	2	0.0
Oct	67.1	46.9	57.0	2.81	1.29	3.43	5	0.0
Nov	59.7	42.8	51.2	6.87	3.59	8.39	11	0.0
Dec	55.5	39.3	47.4	8.34	4.18	10.19	11	0.2
Annual:					40.12	55.11		
Average	62.8	45.6	54.2	-	-	-	-	-
Total	-	-	-	48.52			77	0.6

GROWING SEASON DATES

Years with missing data:	24 deg = 0	28 deg = 2	32 deg = 1
Years with no occurrence:	24 deg = 30	28 deg = 17	32 deg = 2
Data years used:	24 deg = 30	28 deg = 28	32 deg = 29
Probability	24 F or higher	28 F or higher	32 F or higher
50 percent *	No occurrence	No occurrence	2/7 to 12/14: 310 days
70 percent *	No occurrence	No occurrence	1/25 to 12/28: 337 days
* 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
1926	7.18	10.17	T	1.53	1.17	0.00	0.00	0.21	0.51	5.67	18.65	7.95	53.04
1927		13.15	3.66	4.01	1.53	1.35	T	0.00	0.36	1.67	9.29	4.11	39.13
1928	4.31	3.81	7.43	6.77	0.11	0.56	T	0.03	0.27	0.69	6.42	8.00	38.40
1929	3.11	3.25	3.15	2.20	0.16	1.75	0.00	0.00	0.00	0.16	T	9.37	23.15
1930	6.77	6.54	3.54	3.39	1.09	0.22	T	0.00	0.73	0.90	3.92	2.99	30.09
1931	M2.86	M2.40	3.74	1.63	0.38	0.84	0.00	0.00	0.19	4.17	6.32	13.81	36.34
1932	9.09	1.51	2.74	4.17	2.49	0.06	0.13	0.01	0.00	0.53	7.48	6.88	35.09
1933	10.37	2.11	12.13	1.60	4.72	0.17	0.00	T	0.39	2.17	0.47	13.49	47.62
1934	4.75	5.04	2.98	1.27	3.36	1.20	T	0.03	0.	6.53	8.44	6.26	40.

									70				56
1935	10.13	4.00	7.12	5.38	0.16	0.13	0.01	T	0.69	3.81	2.74	7.98	42.15
1936	14.11	8.74	2.97	3.43	1.62	1.97	0.25	0.00	0.00	0.30	0.03	3.37	36.79
1937	7.33	11.17	7.98	4.30	0.57	1.24	0.00	0.09	0.06	4.28	15.15	8.52	60.69
1938	9.93	19.39	16.54	2.65	M0.41	0.00	0.00	0.00	1.10	3.53	6.14	6.96	66.65
1939	6.51	5.05	5.24	0.29	1.88	0.50	0.06	T	T	1.33	1.37	14.65	36.88
1940	8.58	14.60	6.38	0.67	1.95	0.65	0.00	0.00	1.05	3.57	2.30	17.11	56.86
1941	15.32	11.92	5.70	4.85	2.28	1.48	0.01	0.09	0.91	2.18	3.81	18.94	67.49
1942	5.94	9.39	2.32	6.33	5.41	0.27	T	0.00	0.00	1.00	10.29	8.81	49.76
1943	10.05	3.12	5.80	2.95	1.34	1.14	0.00	0.21	0.07	5.82	3.66	2.49	36.65
1944	6.16	5.42	3.25	4.06	1.88	1.44	T	0.00	0.27	3.11	9.01	8.94	43.54
1945	3.38	9.83	8.61	2.28	2.30	0.00	0.00	0.02	0.32	7.02	10.78	15.31	59.85
1946	5.06	6.69	4.44	0.75	0.79	0.07	0.19	T	0.33	1.96	7.69	1.73	29.70
1947	4.84	3.60	7.48	1.86	0.04	1.49	0.35	0.26	0.33	7.31	2.02	3.76	33.34
1948	7.30	4.72	6.77	10.19	3.39	1.49	0.03	0.15	0.88	2.11	2.92	9.65	49.60
1949	1.88	6.79	14.05	0.19	1.27	0.37	0.02	0.18	0.27	2.28	2.65	4.21	34.16
1950	13.01	6.73	7.35	2.03	1.63	0.80	0.01	0.01	0.34	14.55	4.83	7.31	58.60
1951	10.78	7.61	3.48	2.05	1.52	0.00	0.11	MT	0.23	4.82	8.93	12.91	52.44
1952	15.22	6.74	7.14	1.53	1.99	1.68	0.00	0.00	0.17	0.30	2.47	18.66	55.90
1953	13.23	2.98	8.70	3.35	5.61	1.63	0.01	0.27	0.03	3.00	10.24	M4.27	53.32
1954	16.08	7.54	6.96	3.44	0.06	1.80	0.01	1.74	0.60	1.78	6.26	10.15	56.42
1955	5.64	3.59	1.73	7.92	0.12	0.11	0.11	0.01	0.78	1.71	7.65	22.88	52.25
1956	14.43	11.37	1.82	0.72	1.70	0.98	0.04	0.00	0.00	5.76	0.44	5.73	42.99
1957	8.21	8.92	8.34	3.21	4.14	0.10	0.09	0.10	2.88	5.17	5.62	8.03	54.81
1958	11.48	21.54	8.23	6.39	1.12	1.83	0.11	0.04	M0.66	M0.43	3.79	3.77	59.39
1959	19.75	15.52	2.86	0.24	0.73	0.11	0.00	0.00	2.16	0.77	0.25	3.84	46.23
1960	6.20	10.78	6.83	2.62	M4.17	M0.00	0.00	T	0.00	1.27	8.53	7.55	47.95
1961	4.48	7.91	9.78	M2.42	M2.43	0.19	0.06	M0.19	0.40	1.73	6.60	3.60	39.79
1962	3.17	11.56	7.18	2.34	0.86	0.04	0.01	1.46	0.98	9.14	6.57	4.52	47.83
1963	2.73	7.54	9.26	12.38	2.45	0.25	0.08	0.02	0.36	5.66	8.70	2.65	52.08
1964	9.59	1.68	6.11	0.86	1.65	0.87	0.16	0.10	0.03	2.73	9.74	18.37	51.89
1965	9.50	1.78	1.20	8.77	0.18	0.28	0.00	0.15	0.00	0.39	11.25	6.79	40.29
1966	14.24	5.95	6.08	1.31	0.08	0.37	0.03	0.34	1.13	0.61	11.33	8.38	49.85
1967	10.84	1.13	12.42	4.65	1.08	0.19	T	0.00	0.85	2.75	4.96	6.48	45.35
1968	11.39	3.51	5.11	0.32	0.98	0.32	0.06	1.53	0.	3.23	5.64	17.	49.

									19			37	65
1969	16.19	13.52	2.08	3.78	0.73	0.43	0.01	0.00	0.70	1.40	3.40	14.45	56.69
1970	17.32	4.65	3.24	1.33	1.03	0.09	0.00	T	0.10	2.30	12.96	13.32	56.34
1971	8.60	3.34	7.76	3.30	0.71	0.66	0.07	0.34	1.83	1.19	10.29	11.21	49.30
1972	6.33	5.53	5.54	3.83	0.83	0.73	T	0.07	1.65	3.98	7.47		35.96
1973	10.80	7.91	6.94	1.11	0.36	0.06	0.00	T	2.41	4.49	21.53	11.21	66.82
1974	11.73	8.36	10.44	4.20	0.40	0.26	0.15	0.80	T	1.95	3.58	10.36	52.23
1975	5.86	10.77	14.78	3.61	0.72	0.34	0.08	0.60	T	8.60	4.67	5.08	55.11
1976	1.51	8.80	3.81	5.45	0.12	0.15	0.25	1.63	0.01	0.20	2.33	0.71	24.97
1977	2.53	3.43	4.90	0.67	2.89	0.16	T	0.08	3.34	2.40	6.60	9.58	36.58
1978	17.20	10.27	5.52	5.17	1.02	0.16	0.03	0.39	3.30	0.06	2.10	2.48	47.70
1979	6.31	8.69	4.89	4.93	2.87	0.05	0.11	0.25	0.39	8.68	8.14	7.35	52.66
1980	7.62	9.83	6.91	4.86	2.11	0.15	0.01	0.02	0.18	1.48	1.94	8.72	43.83
1981	12.90	4.90	5.50	1.26	1.54	0.34	0.01	0.03	1.41	5.44	13.81	10.58	57.72
1982	M6.16	6.55	11.46	8.74	0.05	0.48	0.20	0.15	0.81	6.78	8.16	15.51	65.05
1983	13.34	13.76	15.12	5.94	1.45	M0.46	0.41	3.15	0.37	1.03	16.01	17.31	88.35
1984	0.74	6.03	6.27	3.44	1.01	1.02	T	0.05	0.25	3.22	18.70	3.44	44.17
1985	0.55	3.61	6.18	0.46	0.65	0.41	0.04	0.24	1.13	3.51	2.96	4.59	24.33
1986	9.62	16.10	8.31	1.25	2.31	0.12	0.04	T	3.85	1.56	1.88	4.34	49.38
1987	6.20	5.81	12.04	0.75	1.11	0.28	0.05	0.03	0.00	1.25	4.80	18.02	50.34
1988	6.38	0.16	1.36	2.70	1.59	3.57	0.04	T	0.07	0.65	10.84	9.04	36.40
1989	4.95	2.70	10.26	2.10	1.86	0.43	0.03	0.72	1.09	5.10	1.76	0.11	31.11
1990	9.14	5.40	3.28	1.22	4.50	0.15	0.11	0.67	0.26	2.47	2.99	2.84	33.03
1991	1.40	3.66	13.33	1.79	3.29	0.35	0.97	0.05	T	2.08	2.33	3.99	33.24
1992	5.05	10.19	6.11	2.58	1.29	1.02	0.52	T	0.03	2.68	2.43	13.27	45.17
1993	10.81	7.30	3.40	5.76	5.06	1.59	0.05	0.26	T	1.36	2.10	8.66	46.35
1994	6.19	8.93	2.93	3.26	1.83	0.18	0.03	T	0.10	0.70	8.54	6.32	39.01
1995	26.41	1.65	16.07	6.67	1.69	1.25	0.17	0.05	0.30	0.39	1.10	14.82	70.57
1996	11.05	9.33	4.81	5.26	2.47	0.17	0.03	0.00	0.74	3.01	5.42	22.58	64.87
1997	12.90	3.02	2.38	2.27	0.59	1.17	0.01	0.45	0.79	2.33	9.39	5.83	41.13
1998	16.47	19.83	9.07	3.56	4.70	0.20	0.10	0.01	0.01	1.98	11.99	6.04	73.96
1999	4.72	13.30	10.16	2.71	1.08	0.06	T	0.22	T	2.32	9.17	4.59	48.33
2000	10.11	11.79	2.54	2.62	1.64	0.51	0.03	0.01	0.39	3.49	3.16	3.17	39.46
2001	7.14	6.65	5.02	3.12	0.23	0.68	0.08	0.08	0.11	1.44	9.41	12.45	46.41
2002	6.35	3.88	4.84	2.74	0.83	0.04	0.02	T	0.	0.02	5.02	27.	51.

									08			44	26
2003	5.13	4.23	7.38	13.95	1.27	0.10	0.01	0.13	0.30	0.20	4.98	12.90	50.58
2004	8.02	14.41	2.72	1.33	1.45	0.06	0.00	0.21	M0.25	6.46	1.85	9.92	46.68
2005	7.60	3.98	8.36	5.96	4.64	2.77	0.01	0.00	0.03	1.48	7.32	M18.79	60.94
2006	11.66	6.65	15.20	5.21	1.46	0.14	0.01	0.00	0.24	0.55	7.65	9.46	58.23
2007	1.70	12.31	2.91	3.61	0.82	0.46	0.67	0.02	0.31	3.62	1.89	10.72	39.04
2008	14.64	5.13	2.35	2.38	0.05	0.24	0.02	M0.00			6.38	5.39	36.58
2009	1.94	10.05	M5.88	1.31	2.76	0.06	0.02	0.01	0.45	4.33	4.59	4.58	35.98
2010	16.23	6.20	5.53	7.97	3.21	1.55	0.00	0.17	0.53	4.16	4.94	14.02	64.51
2011	M1.12	5.70	M15.08	3.89	M2.34	1.11	0.24	0.01	0.19	M2.82	4.29	1.07	37.86
2012	M6.47	4.20	13.39	M3.84	0.91	1.03	0.76	0.02	0.00	M2.24	M8.66	14.44	55.96
2013	3.02	1.47	M3.45	1.61	M0.87	M0.37	0.00	M0.50	3.78	M0.03	M0.88	0.64	16.62
2014	0.87	M4.19	7.25	M0.94	M0.81	M0.18	0.06	0.00	2.46	5.60	M3.99	11.67	38.02
2015	1.22	11.92	2.30	3.66	0.33	M0.02	0.19	M0.28	0.50	0.68	4.85	14.81	40.76
2016	15.17	3.45	M12.25	M2.74	1.36	0.07	0.06	T	0.06	M10.39	8.19	7.32	61.06
2017	M16.33	M16.84	M7.80	M6.84	M1.01	M0.46	0.11	M0.00	0.56	M0.98	6.58	1.21	58.72
2018	M7.38	M3.01	8.90	4.00	M0.90	0.27	0.00	0.02	0.47	1.24	5.70	6.26	38.15
2019	10.80	17.62	6.66	2.98	4.78	0.00	0.03	M0.19	1.00	0.76	2.04	11.06	57.92
2020	8.01	0.74	2.34	1.86	3.72	0.49	0.00	0.05	0.29	0.14	2.94	3.95	24.53
2021	9.50	5.08	4.88	0.66	M0.05								20.17
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: 2016-07-22													

Climatological Data for SCOTIA, CA - April 2021

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2021-04-01	73	42	57.5	18	8	0.00	M	M
2021-04-02	66	45	55.5	16	6	0.00	M	M
2021-04-03	58	44	51.0	11	1	0.00	M	M
2021-04-04	53	47	50.0	10	0	0.00	M	M
2021-04-05	57	45	51.0	11	1	0.00	M	M
2021-04-06	60	38	49.0	9	0	0.00	M	M
2021-04-07	56	46	51.0	11	1	0.00	M	M
2021-04-08	55	44	49.5	10	0	0.00	M	M
2021-04-09	55	44	49.5	10	0	0.00	M	M
2021-04-10	55	39	47.0	7	0	0.00	M	M
2021-04-11	56	34	45.0	5	0	0.00	M	M
2021-04-12	61	37	49.0	9	0	0.00	M	M
2021-04-13	62	40	51.0	11	1	0.00	M	M
2021-04-14	66	37	51.5	12	2	0.00	M	M
2021-04-15	65	36	50.5	11	1	0.00	M	M
2021-04-16	61	40	50.5	11	1	0.00	M	M
2021-04-17	65	44	54.5	15	5	0.00	M	M
2021-04-18	66	44	55.0	15	5	0.00	M	M
2021-04-19	64	46	55.0	15	5	0.00	M	M
2021-04-20	64	47	55.5	16	6	0.08	M	M
2021-04-21	59	46	52.5	13	3	0.00	M	M
2021-04-22	58	45	51.5	12	2	0.00	M	M
2021-04-23	65	43	54.0	14	4	0.00	M	M
2021-04-24	58	46	52.0	12	2	0.04	M	M
2021-04-25	56	44	50.0	10	0	0.52	M	M
2021-04-26	58	44	51.0	11	1	0.02	M	M
2021-04-27	63	37	50.0	10	0	0.00	M	M
2021-04-28	70	41	55.5	16	6	0.00	M	M
2021-04-29	66	45	55.5	16	6	0.00	M	M
2021-04-30	66	42	54.0	14	4	0.00	M	M
Average|Sum	**61.2**	**42.4**	**51.8**	**361**	**71**	**0.66**	**M**	**M**

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Appendix H - NRCS Soil Resource 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

Humboldt County, South Part, California

Mattole Road PM 2.5 Storm Damage Repair Project

May 22, 2021

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.

Soil Map


124° 11' 34" W
124° 11' 18" W
398590
398650
398710
398770
398830
398890
40° 15' 26" N
40° 15' 11" N
4456980
4456920
4456860
4456800
4456740
4456680
4456620
4456560
211
567
567
100
663
5505
Mattole River
State Hwy 211
Soil Map may not be valid at this scale.
Map Scale: 1:2,330 if printed on A portrait (8.5" x 11") sheet.
Meters
0 30 60 120 180
Feet
0 100 200 400 600
N
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

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

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

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

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

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

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

Soil Survey Area: Humboldt County, South Part, California
Survey Area Data: Version 9, Jun 1, 2020

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

Date(s) aerial images were photographed: May 8, 2019—Jun 21, 2019

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
100	Water and Fluvents, 0 to 2 percent slopes	0.4	5.5%
567	Crazycoyote-Sproulish-Caperidge complex, 15 to 50 percent slopes	0.5	7.0%
663	Yorknorth-Windynip complex, 15 to 50 percent slopes	6.2	87.0%
5505	Crazycoyote-Sproulish-Canoecreek complex, 30 to 50 percent slopes	0.0	0.5%
Totals for Area of Interest		**7.1**	**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.

Humboldt County, South Part, California

100—Water and Fluvents, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 1l9dm
Elevation: 10 to 50 feet
Mean annual precipitation: 40 to 75 inches
Mean annual air temperature: 50 to 59 degrees F
Frost-free period: 300 to 330 days
Farmland classification: Not prime farmland

Map Unit Composition

Water: 60 percent
Fluvents and similar soils: 35 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Water

Setting

Landform: Rivers on channels
Down-slope shape: Concave, linear
Across-slope shape: Linear

Description of Fluvents

Setting

Landform: Point bars on channels
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave, convex
Across-slope shape: Linear
Parent material: Alluvium derived from mixed

Typical profile

A - 0 to 13 inches: gravelly fine sandy loam
C - 13 to 59 inches: extremely gravelly sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: FrequentNone
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water capacity: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): 5w
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Other vegetative classification: Riparian & Wetland Vegetation (RNPR001CA)

Hydric soil rating: Yes

Minor Components

Typic udifluvents

Percent of map unit: 4 percent
Landform: Meandering channels
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Rock outcrop

Percent of map unit: 1 percent
Landform: Channels
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

567—Crazycoyote-Sproulish-Caperidge complex, 15 to 50 percent slopes

Map Unit Setting

National map unit symbol: 1lpq2
Elevation: 660 to 3,280 feet
Mean annual precipitation: 60 to 100 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 240 to 300 days
Farmland classification: Not prime farmland

Map Unit Composition

Crazycoyote and similar soils: 32 percent
Sproulish, warm, and similar soils: 28 percent
Caperidge, warm, and similar soils: 25 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Crazycoyote

Setting

Landform: Ridges
Landform position (two-dimensional): Shoulder, summit
Landform position (three-dimensional): Mountaintop
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Colluvium and residuum derived from sandstone and mudstone

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A1 - 1 to 7 inches: loam
A2 - 7 to 12 inches: loam
ABt - 12 to 20 inches: loam
Bt1 - 20 to 39 inches: loam
Bt2 - 39 to 63 inches: very gravelly loam

Properties and qualities

Slope: 15 to 50 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water capacity: Moderate (about 6.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Hydric soil rating: No

Description of Sproulish, Warm

Setting

Landform: Ridges
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Mountaintop
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Colluvium derived from mudstone and/or colluvium derived from sandstone and/or residuum weathered from mudstone and/or residuum weathered from sandstone

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 11 inches: loam
Bt1 - 11 to 26 inches: paragravelly loam
Bt2 - 26 to 39 inches: paragravelly clay loam
Bt3 - 39 to 55 inches: very paragravelly loam
Bt4 - 55 to 71 inches: very paragravelly loam

Properties and qualities

Slope: 15 to 50 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water capacity: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Hydric soil rating: No

Description of Caperidge, Warm

Setting

Landform: Ridges
Landform position (two-dimensional): Shoulder, summit
Landform position (three-dimensional): Mountaintop
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Parent material: Colluvium derived from sandstone and/or residuum weathered from sandstone

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A1 - 2 to 9 inches: very gravelly loam
A2 - 9 to 23 inches: very gravelly loam
Bw1 - 23 to 33 inches: very gravelly loam
Bw2 - 33 to 47 inches: very gravelly loam
C1 - 47 to 65 inches: extremely gravelly sandy loam
C2 - 65 to 79 inches: very gravelly sandy loam

Properties and qualities

Slope: 15 to 50 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water capacity: Moderate (about 6.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Canoecreek

Percent of map unit: 8 percent
Landform: Mountain slopes, ridges
Landform position (two-dimensional): Backslope, summit, shoulder
Landform position (three-dimensional): Mountainflank, mountaintop
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Wirefence

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Backslope, summit
Landform position (three-dimensional): Mountaintop
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Rock outcrop

Percent of map unit: 2 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Center third of mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

663—Yorknorth-Windynip complex, 15 to 50 percent slopes

Map Unit Setting

National map unit symbol: 1lpqb
Elevation: 200 to 3,280 feet
Mean annual precipitation: 60 to 90 inches
Mean annual air temperature: 48 to 57 degrees F
Frost-free period: 240 to 280 days
Farmland classification: Not prime farmland

Map Unit Composition

Yorknorth, moist, and similar soils: 70 percent
Windynip and similar soils: 15 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Yorknorth, Moist

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Concave, linear
Across-slope shape: Linear, concave
Parent material: Colluvium derived from sandstone and/or earthflow deposits derived from schist

Typical profile

A - 0 to 10 inches: silt loam

BAt - 10 to 26 inches: silty clay loam
Bt1 - 26 to 35 inches: silty clay loam
Bt2 - 35 to 51 inches: silty clay loam
BCt - 51 to 71 inches: clay loam

Properties and qualities
Slope: 15 to 50 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: About 20 to 39 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water capacity: High (about 10.2 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Hydric soil rating: No

Description of Windynip

Setting
Landform: Mountain slopes
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Colluvium and residuum derived from sandstone and mudstone

Typical profile
A1 - 0 to 4 inches: loam
A2 - 4 to 20 inches: loam
Bt1 - 20 to 30 inches: gravelly clay loam
Bt2 - 30 to 43 inches: gravelly clay loam
BCt - 43 to 79 inches: paragravelly clay loam

Properties and qualities
Slope: 15 to 50 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water capacity: Moderate (about 8.8 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Coyoterock

Percent of map unit: 8 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Center third of mountainflank
Down-slope shape: Linear, concave
Across-slope shape: Concave, linear
Hydric soil rating: No

Crazycoyote

Percent of map unit: 3 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Center third of mountainflank
Down-slope shape: Linear, concave, convex
Across-slope shape: Linear
Hydric soil rating: No

Devilshole

Percent of map unit: 2 percent
Landform: Mountain slopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Upper third of mountainflank
Down-slope shape: Convex, linear
Across-slope shape: Linear, convex
Hydric soil rating: No

Rock outcrop

Percent of map unit: 2 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Center third of mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

5505—Crazycoyote-Sproulish-Canoecreek complex, 30 to 50 percent slopes

Map Unit Setting

National map unit symbol: 2mhhg
Elevation: 200 to 3,280 feet
Mean annual precipitation: 60 to 100 inches
Mean annual air temperature: 48 to 57 degrees F

Frost-free period: 240 to 300 days
Farmland classification: Not prime farmland

Map Unit Composition

Crazycoyote and similar soils: 35 percent
Sproulish and similar soils: 30 percent
Canoecreek and similar soils: 20 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Crazycoyote

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex, linear, concave
Across-slope shape: Linear
Parent material: Colluvium derived from sandstone and/or residuum weathered from sandstone

Typical profile

Oi - 0 to 2 inches: gravelly slightly decomposed plant material
A1 - 2 to 5 inches: gravelly loam
A2 - 5 to 15 inches: gravelly loam
Bt1 - 15 to 25 inches: gravelly loam
Bt2 - 25 to 35 inches: very paragravelly loam
BCt - 35 to 52 inches: very paragravelly loam
C - 52 to 79 inches: paragravelly sandy loam

Properties and qualities

Slope: 30 to 50 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water capacity: Moderate (about 7.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Hydric soil rating: No

Description of Sproulish

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Linear

Parent material: Colluvium derived from mudstone and/or sandstone and/or residuum weathered from mudstone and/or sandstone

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 4 inches: loam
Bt1 - 4 to 24 inches: loam
Bt2 - 24 to 39 inches: gravelly clay loam
Bt3 - 39 to 55 inches: very gravelly clay loam
BCt - 55 to 79 inches: gravelly clay loam

Properties and qualities

Slope: 30 to 50 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water capacity: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Hydric soil rating: No

Description of Canoecreek

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Colluvium derived from mudstone and/or sandstone and/or residuum weathered from mudstone and/or sandstone

Typical profile

Oi - 0 to 2 inches: gravelly slightly decomposed plant material
A - 2 to 12 inches: very gravelly loam
Bw - 12 to 24 inches: very gravelly loam
C1 - 24 to 35 inches: very gravelly loam
C2 - 35 to 71 inches: extremely gravelly loam

Properties and qualities

Slope: 30 to 50 percent
Surface area covered with cobbles, stones or boulders: 1.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches

Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water capacity: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Windynip

Percent of map unit: 7 percent
Landform: Mountain slopes
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Kingrange

Percent of map unit: 6 percent
Landform: Mountain slopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Rock outcrop

Percent of map unit: 2 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Center third of mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

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Appendix E

Botanical Report

Humboldt County Department of Public Works

Mattole Road PM 5.25 Storm Damage Repair Project

Botanical Report

October 2021

Table of Contents

Appendices

1. Introduction

1.1 Summary

GHD prepared this botanical survey report and accompanying appendices on behalf the Humboldt County Department of Public Works (HCDPW), in support of the proposed Mattole Road PM 5.25 Storm Damage Repair Project (Project) near the unincorporated community of Honeydew, Humboldt County, CA (**Appendix A, Figure 1**). Botanical studies consisted of seasonally appropriate floristic surveys for special status plants and assessment of Sensitive Natural Communities (SNC) within the Project's projected area of impact, further referred to as the Project Study Boundary (PSB) (**Appendix A, Figure 2**). Sticky pea, an endemic plant on the North Coast with limited distribution (CRPR 4.3) was observed in the PSB. As a CRPR 4.3 plant, it is considered a limited distribution plant that is not very threatened in California, and it is not considered to be protected under California Environmental Quality Act (CEQA) Guidelines section 15380. The Sticky pea population is unlikely to be substantially affected by the Project due to its location, and no mitigation measures are recommended. No SNCs were detected in the PSB. Please see the Mattole Road PM 5.25 Storm Damage Repair Project Aquatic Resources Delineation Report (GHD 2021) for complete results of the delineation of wetlands and other waters. GHD conducted surveys for special status plant species and vegetation assessments during the spring and summer of 2021 (April 22 and July 22). This report supports the Project's environmental documentation, permitting, and construction planning.

1.2 Project Description

The Project proposes to stabilize an existing landslide (hillslope failure) to the greatest extent possible, restore the roadway, improve roadway drainage, reduce erosion potential along the toe of the slide adjacent to the Mattole River, and increase roadway safety and local access. The Project includes lateral sub-drains with subsurface drainage, culvert replacement, and a restored roadway to improve drainage and stabilize the existing landslide. The Project also includes armoring including the installation of rock slope protection, soil, and live willow plantings at the toe of the landslide, along the bank of the Mattole River. Dewatering and fish relocation is anticipated to be necessary. The proposed Project (**Appendix A Figure 2**) includes the area around access routes, staging areas, the restored roadway, improved slope and roadway drainage, and armoring slope toe along the Mattole River.

1.3 Location

The Project is located in a remote location of Humboldt County on the Mattole Road at Post Mile (PM) 5.25, about approximately 5.25 miles north of Honeydew, within the Buckeye Mountain 7.5-minute USGS quadrangle, Township 1S, Range 1E, Section 25 (**Appendix A Figure 1**). Mattole Road is a rural roadway that runs from the town of Ferndale in the north to Petrolia and Honeydew in the south then east through Humboldt Redwoods State Park where it intersects with Highway 101. This Project is not located within the Coastal Zone.

1.4 Regulatory Background

1.4.1 Federally Listed Species

Special status plant species under Federal jurisdiction include those listed as endangered, threatened, or as candidate species by the Fish and Wildlife Service (USFWS) under the U.S. Endangered Species Act (FESA).

1.4.2 State Listed Species

Special status plant species under California Department of Fish and Wildlife (CDFW) jurisdiction include the following:

- Endangered, Threatened, or Candidate plant species listed under the California Endangered Species Act (CESA),
- Plants listed as Rare under California Native Plant Protection Act [NPPA] (Fish & G. Code, § 1900 et seq.), and
- California Rare Plant Ranking (CRPR) rare plants on the California Native Plant Society's (CNPS) Lists 1 and 2.

Plant species on CNPS Lists 1 and 2 are considered eligible for State listing as Endangered or Threatened pursuant to the California Fish and Game Code, and CDFW has oversite of these special status plant species as a trustee agency. Such species are considered during the CEQA process because they meet the definition of Threatened or Endangered under Sections 2062 and 2067 of the California Fish and Game Code. Plants on CNPS Lists 3 and 4 do not have formal protection under CEQA but may merit consideration as special status plants in certain circumstances. CDFW publishes and periodically updates lists of special status species which include all taxa of concern that are tracked by CDFW. Additionally, locally significant plants (CEQA Guidelines, § 15125, subd. (c)), or as designated in local or regional plans, policies, or ordinances) are considered special status plant species (CDFW 2018).

1.4.3 Sensitive Natural Communities

Natural vegetation communities listed as Sensitive in the California Natural Diversity Database (CNDDB) and on the California SNC List are to be addressed within the CEQA review process (CDFW 2021a). SNCs are primarily classified at the alliance level according to *A Manual of California Vegetation* (Sawyer et al. 2009). Legacy SNCs are listed in CNDDB according to the Holland classification system (1986), and Holland types may be used when a current alliance-level classification does not exist (CDFW 2021a). CDFW considers vegetation alliances with a NatureServe State Rank of S1 to S3 to be SNCs, and therefore these alliances are considered during the CEQA process (CDFW 2021a).

2. Methods

2.1 Pre-Survey Investigations

Prior to surveys, a scoping list of special-status plant species and habitats with recorded occurrences in the Project vicinity (as defined by the 9-quad area) was compiled by consulting the

CNDDB Rare Find database and mapping via the Biogeographic Information and Observation System (BIOS) (CDFW 2021b), the CNPS *Inventory of Rare and Endangered Vascular Plants* (CNPS 2021), and the U.S. Fish and Wildlife Service Information for Planning and Consulting (IPaC) database for the list of Federally protected plant species (USFWS 2021).

The scoping list includes special-status plants that occur in habitat similar to the PSB with documented occurrences on the Buckeye Mountain USGS quadrangle or adjacent quadrangles. CDFW and CNPS searches included nine USGS quadrangles within the PSB located in the central quad (**Appendix A Figure 3**). The query yielded 19 special status plant species of CRPR ranking 1 to 2, including one ranked 4.2 but protected as Rare under the NPPA in California, and the table of scoping results is provided in **Appendix B**. All species were reviewed and classified by their potential to occur in the PSB prior to field surveys. Of the species identified during scoping, two have a high probability of occurring within the PSB: Howell's montia (*Montia howellii,* CRPR 2B.2) and Siskiyou checkerbloom (*Sidalcea malviflora* ssp. *patula,* CRPR 1B.2); and two have a moderate probability of occurring within the PSB: leafy reed grass (*Calamagrostis foliosa*, CESA Rare, CRPR 4.2), and white-flowered rein orchid (*Piperia candida*, CRPR 1B.2). Two survey visits were recommended to observe potentially occurring plants within the peak blooming periods, including one in early spring, and one in early-to-mid-summer.

2.2 Floristic Surveys

GHD botanists Kelsey McDonald and Rose Dana conducted initial spring and summer floristic surveys for special status plants according to *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* by the California Natural Resource Agency (CDFW 2018) and *General Rare Plant Survey Guidelines* by the *Endangered Species Recovery Program* (USFWS 2002). The special status plant survey was conducted by walking the site and identifying all plant species encountered to the lowest taxonomic level necessary for rare plant identification. Nomenclature follows *The Jepson Manual* (Baldwin et al. 2012).

GHD Botanist Kelsey McDonald has a M.S. in Environmental and Natural Resource Sciences from Humboldt State University, and she is a CNPS Certified Consulting Botanist with over seven years of experience conducting special status plant surveys. GHD Botanist Rose E. Dana has a degree in Plant Ecology from Humboldt State University is working on her M.S. in Natural Resource Management, with over 10 years of experience conducting biological and botanical surveys.

Kelsey McDonald conducted a botanical survey on April 22nd and Rose Dana conducted a botanical survey on July 22nd, 2021. During the spring survey, the weather was sunny and approximately 70 degrees Fahrenheit. During the summer survey the weather was sunny and approximately 90 degrees Fahrenheit. A list of plant species observed within the PSB is provided (**Appendix C**).

The total spring survey effort was 7 person-hours, and the total summer survey effort was 7 person-hours. Habitats and special status plants were photo documented onsite (**Appendix D**). Special status plants were mapped using points collected in the field with an Eos Arrow 100 Submeter Global Positioning System (GPS) Receiver with Global Navigation Satellite System (GNSS) and an iPad running ArcGIS Collector software in the WGS84 datum.

2.3 Vegetation Mapping and Assessment

The vegetation community onsite was assessed in the field and classified at the alliance level according to the Manual of California Vegetation (Sawyer et al. 2009) using the Rapid Assessment method. Kelsey McDonald assessed potential SNCs according to protocol (CDFW 2018) on April 22, 2021. Vegetation Rapid Assessment forms (**Appendix E**) was used to characterize the dominant vegetation and evaluate habitat quality, and this assessment provided the basis for designating vegetation as SNCs per CDFW should it qualify. Photo documentation of the habitat observed onsite can be found in **Appendix D**. The Rapid Assessment location was mapped using a point collected in the field with an Eos Arrow 100 Submeter Global Navigation Satellite System (GNSS) Receiver and an iPad running ArcGIS Collector software in the WGS84 datum. The location of the Vegetation Rapid Assessment is shown in **Appendix A Figure 4**. A Natural Resources Conservation Service (NRCS) soils map was consulted prior to conducting surveys (**Appendix A Figure 5**), as is required by CDFW's protocols for surveying and evaluating impacts to special status native plant populations and sensitive natural communities (CDFW 2018). The full NRCS Custom Soil Resource report for the PSB is available in **Appendix F**.

3. Results

3.1 Special Status Plants

No special status plants (defined as plants that are Federally or State protected, including CNPS Lists 1 and 2) were detected within the PSB. A limited distribution (CNPS List 4) plant species was observed during floristic surveys of the PSB, sticky pea (*Lathyrus glandulosus*, CRPR 4.3). Sticky pea, while considered a limited distribution taxon, is not regulated by CESA or FESA, and was recorded as recommended by CNPS and CDFW guidelines (CDFW 2021b, CNPS 2020) and was submitted to the CNDDB (**Appendix G**). The location of the sticky pea is on the edge of the PSB and is unlikely to be impacted by the Project and no mitigation measures are recommended. Sticky pea was observed during the spring survey (April 22) and was senesced during the summer survey (July 22). The sticky pea was identified by the number of leaflets (~14) and by glands dotting the leaves (**Figure A, Photo 1)**. The sticky pea population was located on the northern section of the PSB, on the west side of Mattole Road, on the upper roadcut on the edge of the PSB (**Figure A, Photo 2**).

Floristic surveys were appropriately timed to detect federally protected species added to consideration based on the IPaC search, and no federally protected plants were detected.

The July 22nd survey was appropriately timed to observe the State and Federally Endangered taxon western lily (*Lilium occidentale*, CRPR 1B.1) in bloom, and it was not observed within the PSB. There are no known occurrences within 30 miles of PSB. No critical habitat has been designated (USFWS 2021a). This species is typically associated with North Coast coniferous forest openings within the coastal fogbank rather than the warm inland woodland habitat occurring in the PSB. This species has not been documented south of Loleta or more than 4 miles inland. Other federally protected plant species added to the list, such as Menzies' wallflower (*Erysimum menziesii*) and beach layia (*Layia carnosa*), have no potential to occur in the PSB as habitat for these species is absent within the PSB.

Seasonally appropriate surveys for special status plants have been completed, including reconnaissance, an early season survey April, and a summer survey in July. Surveys were appropriately timed to observe potentially occurring special status species during the blooming period. The spring survey was timed appropriately to catch potentially occurring early blooming species such as Howell's montia (*Montia howellii*), which may occur in compacted wet roadside habitats. The July survey was suitably timed to observe later blooming species such as Siskiyou checkerbloom (*Sidalcea malviflora* ssp. *patula*), which may also occur in similar roadside edge habitats. The July 22nd survey was appropriately timed to observe the State Rare taxon leafy reed grass (*Calamagrostis foliosa*, CRPR 4.2) and white flowered rein orchid (*Piperia candida,* CRPR 1B.2) in bloom, and these species were not observed within the PSB.

3.2 Sensitive Natural Community and Habitat Assessment

No SNCs were documented within the PSB. One of the vegetation communities was assessed using the Rapid Assessment method as needed to classify the habitat at the alliance level and evaluate the potential for classification as a SNC and other sensitive habitats. The PSB contains three main types of vegetation communities which are described below. The other two vegetation communities discussed below were not assessed using the Rapid Assessment method but are provided for descriptive purposes. The described vegetation alliances below have not been mapped as they are not SNCs. A general site overview photo is available in **Appendix D, Photo 3.**

3.2.1 Poison Oak Shrubland Alliance

The poison oak shrubland alliance corresponds with Rapid Assessment datasheet MATT001 in **Appendix E**. This alliance was located within the slide area above Mattole Road and was dominated by poison oak (*Toxicodendron diversilobum*) with a low cover of young emergent Douglas fir (*Pseudotsuga menziesii*), bigleaf maple (*Acer macrophyllum*), Oregon ash (Fraxinus latifolia), and coyote brush (*Baccharis pilularis*). The alliance contained mesic openings characterized by orchardgrass (*Dactylis glomerata*), tall fescue (*Festuca arundinacea*), and spreading rush (*Juncus patens*). The upper slide was native-dominant with relatively few problematic invasive species. Some invasive Italian thistle (*Carduus pyncocephalus*) and bull thistle (*Cirsium vulgare*) was noted. Low growing vegetation was likely in part due to the unstable slope preventing mature vegetation to become well established. The poison oak shrubland alliance is rated as *apparently secure* in the state of California (S4), and therefore it is not considered an SNC. See **Appendix D, Photos 4 and 5**.

3.2.2 Coyote Brush Shrubland Alliance

The slide below Mattole Road was predominantly scrub habitat dominated by coyote brush. Emergent trees were present at low cover in drier and rockier locations, including Douglas fir, bay laurel (*Umbellularia californica*), bigleaf maple, red alder (*Alnus rubra*), and a very few Oregon white oak (*Quercus garryana*). Arroyo willow (*Salix lasiolepis*) was present near the riverbank. Highly invasive French broom (*Genista monspessulana*) was widespread in the lower slide, especially along Mattole Road. Other species that characterize the shrub canopy include poison oak, oceanspray (*Holodiscus discolor*), and blueblossom (*Ceanothus thyrsiflorus*). Herbaceous openings occur along the slide, predominantly characterized by riverbank lupine (*Lupinus rivularis*), invasive fennel (*Foeniculum vulgare*) and non-native grasses such as tall fescue, orchardgrass, and sweet vernal grass (*Anthoxanthum odoratum*). The coyote brush scrub alliance is rated as *secure* in the state of California (S5), and therefore it is not considered and SNC. See **Appendix D, Photos 6 and 7**.

3.2.3 Douglas Fir Forest and Woodland Alliance

Woodland dominated by Douglas fir with Pacific madrone (*Arbutus menziesii*), tanoak (*Notholithocarpus densiflorus*), bay laurel, Oregon white oak, and black oak (*Quercus kelloggii*) was present in on the edges of the PSB in areas less affected by the landslide. The understory is predominantly poison oak (*Toxicodendron diversilobum*) and pink honeysuckle (*Lonicera hispidula*). The Douglas fir woodland surrounding the Project area is diverse and dominated by native species, with scattered invasive French broom, Italian thistle, and non-native grass species such as ripgut brome (*Bromus diandrus*) and slender oat (*Avena barbata*) along the roadside. The Douglas fir woodland alliance is rated as *apparently secure* in the state of California (S4), and therefore it is not considered and SNC. See **Appendix D, Photo 8**.

4. Conclusions

The purpose of this evaluation was to conduct seasonally appropriate surveys for state, federal, and other sensitive listed plant species, and to evaluate potential SNCs within the PSB. Floristic surveys were completed according to protocol (CDFW 2018). A CNPS List 4 endemic plant with limited distribution, sticky pea (CRPR 4.3), was observed with the PSB, but it is not considered special status, is unlikely to be impacted by the Project, and no mitigation measures are recommended. No Critical Habitat for plants occurs within the PSB. Surveys were seasonally appropriate, and conditions were suitable for surveying. No additional rare plant surveys are needed within the designated PSB at this time. Additional surveys and on-site impact/mitigation evaluation may be required if the Project impacts sensitive resources that are outside the PSB.

5. Special Terms and Conditions

5.1 Purpose of this Report

GHD prepared this report for HCDPW, in support of the Project, and HCDPW may only use and rely on this report for the purpose agreed upon between GHD and HCDPW, as set out in the scope and contract for work effort reported herein. GHD Inc. is not liable for any action arising out of the reliance of any third party on the information contained within this report. GHD otherwise disclaims responsibility to any entity other than HCDPW arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

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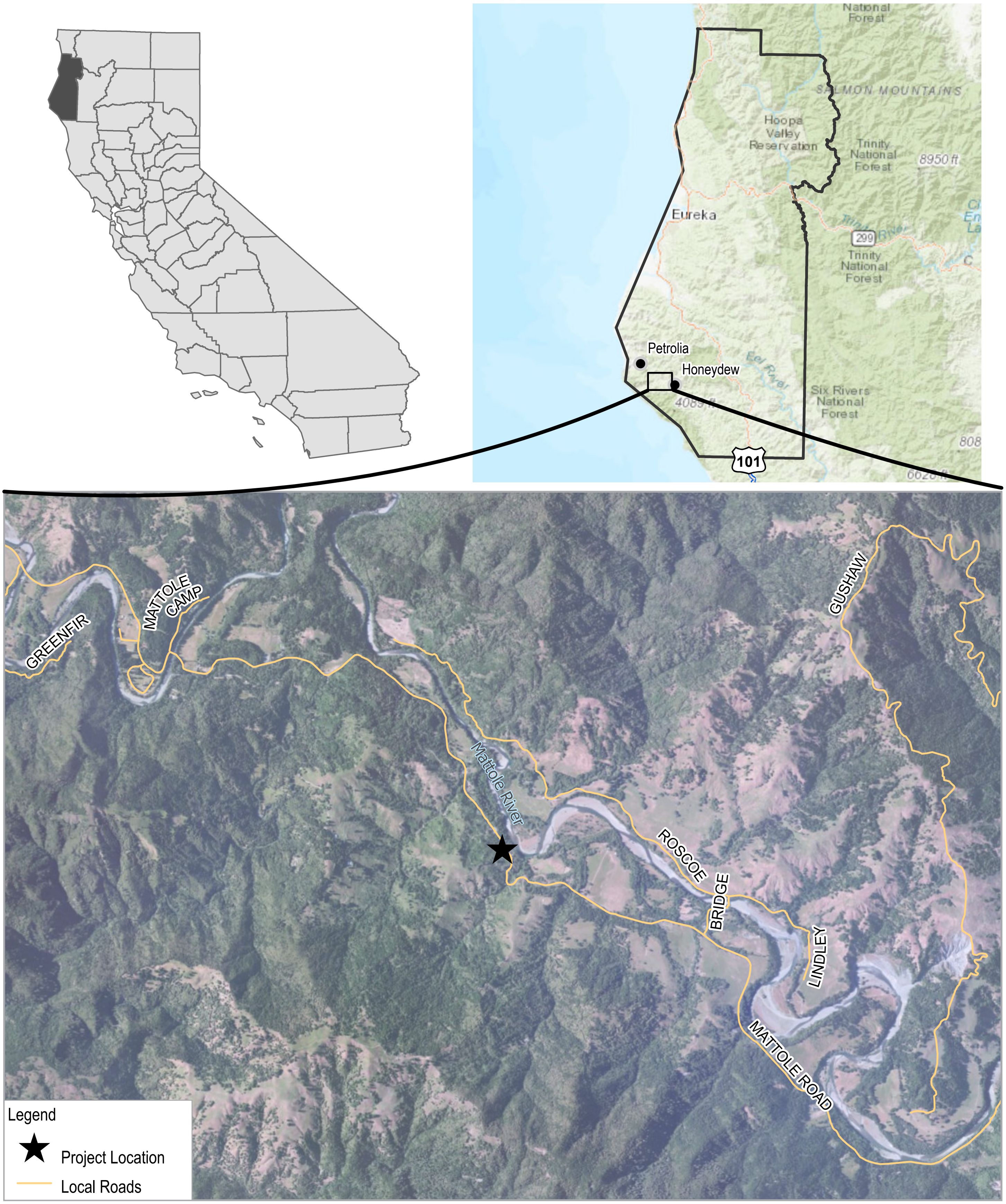
Appendices

Appendix A – Figures



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Humboldt County Dept. of Public Works
Mattole Road PM 5.25 Storm Damage Repair

Project No. **11222901**
Revision No. **-**
Date **6/7/2021**

Project Vicinity Map

FIGURE 1

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World Topographic Map: Esri, HERE, Garmin, FAO, USGS, EPA, NPS
World_Transportation: Esri, HERE. Created by: jlopez4

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GHD

Humboldt County Dept. of Public Works
Mattole Road PM 5.25
Storm Damage Repair

Project Survey Boundary

Project No. **11222901**
Revision No. **-**
Date **9/24/2021**

FIGURE 2

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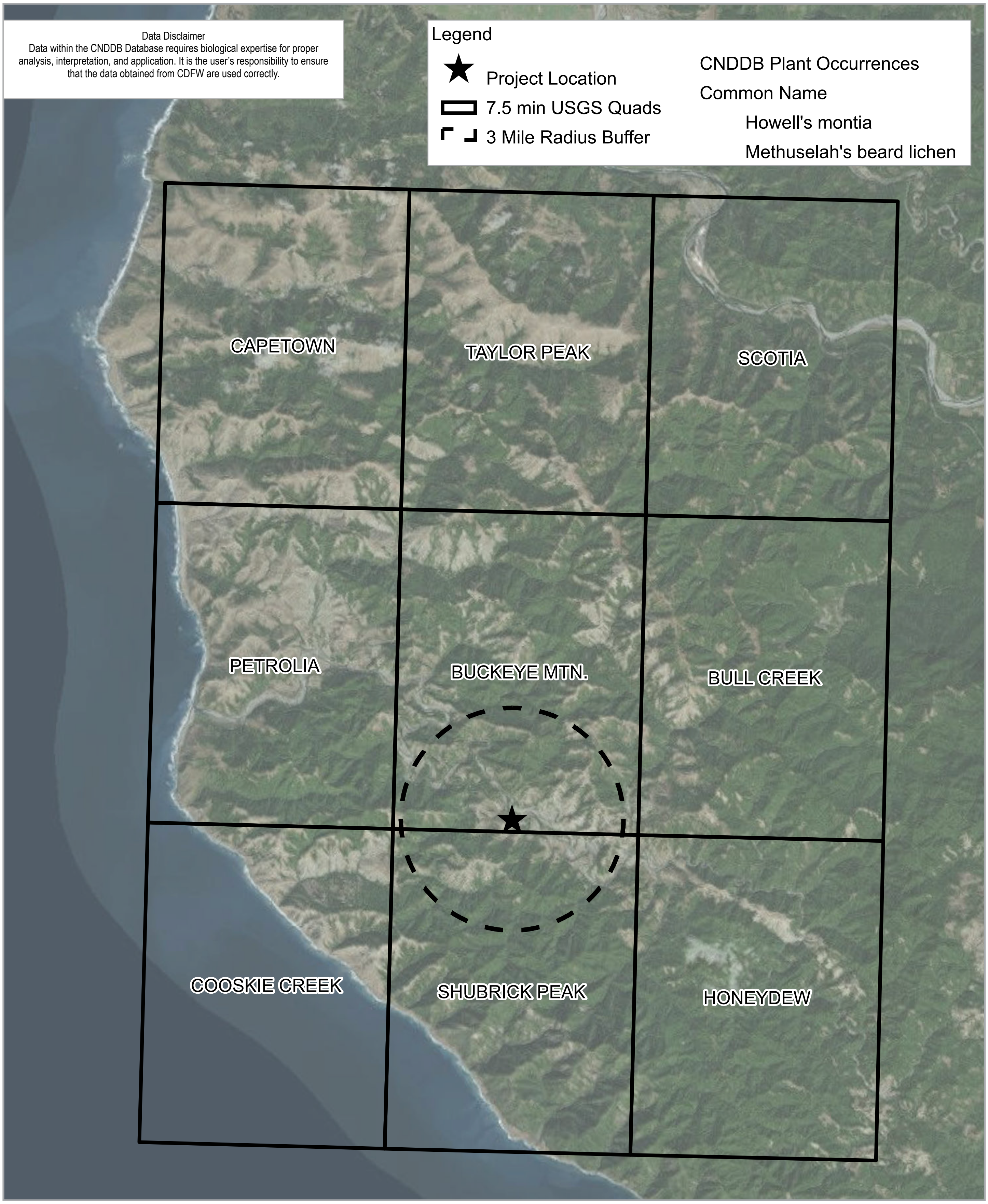

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Humboldt County Dept. of Public Works
Mattole Road PM 5.25
Storm Damage Repair

Project No. **11222901**
Revision No. **-**
Date **9/27/2021**

CNDDB Map

FIGURE 3

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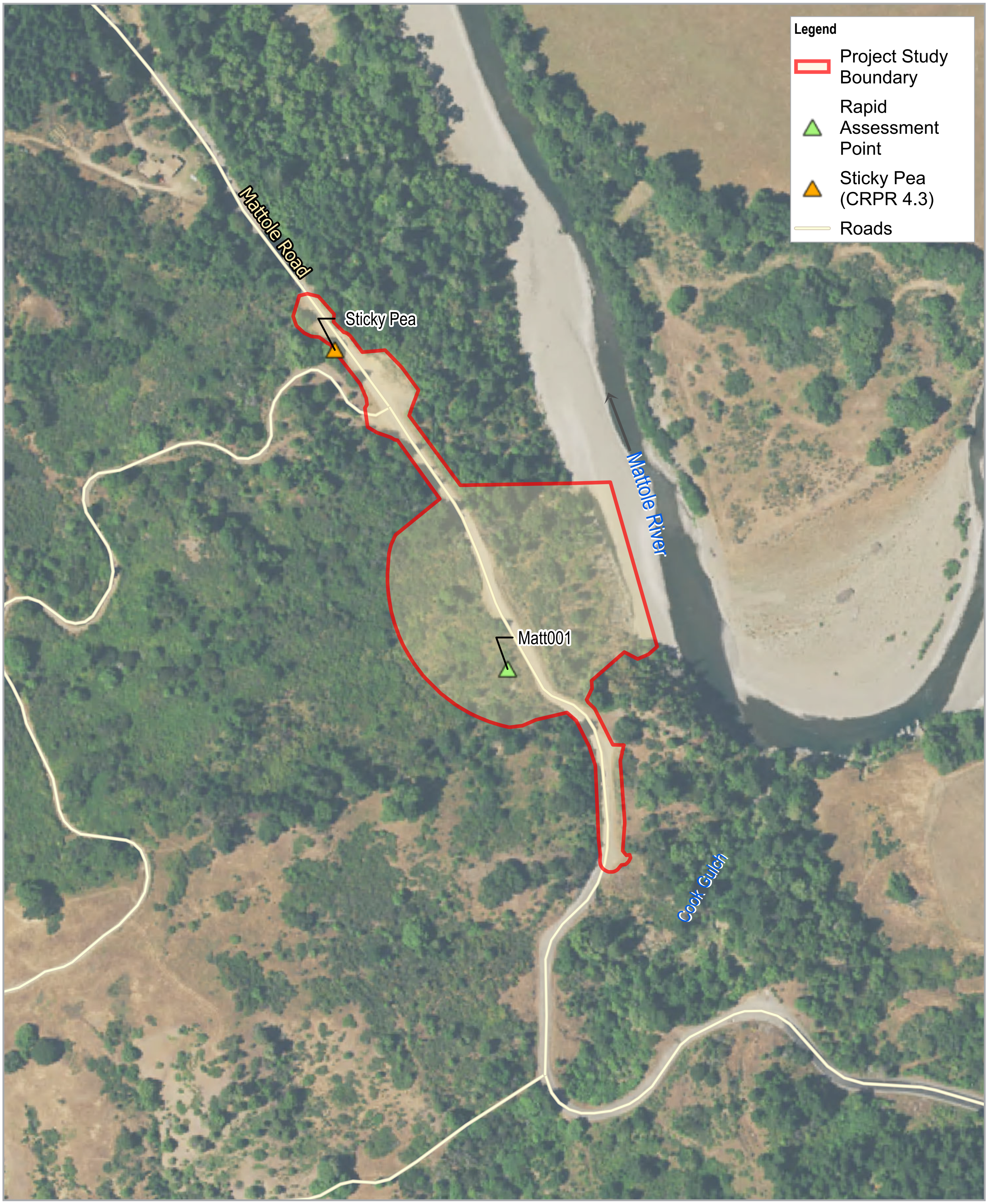

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Humboldt County Dept. of Public Works
Mattole Road PM 5.25
Storm Damage Repair

Vegetation Map

Project No. **11222901**
Revision No. **-**
Date **10/4/2021**

FIGURE 4

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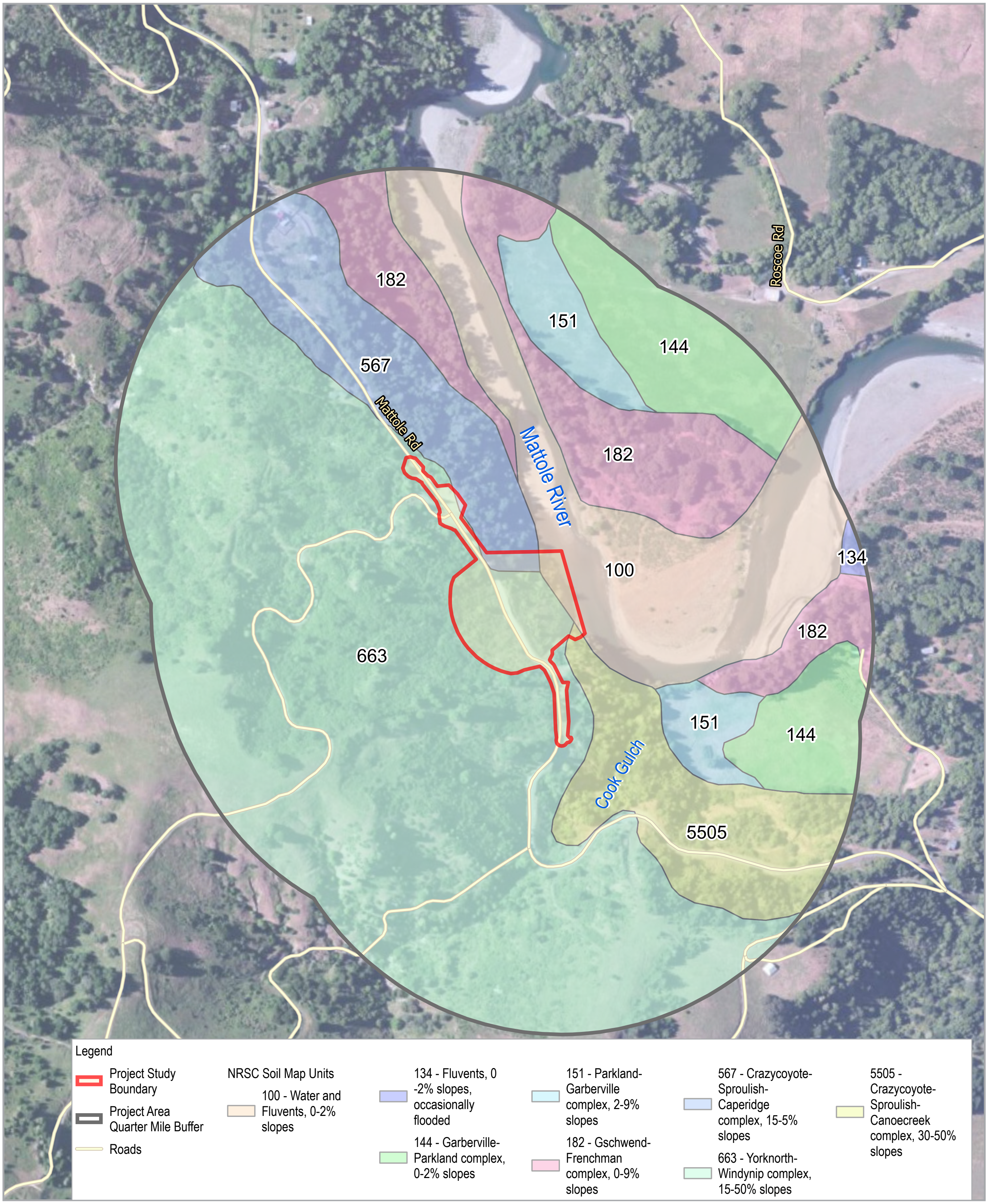

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GHD

Humboldt County Dept. of Public Works
Mattole Road PM 5.25 Storm Damage Repair

Project No. **11222901**
Revision No. **-**
Date **9/27/2021**

NRCS Soils

FIGURE 5

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Appendix B – 9 Quad Scoping Table

Scientific Name	Common Name	FESA	CESA	CRPR	GRank	SRank	Blooming Period	Habitat Requirements	Potential to Occur in the Study Area
Astragalus pycnostachyus var. pycnostachyus	coastal marsh milk-vetch	None	None	1B.2	G2T2	S2	(Apr) Jun-Oct	Coastal dunes (mesic), marshes and swamps, coastal scrub.	**No Potential.** Coastal marsh, coastal scrub, and dunes do not occur in the PSB.
Calamagrostis foliosa	leafy reed grass	None	**State Rare**	4.2	G3	S3	May-Sep	Coastal bluff scrub, north coast coniferous forest; rocky areas. May also occur in rocky outcrops, crevices and cliffs (Baldwin et al. 2012)	**Moderate Potential.** Coniferous forest, scrub habitat, and rocky cliffs that may support leafy reed grass occur in the PSB. Documented occurrences within 5 miles in the King Range and Mattole River valley.
Castilleja litoralis	Oregon coast paintbrush	None	None	2B.2	G3	S3	Jun	Coastal bluff scrub, coastal dunes, coastal scrub.	**No Potential.** Coastal bluffs, coastal scrub, and dunes do not occur in the PSB.
Erysimum concinnum	bluff wallflower	None	None	1B.2	G3	S2	Feb-Jul	Coastal dunes, coastal bluff scrub, coastal prairie.	**No Potential.** Coastal buffs and dunes do not occur in the PSB.
Erysimum menziesii	Menzies' wallflower	**Endangered**	**Endangered**	1B.1	G1	S1	Mar-Sep	Coastal dunes	**No Potential.** Coastal dunes do not occur in the PSB.
Erythronium oregonum	giant fawn lily	None	None	2B.2	G4G5	S2	Mar-Jun (Jul)	Cismontane woodland, meadows and seeps.	**Low Potential.** Marginal cismontane woodland and seeps occur in the PSB.

Scientific Name	Common Name	FESA	CESA	CRPR	GRank	SRank	Blooming Period	Habitat Requirements	Potential to Occur in the Study Area
Erythronium revolutum	coast fawn lily	None	None	2B.2	G4G5	S3	Mar-Jul (Aug)	Bogs and fens, broadleafed upland forest, north coast coniferous forest.	**Low Potential.** Upland forest, mesic habitat and riverbanks occur within the PSB.
Gilia capitata ssp. pacifica	Pacific gilia	None	None	1B.2	G5T3	S2	Apr-Aug	Coastal bluff scrub, chaparral openings, coastal prairie, valley and foothill grassland.	**Low Potential.** Marginal chaparral openings and patches of grassland present.
Gilia millefoliata	dark-eyed gilia	None	None	1B.2	G2	S2	Apr-Jul	Coastal dunes.	**No Potential.** Coastal dunes do not occur in the PSB.
Hesperevax sparsiflora var. brevifolia	short-leaved evax	None	None	1B.2	G4T3	S3	Mar-Jun	Coastal bluff scrub, coastal dunes, coastal prairie.	**No Potential.** Coastal dunes, coastal bluff scrub, and coastal prairie do not occur in the PSB.
Layia carnosa	beach layia	**Endangered**	**Endangered**	1B.1	G2	S2	Mar-Jul	Coastal dunes, coastal scrub.	**No Potential.** Coastal dunes and coastal scrub do not occur in the PSB.
Lilium occidentale	western lily	**Endangered**	**Endangered**	1B.1	G1G2	S1	Jun-Jul	Bogs and fens, coastal bluff scrub, coastal prairie, coastal scrub, marshes and swamps, North Coast coniferous forest	**Low Potential.** Marginal coniferous forest, scrub, and wetlands may occur within PSB. No known occurrences within 30 miles of PSB. No critical habitat has been designated (USFWS 2021a).

Scientific Name	Common Name	FESA	CESA	CRPR	GRank	SRank	Blooming Period	Habitat Requirements	Potential to Occur in the Study Area
Montia howellii	Howell's montia	None	None	2B.2	G3G4	S2	(Feb) Mar-May	Meadows and seeps, north coast coniferous forest, vernal pools.	**High Potential.** Seeps and coniferous forest occur within the PSB. Nearest known occurrence is within 2.5 miles of PSB in 2016.
Oenothera wolfii	Wolf's evening-primrose	None	None	1B.1	G2	S1	May-Oct	Coastal bluff scrub, coastal dunes, coastal prairie, lower montane coniferous forest.	**Low Potential.** Coniferous forest and scrub habitat occurs within the PSB.
Packera bolanderi var. bolanderi	seacoast ragwort	None	None	2B.2	G4T4	S2S3	(Jan-Apr) May-Jul (Aug)	Coastal scrub, north coast coniferous forest.	**Low Potential.** Coniferous forest and marginal scrub habitat occur within the PSB.
Piperia candida	white-flowered rein orchid	None	None	1B.2	G3	S3	(Mar) May-Sep	North Coast coniferous forest, lower montane coniferous forest, broadleafed upland forest.	**Moderate Potential.** Broadleafed upland forest, and North Coast coniferous forest habitat present within the PSB. Known occurrences within 5 miles of the PSB as recently as 2019 (CDFW 2021b).
Polemonium carneum	Oregon polemonium	None	None	2B.2	G3G4	S2	Apr-Sep	Coastal prairie, coastal scrub, lower montane coniferous forest.	**Low Potential.** Coniferous forest and marginal scrub habitat occur within the PSB.

Scientific Name	Common Name	FESA	CESA	CRPR	GRank	SRank	Blooming Period	Habitat Requirements	Potential to Occur in the Study Area
Sidalcea malviflora ssp. patula	Siskiyou checkerbloom	None	None	1B.2	G5T2	S2	May-Aug	Coastal bluff scrub, coastal prairie, north coast coniferous forest.	**High Potential.** Coniferous forest occurs within PSB. Nearest known occurrence is less than one mile from the PSB in 2019 (CNPS 2021).
Sisyrinchium hitchcockii	Hitchcock's blue-eyed grass	None	None	1B.1	G1G2	S1	Jun	Cismontane woodland (openings), valley and foothill grassland.	**Low Potential.** Cismontane woodland openings and marginal grassland habitat may occur in the PSB.

Appendix C – Plant Observations

Scientific Name	Common Name	Status	Family	Date
Achillea millefolium	Yarrow	native	Asteraceae	4/22/2021
Acmispon americanus	American bird's foot trefoil	native	Fabaceae	7/22/2021
Acmispon parviflorus	Hill lotus	native	Fabaceae	4/22/2021
Acmispon wrangelianus	Chilean trefoil	native	Fabaceae	4/22/2021
Agrostis gigantea	Creeping bentgras	non-native	Poaceae	4/22/2021
Alnus rubra	Red alder	native	Betulaceae	4/22/2021
Anthriscus caucalis	Bur chevril	non-native	Apiaceae	4/22/2021
Arbutus menziesii	Madrono	native	Ericaceae	4/22/2021
Artemisia douglasiana	California mugwort	native	Asteraceae	7/22/2021
Avena barbata	Slim oat	invasive non-native	Poaceae	7/22/2021
Baccharis pilularis	Coyote brush	native	Asteraceae	4/22/2021
Barbarea vulgaris	Yellow rocket	non-native	Brassicaceae	4/22/2021
Bellis perennis	English lawn daisy	non-native	Asteraceae	4/22/2021
Briza maxima	Rattlesnake grass	invasive non-native	Poaceae	4/22/2021
Bromus diandrus	Ripgut brome	invasive non-native	Poaceae	4/22/2021
Bromus hordeaceus	Soft chess	invasive non-native	Poaceae	4/22/2021
Callitriche sp.			Plantaginaceae	4/22/2021
Calochortus tolmiei	Hairy star tulip	native	Liliaceae	4/22/2021
Cardamine oligosperma	Idaho bittercress	native	Brassicaceae	4/22/2021
Carduus pycnocephalus	Italian thistle	invasive non-native	Asteraceae	4/22/2021
Carex gracilior	Slender sedge	native	Cyperaceae	4/22/2021
Carex obnupta	Slough sedge	native	Cyperaceae	4/22/2021
Ceanothus parvifolius	little leaf ceanothus	native	Rhamnaceae	4/22/2021
Ceanothus thyrsiflorus	Blueblossom	native	Rhamnaceae	4/22/2021
Centaurea calcitrapa	Purple star thistle	invasive non-native	Asteraceae	7/22/2021

Scientific Name	Common Name	Status	Family	Date
Centaurium tenuiflorum	Slender centaury	non-native	Gentianaceae	7/22/2021
Chlorogalum pomeridianum	Amole	native	Agavaceae	4/22/2021
Cirsium vulgare	Bullthistle	invasive non-native	Asteraceae	7/22/2021
Claytonia perfoliata	Miner's lettuce	native	Montiaceae	4/22/2021
Clinopodium douglasii	Yerba buena	native	Lamiaceae	4/22/2021
Crepis capillaris	Smooth hawksbeard	non-native	Asteraceae	7/22/2021
Croton setiger	Turkey-mullein	native	Euphorbiaceae	7/22/2021
Cynosurus echinatus	Dogtail grass	invasive non-native	Poaceae	4/22/2021
Cyperus eragrostis	Tall cyperus	native	Cyperaceae	4/22/2021
Dactylis glomerata	Orchardgrass	invasive non-native	Poaceae	4/22/2021
Daucus carota	Carrot	non-native	Apiaceae	4/22/2021
Daucus pusillus	Wild carrot	native	Apiaceae	7/22/2021
Digitaria sanguinalis	Crabgrass	non-native	Poaceae	7/22/2021
Dryopteris arguta	Wood fern	native	Dryopteridaceae	4/22/2021
Dysphania botrys	Jerusalem oak goosefoot	non-native	Chenopodiaceae	7/22/2021
Echinochloa crus-galli	Barnyard grass	non-native	Poaceae	7/22/2021
Elymus glaucus	Blue wildrye	native	Poaceae	4/22/2021
Epilobium ciliatum	Slender willow herb	native	Onagraceae	7/22/2021
Equisetum laevigatum	Smooth scouring rush	native	Equisetaceae	4/22/2021
Equisetum telmateia	Giant horsetail	native	Equisetaceae	4/22/2021
Erigeron philadelphicus var. philadelphicus	Philadelphia fleabane	native	Asteraceae	4/22/2021
Erodium cicutarium	Coastal heron's bill	invasive non-native	Geraniaceae	4/22/2021
Erythranthe guttata	Yellow monkey flower	native	Phrymaceae	7/22/2021
Eschscholzia californica	California poppy	native	Papaveraceae	4/22/2021
Festuca arundinacea	Reed fescue	invasive non-native	Poaceae	4/22/2021
Festuca bromoides	Brome fescue	non-native	Poaceae	4/22/2021
Festuca californica	California fescue	native	Poaceae	4/22/2021

Scientific Name	Common Name	Status	Family	Date
Foeniculum vulgare	Fennel	invasive non-native	Apiaceae	4/22/2021
Fragaria vesca	Wild strawberry	native	Rosaceae	4/22/2021
Fraxinus latifolia	Oregon ash	native	Oleaceae	4/22/2021
Galium aparine	Cleavers	native	Rubiaceae	4/22/2021
Genista monspessulana	French broom	invasive non-native	Fabaceae	4/22/2021
Geranium dissectum	Wild geranium	invasive non-native	Geraniaceae	4/22/2021
Grindelia stricta var. platyphylla	Gumplant	native	Asteraceae	7/22/2021
Helenium puberulum	Sneezeweed	native	Asteraceae	7/22/2021
Holodiscus discolor	Oceanspray	native	Rosaceae	4/22/2021
Hypericum perforatum	Klamathweed	invasive non-native	Ericaceae	4/22/2021
Iris douglasiana	Douglas iris	native	Iridaceae	4/22/2021
Juncus bufonius	Common toad rush	native	Juncaceae	4/22/2021
Juncus effusus	Common bog rush	native	Juncaceae	4/22/2021
Juncus patens	Rush	native	Juncaceae	4/22/2021
Juncus xiphioides	Iris leaved rush	native	Juncaceae	7/22/2021
Kickxia elatine	Sharp point fluellin	non-native	Plantaginaceae	7/22/2021
Lathyrus glandulosus	Sticky pea	rare, native	Fabaceae	4/22/2021
Leucanthemum vulgare	Oxe eye daisy	invasive non-native	Asteraceae	4/22/2021
Linum bienne	Flax	non-native	Linaceae	4/22/2021
Lonicera hispidula	Pink honeysuckle	native	Caprifoliaceae	4/22/2021
Lupinus bicolor	Lupine	native	Fabaceae	4/22/2021
Lupinus rivularis	Riverbank lupine	native	Fabaceae	4/22/2021
Luzula comosa	Hairy wood rush	native	Juncaceae	4/22/2021
Lysimachia arvensis	Scarlet pimpernel	non-native	Myrsinaceae	4/22/2021
Marah oregana	Coast man-root	native	Cucurbitaceae	4/22/2021
Medicago polymorpha	California burclover	invasive non-native	Fabaceae	4/22/2021
Melilotus albus	White sweetclover	non-native	Fabaceae	7/22/2021

Scientific Name	Common Name	Status	Family	Date
Melilotus officinalis	Yellow sweetclover	non-native	Fabaceae	7/22/2021
Mentha pulegium	Pennyroyal	invasive non-native	Lamiaceae	4/22/2021
Montia fontana	Water montia	native	Montiaceae	4/22/2021
Navarretia mellita	Skunk navarretia	native	Polemoniaceae	4/22/2021
Notholithocarpus densiflorus	Tanoak	native	Fagaceae	4/22/2021
Oenanthe sarmentosa	Water parsley	native	Apiaceae	7/22/2021
Osmorhiza berteroi	Sweet cicely	native	Apiaceae	7/22/2021
Pentagramma triangularis	Gold back fern	native	Pteridaceae	4/22/2021
Petasites frigidus	Arctic sweet coltsfoot	native	Asteraceae	4/22/2021
Phalaris aquatica	Harding grass	invasive non-native	Poaceae	4/22/2021
Plantago erecta	California plantain	native	Plantaginaceae	4/22/2021
Plantago lanceolata	Ribwort	invasive non-native	Plantaginaceae	4/22/2021
Poa pratensis	Kentucky blue grass	invasive non-native	Poaceae	4/22/2021
Polygonum aviculare	Prostrate knotweed	non-native	Polygonaceae	4/22/2021
Polypogon monspeliensis	Annual beard grass	invasive non-native	Poaceae	7/22/2021
Polystichum munitum	Western sword fern	native	Dryopteridaceae	4/22/2021
Prunella vulgaris	Self heal	native	Lamiaceae	4/22/2021
Prunus sp.			Rosaceae	4/22/2021
Pseudognaphalium luteoalbum	Jersey cudweed	non-native	Asteraceae	7/22/2021
Pseudotsuga menziesii	Douglas fir	native	Pinaceae	4/22/2021
Pteridium aquilinum	Western brackenfern	native	Dennstaedtiaceae	4/22/2021
Quercus garryana	Oregon oak	native	Fagaceae	4/22/2021
Ranunculus californicus	Common buttercup	native	Ranunculaceae	4/22/2021
Ranunculus sardous	Hairy buttercup	non-native	Ranunculaceae	4/22/2021
Ribes roezlii	Sierra gooseberry	native	Grossulariaceae	4/22/2021
Ribes sanguineum	Flowering currant	native	Grossulariaceae	4/22/2021
Rosa cf. rubiginosa	Sweet brier	non-native	Rosaceae	4/22/2021

Scientific Name	Common Name	Status	Family	Date
Rubus armeniacus	Himalayan blackberry	invasive non-native	Rosaceae	4/22/2021
Rubus parviflorus	Thimbleberry	native	Rosaceae	4/22/2021
Rubus ursinus	California blackberry	native	Rosaceae	4/22/2021
Rumex crispus	Curly dock	invasive non-native	Polygonaceae	4/22/2021
Salix lasiolepis	Arroyo willow	native	Salicaceae	4/22/2021
Sanicula crassicaulis	Pacific sanicle	native	Apiaceae	4/22/2021
Saxifraga mertensiana	Wood saxifrage	native	Saxifragaceae	4/22/2021
Scoliopus bigelovii	Slink pod	native	Liliaceae	4/22/2021
Senecio jacobaea	Tansy ragwort	invasive non-native	Asteraceae	7/22/2021
Sisyrinchium bellum	Blue eyed grass	native	Iridaceae	4/22/2021
Sonchus arvensis	Perennial sow thistle	non-native	Asteraceae	4/22/2021
Stachys rigida	Rough hedgenettle	native	Lamiaceae	7/22/2021
Stellaria media	Chickweed	non-native	Caryophyllaceae	4/22/2021
Stellaria nitens	Shining chickweed	native	Caryophyllaceae	4/22/2021
Symphoricarpos albus	Common snowberry	native	Caprifoliaceae	4/22/2021
Taraxacum officinale	Red seeded dandelion	non-native	Asteraceae	4/22/2021
Tellima grandiflora	Fringe cups	native	Saxifragaceae	4/22/2021
Torilis arvensis	Field hedge parsley	invasive non-native	Apiaceae	7/22/2021
Toxicodendron diversilobum	Poison oak	native	Anacardiaceae	4/22/2021
Trifolium glomeratum	Clover	non-native	Fabaceae	4/22/2021
Trifolium subterraneum	Subterranean clover	non-native	Fabaceae	4/22/2021
Umbellularia californica	California bay	native	Lauraceae	7/22/2021
Verbena lasiostachys	Western vervain	native	Verbenaceae	7/22/2021
Vicia hirsuta	Hairy vetch	non-native	Fabaceae	4/22/2021
Vicia sativa	Spring vetch	non-native	Fabaceae	4/22/2021
Vicia villosa	Hairy vetch	non-native	Fabaceae	4/22/2021
Xanthium strumarium	Cocklebur	native	Asteraceae	7/22/2021

Appendix D – Site Photographs

Photo 1. Sticky pea within the PSB (4/22/2021).

Photo 2. Sticky pea within the PSB (4/22/2021).

Photo 3. A general site photo of the vegetation alongside Mattole Road with the PSB (4/22/2021).

Photo 4. The poison oak shrubland alliance was located within the slide area above Mattole Road and was dominated by poison oak with low cover of young emergent Douglas fir, bigleaf maple, Oregon ash, and coyote brush with mesic openings characterized by orchardgrass, tall fescue, and spreading rush (4/22/2021).

Photo 5. A mesic opening in the poison oak shrubland alliance (4/22/2021).

Photo 6. An example of coyote brush shrubland alliance below Mattole Road (4/22/2021).

Photo 7. A rockier example of coyote brush shrubland alliance below Mattole Road (4/22/2021).

Photo 8. The Douglas fir forest and woodland alliance was present in areas east and west of the main PSB. This alliance was dominated by Douglas fir with Pacific madrone, tanoak, bay laurel, Oregon white oak, and black oak.

Appendix E – Rapid Assessment Forms

Combined Vegetation Rapid Assessment and Relevé Field Form
(Revised March 27, 2018)

For Office Use: | Final database #: | Final vegetation type: Alliance ______ Association ______

I. LOCATIONAL/ENVIRONMENTAL DESCRIPTION
circle: Relevé or RA

Database #: MATT001
Date: 4/22/21
UID:
Name of recorder: K. McDonald
Other surveyors:
Location Name: Mattole Stormwater Damage

GPS name: Arrow
For Relevé only: Bearing°, left axis at ID point____ of Long / Short side
UTME __ __ __ __ __ __ UTMN __ __ __ __ __ __ __ Zone: 11 NAD83 GPS error: ft./ m./ PDOP ____
Decimal degrees: LAT __ __ . __ __ __ __ __ __ LONG __ __ __ . __ __ __ __ __ __

GPS within stand? Yes / No If No, cite from GPS to stand: distance (m) ____ bearing ° ____ inclination ° ____
and record: Base point ID ____________ Projected UTMs: UTME __ __ __ __ __ __ UTMN __ __ __ __ __ __ __

Camera Name: phone Cardinal photos at ID point: NESW
Other photos:

Stand Size (acres): <1, 1-5, >5 | Plot Area (m²): 100 / ______ | Plot Dimensions ____ x ____ m | RA Radius 30 m
Exposure, Actual °: ______ NE NW SE SW Flat Variable | Steepness, Actual °: ______ 0° 1-5° > 5-25° > 25

Topography: Macro: top upper mid lower bottom | Micro: convex flat concave undulating
Geology code: __________ Soil Texture code: __________ | Upland or Wetland/Riparian (circle one)

% Surface cover: (Incl. outcrops) (>60cm diam) (25-60cm) (7.5-25cm) (2mm-7.5cm) (Incl sand, mud)
H_2O: 0 BA Stems: 43 Litter: 5 Bedrock: – Boulder: – Stone: __ Cobble: 2 Gravel: 15 Fines: 35 =100%

% Current year bioturbation ______ Past bioturbation present? Yes / No | % Hoof punch ______
Fire evidence: Yes / No (circle one) If yes, describe in Site history section, including date of fire, if known.

Site history, stand age, comments: Characterizing upper slide slope Primarily Poison oak dom, with emergent young trees, alternating with patches of mesic grassland & rush in wetter areas.

Disturbance code / Intensity (L,M,H): ___/___ ___/___ ___/___ ___/___ ___/___ "Other" __________/___

II. HABITAT DESCRIPTION

Tree DBH : **T1** (<1" dbh), **T2** (1-6" dbh), **T3** (6-11" dbh), **T4** (11-24" dbh), **T5** (>24" dbh), **T6** multi-layered (T3 or T4 layer under T5, >60% cover)
Shrub: **S1** seedling (<3 yr. old), **S2** young (<1% dead), **S3** mature (1-25% dead), **S4** decadent (>25% dead)
Herbaceous: **H1** (<12" plant ht.), **H2** (>12" ht.)
Desert Riparian Tree/Shrub: 1 (<2ft. stem ht.), 2 (2-10ft. ht.), 3 (10-20ft. ht.), 4 (>20ft. ht.)
Desert Palm/Joshua Tree: 1 (<1.5" base diameter), 2 (1.5-6" diam.), 3 (>6" diam.)

III. INTERPRETATION OF STAND

Field-assessed vegetation Alliance name: Poison oak Alliance
Field-assessed Association name (optional): ______
Adjacent Alliances/direction: ______/______, ______/______
Confidence in Alliance identification: L M H Explain: ______
Phenology (E,P,L): Herb____ Shrub____ Tree____ Other identification or mapping information:

Combined Vegetation Rapid Assessment and Relevé Field Form
(Revised March 27, 2018)
SPECIES SHEET

Database #: ______

IV. VEGETATION DESCRIPTION

% NonVasc cover: ____ **Total % Vasc Veg cover:** 70

% Cover - **Conifer tree / Hardwood tree:** 5 / 1 **Regenerating Tree:** 1 **Shrub:** 60 **Herbaceous:** 50

Height Class - **Conifer tree / Hardwood tree:** 5/5 **Regenerating Tree:** 4 **Shrub:** 4 **Herbaceous:** 1-2

☐ ☐ ☐

Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular

% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

Stratum	Species	% cover	C	Final species determination
T	Pseudotsuga menziesii	5		
T	Acer macrophyllum	1		
S	Toxicodendron diversilobum	50		
S	Baccharis pilularis	2		
S	Holodiscus discolor	1		
H	Juncus patens	15		
	Dactylis glomerata	15		
	Festuca arundinacea	5		
	Elymus glaucus	5		
	Ranunculus californica	2		
	Bellis perennis	1		
	Plantago lanceolata	2		
	Daucus carota	1		
	Other grass spp.	10		
T	Fraxinus latifolia	1		
S	Rubus californicus	1		
S	Lonicera hispidula	1		
H	Anthoxanthum odoratum	3		
H	Agrostis capillaris	3		
H	Equisetum telmateia	4		

Unusual species: ______

Appendix F – NRCS Custom Soil Resource 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

Humboldt County, South Part, California

October 4, 2021

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 Scale: 1:2,330 if printed on A portrait (8.5" x 11") sheet.

Meters: 0, 30, 60, 120, 180

Feet: 0, 100, 200, 400, 600

N

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

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

Special Point Features

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

Water Features

- Streams and Canals

Transportation

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

Background

- Aerial Photography

MAP INFORMATION

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

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

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

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

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

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

Soil Survey Area: Humboldt County, South Part, California
Survey Area Data: Version 10, Sep 6, 2021

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

Date(s) aerial images were photographed: May 8, 2019—Jun 21, 2019

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
100	Water and Fluvents, 0 to 2 percent slopes	0.7	9.5%
567	Crazycoyote-Sproulish-Caperidge complex, 15 to 50 percent slopes	0.5	6.6%
663	Yorknorth-Windynip complex, 15 to 50 percent slopes	6.3	83.4%
5505	Crazycoyote-Sproulish-Canoecreek complex, 30 to 50 percent slopes	0.0	0.5%
Totals for Area of Interest		**7.6**	**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.

Humboldt County, South Part, California

100—Water and Fluvents, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 1l9dm
Elevation: 10 to 50 feet
Mean annual precipitation: 40 to 75 inches
Mean annual air temperature: 50 to 59 degrees F
Frost-free period: 300 to 330 days
Farmland classification: Not prime farmland

Map Unit Composition

Water: 60 percent
Fluvents and similar soils: 35 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Water

Setting

Landform: Rivers on channels
Down-slope shape: Concave, linear
Across-slope shape: Linear

Description of Fluvents

Setting

Landform: Point bars on channels
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave, convex
Across-slope shape: Linear
Parent material: Alluvium derived from mixed

Typical profile

A - 0 to 13 inches: gravelly fine sandy loam
C - 13 to 59 inches: extremely gravelly sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: FrequentNone
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): 5w
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Ecological site: R004BK200CA - Riparian

Other vegetative classification: Riparian & Wetland Vegetation (RNPR001CA)
Hydric soil rating: Yes

Minor Components

Typic udifluvents

Percent of map unit: 4 percent
Landform: Meandering channels
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Rock outcrop

Percent of map unit: 1 percent
Landform: Channels
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

567—Crazycoyote-Sproulish-Caperidge complex, 15 to 50 percent slopes

Map Unit Setting

National map unit symbol: 1lpq2
Elevation: 660 to 3,280 feet
Mean annual precipitation: 60 to 100 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 240 to 300 days
Farmland classification: Not prime farmland

Map Unit Composition

Crazycoyote and similar soils: 32 percent
Sproulish, warm, and similar soils: 28 percent
Caperidge, warm, and similar soils: 25 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Crazycoyote

Setting

Landform: Ridges
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Mountaintop
Down-slope shape: Linear
Across-slope shape: Linear

Parent material: Colluvium and residuum derived from sandstone and mudstone

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A1 - 1 to 7 inches: loam
A2 - 7 to 12 inches: loam
ABt - 12 to 20 inches: loam
Bt1 - 20 to 39 inches: loam
Bt2 - 39 to 63 inches: very gravelly loam

Properties and qualities

Slope: 15 to 50 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Ecological site: F004BJ102CA - Dry, steep mountain slopes
Hydric soil rating: No

Description of Sproulish, Warm

Setting

Landform: Ridges
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Mountaintop
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Colluvium derived from mudstone and/or colluvium derived from sandstone and/or residuum weathered from mudstone and/or residuum weathered from sandstone

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 11 inches: loam
Bt1 - 11 to 26 inches: paragravelly loam
Bt2 - 26 to 39 inches: paragravelly clay loam
Bt3 - 39 to 55 inches: very paragravelly loam
Bt4 - 55 to 71 inches: very paragravelly loam

Properties and qualities

Slope: 15 to 50 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None

Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: F004BJ102CA - Dry, steep mountain slopes
Hydric soil rating: No

Description of Caperidge, Warm

Setting

Landform: Ridges
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Mountaintop
Down-slope shape: Convex, linear
Across-slope shape: Linear, convex
Parent material: Colluvium derived from sandstone and/or residuum weathered from sandstone

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A1 - 2 to 9 inches: very gravelly loam
A2 - 9 to 23 inches: very gravelly loam
Bw1 - 23 to 33 inches: very gravelly loam
Bw2 - 33 to 47 inches: very gravelly loam
C1 - 47 to 65 inches: extremely gravelly sandy loam
C2 - 65 to 79 inches: very gravelly sandy loam

Properties and qualities

Slope: 15 to 50 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Ecological site: F004BJ102CA - Dry, steep mountain slopes
Hydric soil rating: No

Minor Components

Canoecreek

Percent of map unit: 8 percent
Landform: Mountain slopes, ridges
Landform position (two-dimensional): Backslope, summit, shoulder
Landform position (three-dimensional): Mountaintop, mountainflank

Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Wirefence

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Mountaintop
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Rock outcrop

Percent of map unit: 2 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Center third of mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

663—Yorknorth-Windynip complex, 15 to 50 percent slopes

Map Unit Setting

National map unit symbol: 1lpqb
Elevation: 200 to 3,280 feet
Mean annual precipitation: 60 to 90 inches
Mean annual air temperature: 48 to 57 degrees F
Frost-free period: 240 to 280 days
Farmland classification: Not prime farmland

Map Unit Composition

Yorknorth, moist, and similar soils: 70 percent
Windynip and similar soils: 15 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Yorknorth, Moist

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Parent material: Colluvium derived from sandstone and/or earthflow deposits derived from schist

Typical profile

A - 0 to 10 inches: silt loam
BAt - 10 to 26 inches: silty clay loam
Bt1 - 26 to 35 inches: silty clay loam
Bt2 - 35 to 51 inches: silty clay loam
BCt - 51 to 71 inches: clay loam

Properties and qualities

Slope: 15 to 50 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: About 20 to 39 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: R004BI201CA - Fine-loamy Uplands
Hydric soil rating: No

Description of Windynip

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Colluvium and residuum derived from sandstone and mudstone

Typical profile

A1 - 0 to 4 inches: loam
A2 - 4 to 20 inches: loam
Bt1 - 20 to 30 inches: gravelly clay loam
Bt2 - 30 to 43 inches: gravelly clay loam
BCt - 43 to 79 inches: paragravelly clay loam

Properties and qualities

Slope: 15 to 50 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: F004BI106CA - High precipitation mountain slopes
Hydric soil rating: No

Minor Components

Coyoterock

Percent of map unit: 8 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Center third of mountainflank
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: No

Crazycoyote

Percent of map unit: 3 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Center third of mountainflank
Down-slope shape: Concave, convex, linear
Across-slope shape: Linear
Hydric soil rating: No

Rock outcrop

Percent of map unit: 2 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Center third of mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Devilshole

Percent of map unit: 2 percent
Landform: Mountain slopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Upper third of mountainflank
Down-slope shape: Convex, linear
Across-slope shape: Linear, convex
Hydric soil rating: No

5505—Crazycoyote-Sproulish-Canoecreek complex, 30 to 50 percent slopes

Map Unit Setting

National map unit symbol: 2mhhg
Elevation: 200 to 3,280 feet
Mean annual precipitation: 60 to 100 inches
Mean annual air temperature: 48 to 57 degrees F
Frost-free period: 240 to 300 days
Farmland classification: Not prime farmland

Map Unit Composition

Crazycoyote and similar soils: 35 percent
Sproulish and similar soils: 30 percent
Canoecreek and similar soils: 20 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Crazycoyote

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Concave, convex, linear
Across-slope shape: Linear
Parent material: Colluvium derived from sandstone and/or residuum weathered from sandstone

Typical profile

Oi - 0 to 2 inches: gravelly slightly decomposed plant material
A1 - 2 to 5 inches: gravelly loam
A2 - 5 to 15 inches: gravelly loam
Bt1 - 15 to 25 inches: gravelly loam
Bt2 - 25 to 35 inches: very paragravelly loam
BCt - 35 to 52 inches: very paragravelly loam
C - 52 to 79 inches: paragravelly sandy loam

Properties and qualities

Slope: 30 to 50 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 7.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Ecological site: F004BJ102CA - Dry, steep mountain slopes
Hydric soil rating: No

Description of Sproulish

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Colluvium derived from mudstone and/or sandstone and/or residuum weathered from mudstone and/or sandstone

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 4 inches: loam
Bt1 - 4 to 24 inches: loam
Bt2 - 24 to 39 inches: gravelly clay loam
Bt3 - 39 to 55 inches: very gravelly clay loam
BCt - 55 to 79 inches: gravelly clay loam

Properties and qualities

Slope: 30 to 50 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: F004BJ102CA - Dry, steep mountain slopes
Hydric soil rating: No

Description of Canoecreek

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Convex

Parent material: Colluvium derived from mudstone and/or sandstone and/or residuum weathered from mudstone and/or sandstone

Typical profile

Oi - 0 to 2 inches: gravelly slightly decomposed plant material
A - 2 to 12 inches: very gravelly loam
Bw - 12 to 24 inches: very gravelly loam
C1 - 24 to 35 inches: very gravelly loam
C2 - 35 to 71 inches: extremely gravelly loam

Properties and qualities

Slope: 30 to 50 percent
Surface area covered with cobbles, stones or boulders: 1.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Ecological site: F004BJ102CA - Dry, steep mountain slopes
Hydric soil rating: No

Minor Components

Windynip

Percent of map unit: 7 percent
Landform: Mountain slopes
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Kingrange

Percent of map unit: 6 percent
Landform: Mountain slopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Rock outcrop

Percent of map unit: 2 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Center third of mountainflank
Down-slope shape: Convex

Across-slope shape: Convex
Hydric soil rating: No

References

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Appendix G – CNDDB Submission

CNDDB Online Field Survey Form Report

California Natural Diversity Database
Department of Fish and Wildlife
1416 9th Street, Suite 1266
Sacramento, CA 95814
Fax: 916.324.0475
cnddb@wildlife.ca.gov
www.dfg.ca.gov/biogeodata/cnddb/

Source code MCD21F0007
Quad code 4012432
Occ. no.
EO index no.
Map index no.

Scientific name: *Lathyrus glandulosus*

Common name: sticky pea

Date of field work (mm-dd-yyyy): 04-22-2021

Comment about field work date(s):

OBSERVER INFORMATION

Observer: Kelsey McDonald

Affiliation:

Address: 718 Third Street , Eureka, CA 95501

Email: kelsey.mcdonald@ghd.com

Phone: (707) 798-7484

Other observers:

DETERMINATION

Keyed in: Jepson

Compared w/ specimen at:

Compared w/ image in: CalPhotos

By another person:

Other:

Identification explanation: ~14 abaxially gland-dotted leaflets

Identification confidence: Confident

Species found: Yes **If not found, why not?**

Level of survey effort: 7 hour survey

Total number of individuals: >10

Collection? No **Collection number:**

Museum/Herbarium:

PLANT INFORMATION

Phenology:

vegetative	flowering	fruiting
10 %	90 %	

SITE INFORMATION

Habitat description: Road cut dominated by poison oak and pink honeysuckle

Slope: ~60 degree road cut Land owner/manager: Caltrans easement

Aspect: east

Site condition + population viability: Good

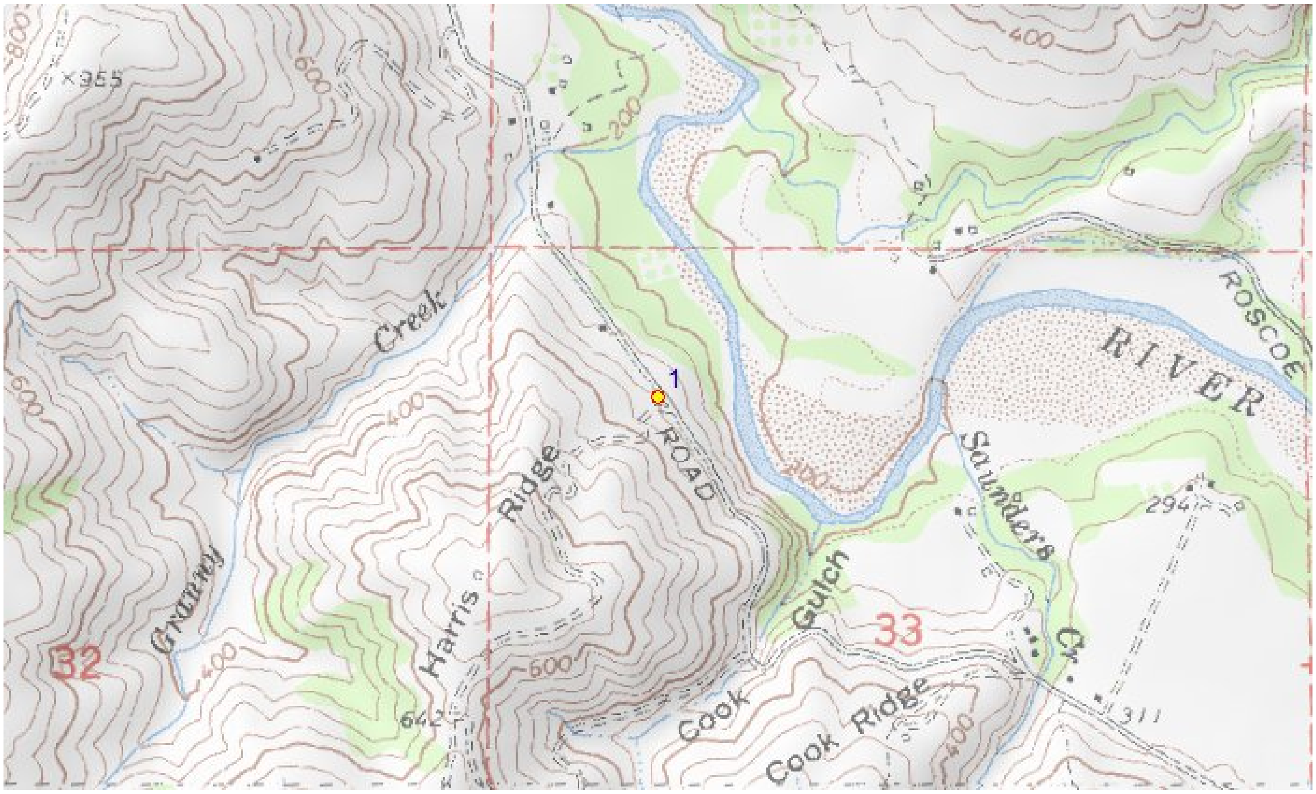
Immediate & surrounding land use: private, transportation

Visible disturbances: nearby landslide/slumping road to be repaired

Threats: roadside maintenance, repairing slumping road

General comments: Appears to be outside the area of direct impacts from road repair

MAP INFORMATION



ID	County	24K Quadrangle	Elev. (ft)	Latitude NAD83	Longitude NAD83	UTM E NAD83	UTM N NAD83	UTM Zone
	Humboldt	Buckeye Mtn.	-9999	40.25668	-124.19189	398641	4456928	10
1	**Public Land Survey**	**Feature Comment**						
	H T02S R01W 33	Lathyrus glandulosus						

The mapped feature is accurate within: 20 m

Source of mapped feature: placed on map based on site observations

Mapping notes:

Location/directions comments: western side of Mattole Road, upper road cut

Attachment(s):

GHD

718 Third Street

Eureka CA 95501

T: 707.443.8326 E: info@ghd.com

\\ghdnet\ghd\US\Eureka\Projects\561\11214735\Tech\05 Environmental Mapping and Studies\5.3 Botanical and SNC Survey www.ghd.com

Appendix F

65% Designs

65% DESIGN SUBMITTAL - 12/9/2022

GHD Inc.
718 Third Street
Eureka California 95501 USA
T 1 707 443 8326 F 1 707 444 8330 W www.ghd.com

BAR IS ONE INCH ON ORIGINAL DRAWING IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	ROAD NAME: MATTOLE ROAD ROAD NO: F3C010 MILE POST: 5.25 PROJECT NO.: ER-32LO(109)PR CONTRACT NO.: 217419 PLOT DATE: 12/09/2022	DESIGN SECTION ENGINEERING DESIGNED BY: C. HAYES DRAWN BY: C. HAYES REVIEWED BY: J. SVEHLA APPROVED BY: J. SVEHLA	COUNTY OF HUMBOLDT DEPARTMENT OF PUBLIC WORKS STORM DAMAGE REPAIR MATTOLE ROAD PM 5.25 COVER SHEET, SHEET INDEX AND MAPS	SHEET 1 OF 21

FUNDING SOURCE

THIS PROJECT IS FUNDED BY THE US DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION EMERGENCY RELIEF PROGRAM

U.S.Department of Transportation
Federal Highway Administration

COUNTY OF HUMBOLDT
DEPARTMENT OF PUBLIC WORKS

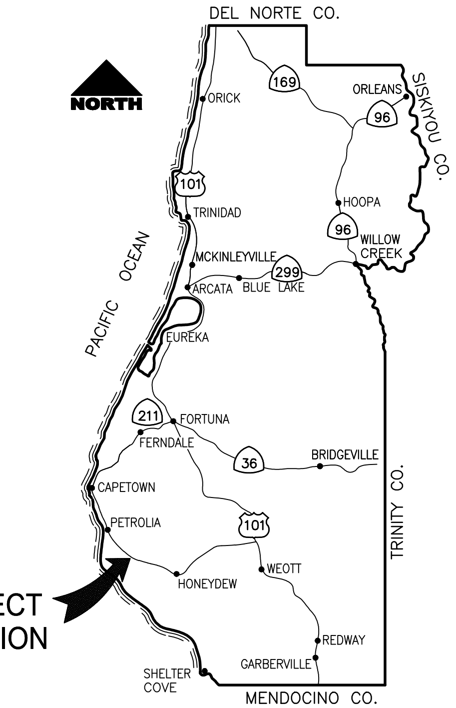
PROJECT PLANS FOR CONSTRUCTION OF

STORM DAMAGE REPAIRS
MATTOLE ROAD AT PM 5.25
PROJECT NO. ER-32LO(109)
CONTRACT NO. 217419

TO BE SUPPLEMENTED BY STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION 2022 STANDARD PLANS, 2022 STANDARD SPECIFICATIONS, AND LATEST REVISED STANDARD PLANS AND SPECIFICAITONS.

NOTES

1. THE CONTRACTOR SHALL HAVE A CLASS "A" LICENSE FOR THIS PROJECT.
2. STANDARD PLAN LIST APPLICABLE TO THIS CONTRACT INCLUDED IN THE SPECIAL PROVISIONS.
3. GEOTECHNICAL REPORT: CRAWFORD AND ASSOCIATES, SEPT. 2021.

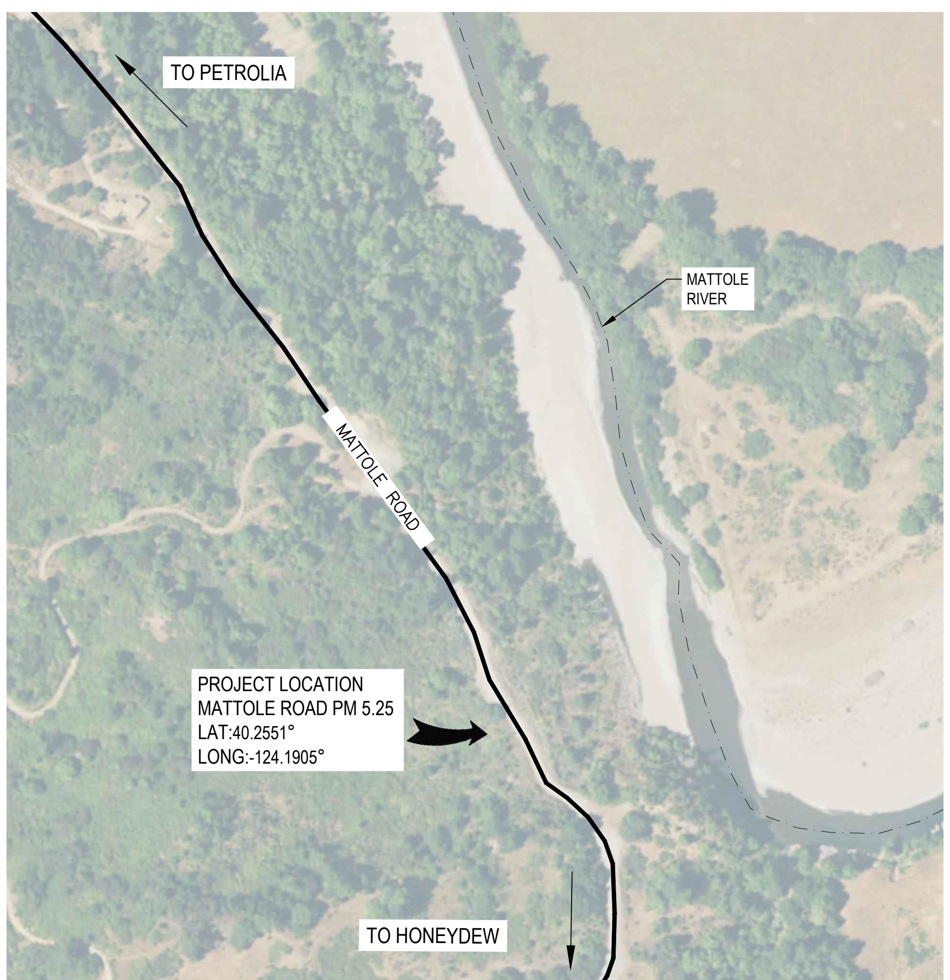


LOCATION MAP
NOT TO SCALE

COUNTY OF HUMBOLDT
The Home of the Redwoods

SHEET LIST TABLE

SHEET	SHEET TITLE
1	COVER SHEET, SHEET INDEX AND MAPS
2	TRAFFIC CONTROL, STAGING/STOCKPILE LOCATIONS AND QUANTITIES
3	SURVEY CONTROL PLAN
4	TYPICAL SECTIONS
5	PAY DIAGRAMS
6	ROADWAY PLAN – 1 OF 3
7	ROADWAY PLAN – 2 OF 3
8	ROADWAY PLAN – 3 OF 3
9	ROADWAY PROFILE & SUPER ELEVATION
10	DRAINAGE PLAN – 1 OF 2
11	DRAINAGE AND RSP PLAN – 2 OF 2
12	DRAINAGE PROFILES
13	EROSION CONTROL PLAN
14	CONSTRUCTION DETAILS
15	DESIGN SECTIONS – 1 OF 4
16	DESIGN SECTIONS – 2 OF 4
17	DESIGN SECTIONS – 3 OF 4
18	DESIGN SECTIONS – 4 OF 4
19	STAGE CONSTRUCTION – STAGE 1
20	STAGE CONSTRUCTION – STAGE 2
21	STAGE CONSTRUCTION – STAGE 3



VICINITY MAP
NOT TO SCALE

NORTH

JEREMY SHANE SVEHLA — DATE
RCE C72169
CIVIL ENGINEER
GHD INC.

REGISTERED PROFESSIONAL ENGINEER
JEREMY SHANE SVEHLA
No. C72169
Exp.
CIVIL
STATE OF CALIFORNIA
DRAFT

APPROVED

TONY R. SEGHETTI — DATE
RCE 63714
DEPUTY DIRECTOR OF ENGINEERING
COUNTY OF HUMBOLDT

ABBREVIATIONS
(TO SUPPLEMENT CALTRANS STANDARD PLANS A3A, A3B & A3C)

APN	ASSESSORS PARCEL NUMBER
CT	CALTRANS
(E)	EXISTING
EL	ELEVATION
L	LEFT
R	RIGHT
S	SLOPE

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REGISTERED PROFESSIONAL ENGINEER
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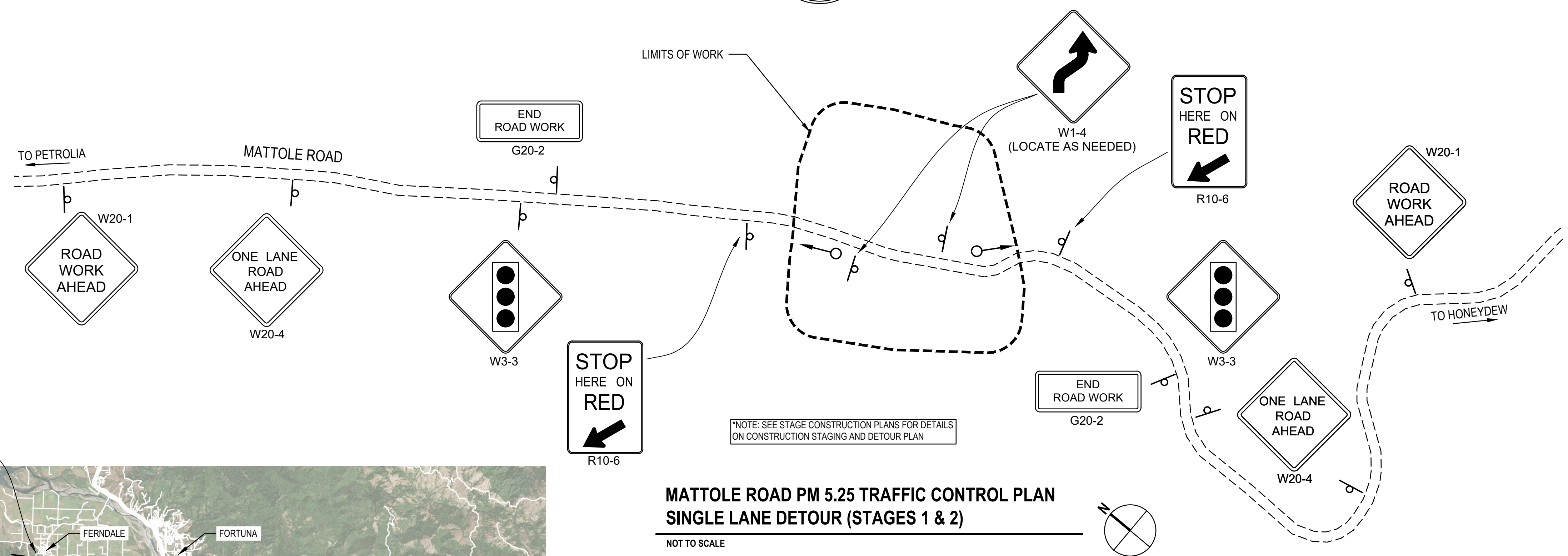
T 1 707 443 8326 F 1 707 444 8330 W www.ghd.com

BAR IS ONE INCH ON ORIGINAL DRAWING IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	ROAD NAME: MATTOLE ROAD	DESIGN SECTION ENGINEERING	COUNTY OF HUMBOLDT DEPARTMENT OF PUBLIC WORKS	SHEET
	ROAD NO: F3C010			2
	MILE POST: 5.25	DESIGNED BY: C. HAYES	STORM DAMAGE REPAIR MATTOLE ROAD PM 5.25	
	PROJECT NO.: ER–32LO(109)PR	DRAWN BY: C. HAYES		OF
	CONTRACT NO.: 217419	REVIEWED BY: J. SVEHLA	TRAFFIC CONTROL, STAGING AND STOCKPILE LOCATIONS AND QUANTITIES	
	PLOT DATE: 12/09/2022	APPROVED BY: J. SVEHLA		21

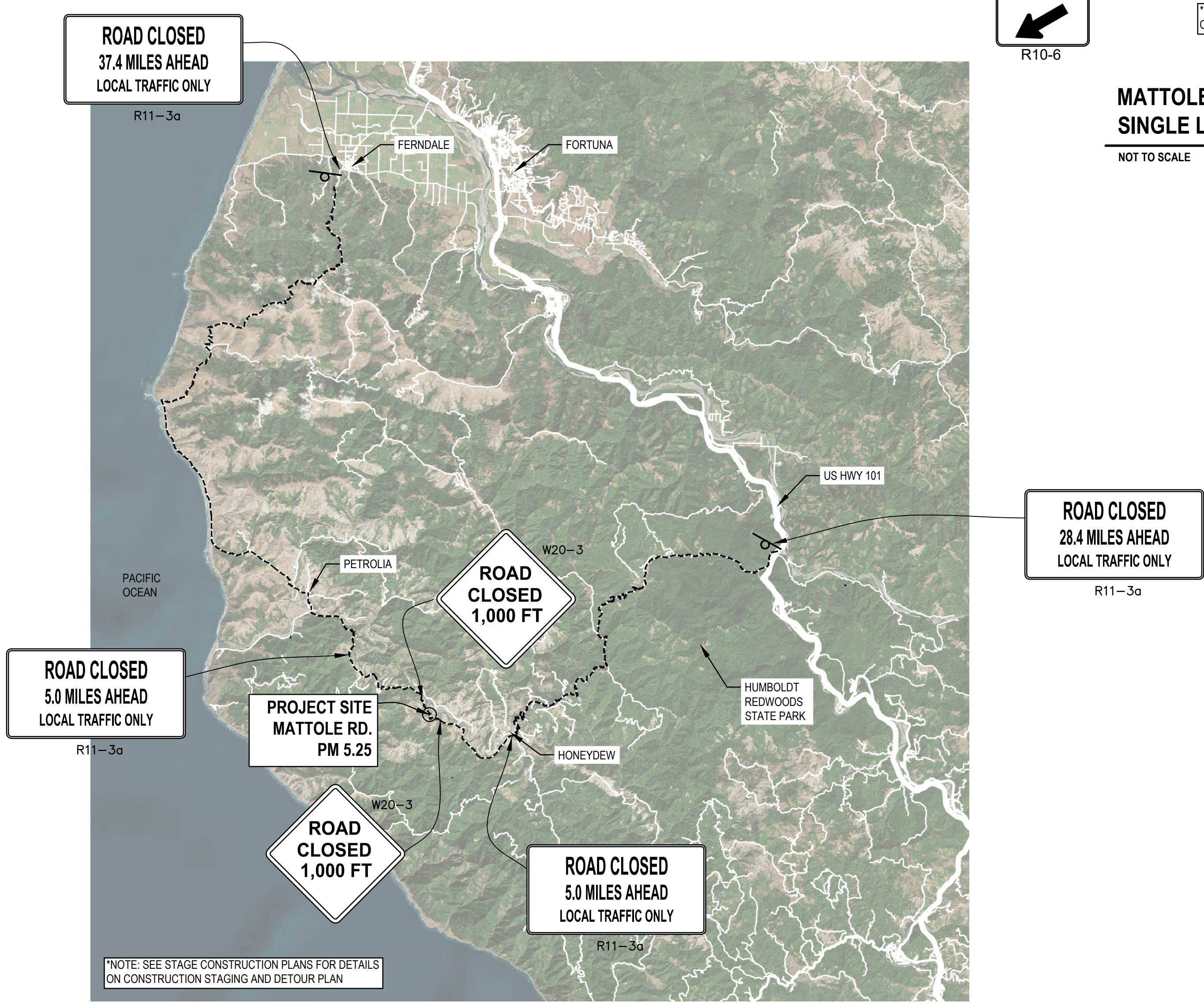


MATTOLE ROAD PM 5.25 TRAFFIC CONTROL PLAN SINGLE LANE DETOUR (STAGES 1 & 2)

NOT TO SCALE

SHEET GENERAL NOTES

1. ALL TRAFFIC CONTROL SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE CALIFORNIA MANUAL ON UNIFORM TRAFFIC CONTROLS DEVICES (CAMUTCD) AND CALTRANS 2018 STANDARD PLANS.
2. EXACT SIGN LOCATIONS AND POSITIONS TO BE APPROVED BY THE ENGINEER.
3. ALL WARNING SIGNS SHALL HAVE A BLACK LEGEND AND BORDER ON ORANGE BACKGROUND.
4. ALTERNATIVE POST CONFIGURATION TO BE APPROVED BY ENGINEER.
5. SPACING PER CALIFORNIA MUTCD TA-11.
6. REFER TO FIGURE 6H-10A(CA) FOR LANE CLOSURE ON TWO-LANE ROAD USING FLAGGERS (TA-10).
7. REFER TO FIGURE 6H-11 FOR LANE CLOSURE ON A TWO-LANE ROAD WITH LOW TRAFFIC VOLUMES (TA-11).
8. MAINTAIN ALL SIGNS THROUGHOUT DURATION OF CONSTRUCTION.
9. MAINTAIN AT LEAST ONE TRAVEL LANE AT ALL TIMES DURING NON-ROAD CLOSURE PERIODS.
10. PROVIDE FLAGGERS AS REQUIRED TO ACCOMMODATE CONSTRUCTION.

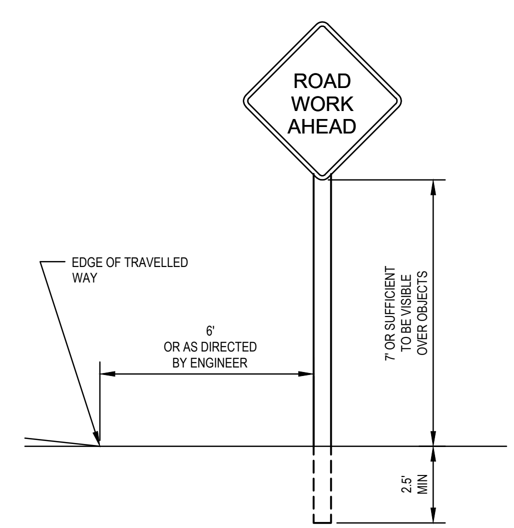


MATTOLE ROAD PM 5.25 TRAFFIC CONTROL PLAN FULL ROAD CLOSURE (STAGE 3)

NOT TO SCALE

STATIONARY MOUNTED CONSTRUCTION AREA SIGNS

SIGN CODE	PANEL SIZE	SIGN MESSAGE	NUMBER & POST SIZE	NO. OF SIGNS
W20-1	36"x36"	ROAD WORK AHEAD	(1) 4"x4"	2
G20-2	36"x18"	END ROAD WORK	(1) 4"x4"	2
W20-4	36"x36"	ONE LANE ROAD AHEAD	(1) 4"x4"	2
W3-3	36"x36"	STOP LIGHT WARNING	(1) 4"x4"	2
R10-6	36"x18"	STOP HERE ON RED	(1) 4"x4"	2
G20-2a	36"x18"	PROCEED WHEN CLEAR	(1) 4"x4"	2
R11-3a	36"x18"	ROAD CLOSED XX MILES AHEAD	(1) 4"x4"	4
G20-2a	36"x18"	ROAD CLOSED 1,000 FEET	(1) 4"x4"	2
W1-4	36"x36"	HORIZONTAL ALIGNMENT	(1) 4"x4"	2



TYPICAL STATIONARY CONSTRUCTION AREA SIGNS

QUANTITIES

No.	Item No.		Description	Quantity	Unit
1	120090		Construction Area Signs	20	EA
2	120100		Traffic Control System	1	LS
3	128601		Temporary Signal System	1	LS
4	129000		Temporary Railing (Type K)	75	EA
5	130100		Job Site Management	1	LS
6	130200		Prepare Water Pollution Control Program	1	LS
7	130310		Rain Event Action Plan	16	EA
8	130320		Stormwater Sampling and Analysis Day	16	EA
9	130330		Stormwater Annual Report	1	EA
10	130620		Temporary Drainge Inlet Protection	4	EA
11	130610		Temporary Check Dam	60	LF
12	210350		Fiber Rolls	8000	LF
13	131201		Temporary Creek Diversion System	1	LS
14	170103		Clearing and Grubbing (LS)	1	LS
15	190101	F	Roadway Excavation	40201	CY
16	198050	F	Embankment	24487	CY
17	710130		Remove Culvert	40	EA
18	641107		18" HDPE Pipe	345	LF
19	510094		Concrete Catch Basin (Type GO)	2	EA
20	700638		36" Corrugated Steel Pipe Inlet (.079" Thick)	10	LF
21	692381		Concrete Anchor and Cable Assembly	3	EA
22	390132		Hot Mix Asphalt (Type A)	409	TON
23	210280		Rolled Erosion Control Product (Netting) (Type B)	92300	SF
24	210212		Dry Seed	92300	SF
25	260201		Class II Aggregate Base (CY)	727	CY
26	394073		Place Hot Mix Asphalt Dike (Type A)	212	LF
27	394077		Place Hot Mix Asphalt Dike (Type F)	1022	LF
28	680902		6" Perforated Plastic Pipe (Roadside Underdrain)	660	LF
29	680902		6" Perforated Plastic Pipe (Blanket Drain)	405	LF
30	680903		6" Non-Perforated Plastic Pipe	119	LF
31	682042		Permeable Material (Blanket Drain)	1240	CY
32	840505		Permeable Material (Lateral Subdrains)	2792	CY
33	210290		Rolled Erosion Control Product (TRM)	750	SF
34	198250A		Geosynthetic Reinforcement (Primary Reinforcement)	14098	SQYD
35	198250B		Geosynthetic Reinforcement (Secondary Reinforcement)	1682	SQYD
36	723080	F	Rock Slope Protection (60 lb, Class II, Method B) (CY)	192	CY
37	723050	F	Rock Slope Protection (1/4 Ton, Class V, Method B) (CY)	100	CY
38	723020	F	Rock Slope Protection (2-4 Ton, Class IX - XI, Method A)	4573	CY
39	729011		Rock Slope Protection Fabric	3201	SQYD
40	022786		Willow Cuttings (Plant Group WC)	1	LS
41	999990		Mobilization	1	LS

65% DESIGN SUBMITTAL - 12/9/2022

REGISTERED PROFESSIONAL ENGINEER
JEREMY SHANE SVEHLA
No. C72169
Exp.
CIVIL
STATE OF CALIFORNIA

GHD Inc.
718 Third Street
Eureka California 95501 USA
T 1 707 443 8326 F 1 707 444 8330 W www.ghd.com

BAR IS ONE INCH ON ORIGINAL DRAWING

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

ROAD NAME:	MATTOLE ROAD	DESIGN SECTION ENGINEERING	
ROAD NO:	F3C010		
MILE POST:	5.25	DESIGNED BY:	C. HAYES
PROJECT NO.:	ER-32L0(109)PR	DRAWN BY:	C. HAYES
CONTRACT NO.:	217419	REVIEWED BY:	J. SVEHLA
PLOT DATE:	12/09/2022	APPROVED BY:	J. SVEHLA

COUNTY OF HUMBOLDT
DEPARTMENT OF PUBLIC WORKS

STORM DAMAGE REPAIR MATTOLE ROAD PM 5.25

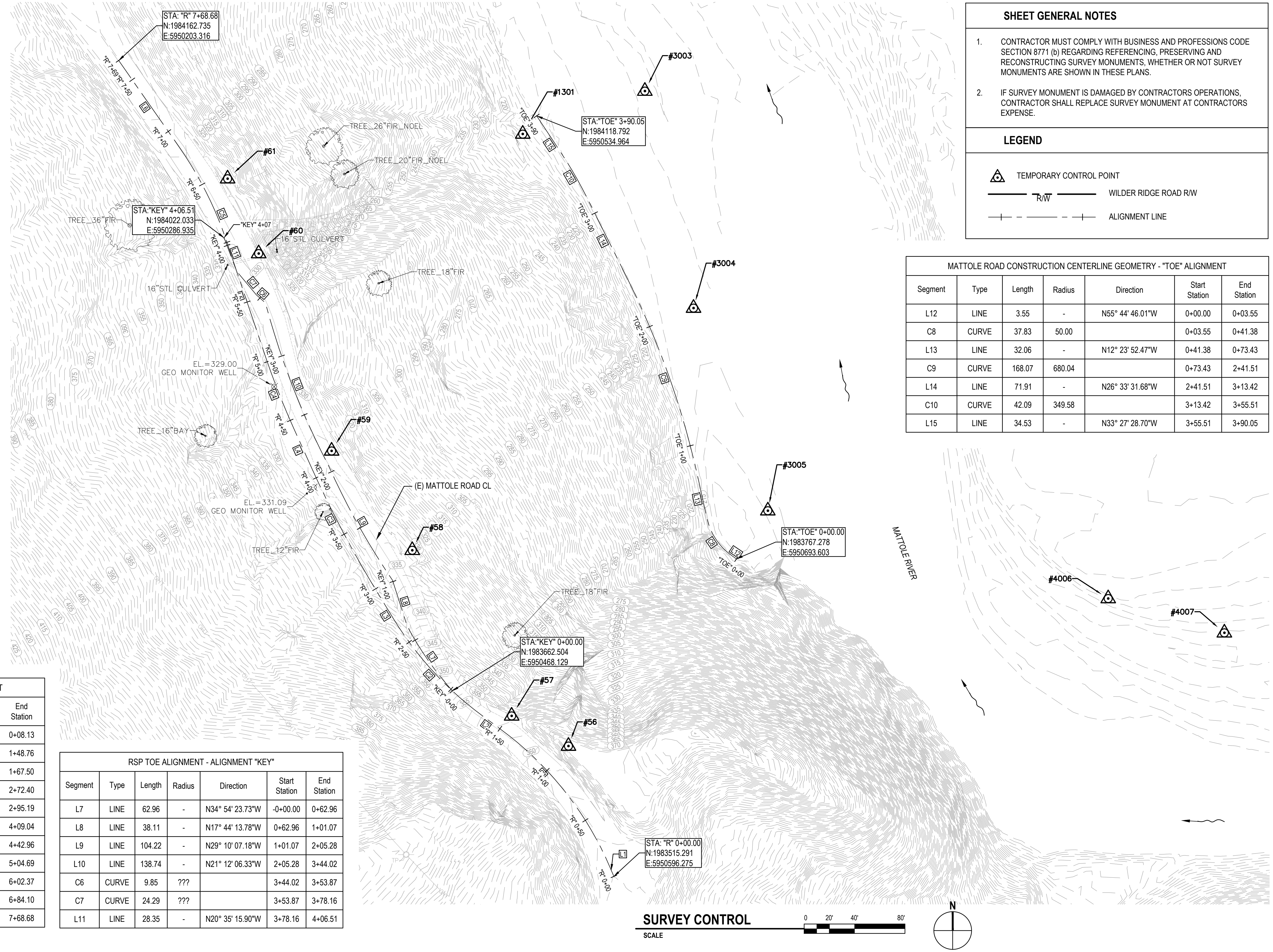
SURVEY CONTROL PLAN

SURVEY CONTROL NOTES

1. THE PURPOSE OF THIS SURVEY IS TO DETERMINE TOPOGRAPHY FOR THE TOE OF SLOPE AND PERFORM CROSS SECTION SURVEY OF MATTOLE RIVER. THIS SURVEY, PERFORMED APRIL 16 THROUGH 23, 2021, SUPPLEMENTS ORIGINAL SURVEY WORK DONE IN MARCH 2020 BY POINTS WEST SURVEYING. ORIGINAL SURVEY WAS A 200 FOOT WIDE STRIP CENTERED ON ROAD AND SUPPLEMENTED BY AN AERIAL SURVEY BY THE COUNTY OF HUMBOLDT DATED DECEMBER 5, 2011. SURVEY NOTES 2 THROUGH 6 BELOW ARE TAKEN FROM ORIGINAL SURVEY.
2. UNDERGROUND UTILITIES SHOWN HEREON ARE BASED ON TIES MADE IN THE FIELD TO VISIBLE UTILITY STRUCTURES. THE ONLY OBSERVED UTILITIES WERE STORM DRAIN PIPE AND OVERHEAD ELECTRIC AND TELEPHONE LINES SHOWN. THE EXISTENCE OF OTHER UTILITIES, IF ANY, IS UNKNOWN. SEE UNDERGROUND UTILITY NOTE BELOW.
3. COORDINATES FOR THIS SURVEY ARE CALIFORNIA COORDINATE SYSTEM OF 1983 (CCS83), ZONE 1, NAD83 (2011) EPOCH 2010.0 BASED ON A STATIC GPS CONTROL SURVEY UTILIZING AN NGS OPUS SOLUTION. THE MAPPING ANGLE IS1 DEGREE 25 MINUTES 55 SECONDS- ROTATE BEARINGS COUNTERCLOCKWISE BY THIS ANGLE TO OBTAIN "TRUE" OR GEODETIC BEARINGS. GRID DISTANCES SHOWN SHOULD BE DIVIDED BY THE COMBINED SCALE FACTOR OF 0.99993489 TO OBTAIN GROUND DISTANCES. MAPPING ANGLE AND GRID SCALE FACTOR TAKEN AT CONTROL POINT NO. 50 FROM THE MATTOLE 5.0 PROJECT. VERTICAL CONTROL IS ALSO BASED ON SAID OPUS SOLUTION, UTILIZING THE GEOID 12B GRAVITY MODEL, WITH AN NAVD 88 DATUM ELEVATION OF 333.13 FEET ON CONTROL POINT 50.
4. ONLY TREES GREATER THAN 12 INCHES IN DIAMETER WERE LOCATED- OTHER TREES EXIST IN SURVEYED AREA AND ARE NOT SHOWN. TREE LOCATIONS ARE APPROXIMATE AS NOT ALL ARE GROWING VERTICALLY; GENERALLY TREES ARE LOCATED AT BREAST HEIGHT.
5. THE RIGHT OF WAY SHOWN IS BASED ON THE PHYSICAL CENTERLINE OF THE MATTOLE ROAD ALIGNMENT. PER ROAD REGISTER NO. 1, PAGE 176, THE WIDTH OF THE RIGHT OF WAY IS 50 FEET. THIS DETERMINATION WAS MADE BY THE COUNTY RIGHT OF WAY DEPARTMENT.
6. NO BOUNDARY SURVEY WAS CONDUCTED. BOUNDARY INFORMATION SHOWN HEREON IS APPROXIMATE BASED ON THE MATTOLE VALLEY MONUMENT PRESERVATION FUND RECORD OF SURVEY, RECORDED IN BOOK 65 OF SURVEYS, PAGES 127-134. THIS RECORD OF SURVEY LISTS GRID COORDINATES FOR SECTION CORNERS AND PROPERTY LINES ARE SHOWN BASED ON THE GRID LOCATIONS OF THOSE SECTION CORNERS. SHOULD ADDITIONAL RIGHT OF WAY BE NEEDED, ADDITIONAL SURVEY WORK WILL BE REQUIRED TO DETERMINE PRECISE BOUNDARY LOCATIONS SHOWN HEREON.

UNDERGROUND UTILITY NOTES

1. UNDERGROUND UTILITIES ARE SHOWN BASED ON A COMBINATION OF VISIBLE PHYSICAL EVIDENCE AND RECORDS MADE AVAILABLE TO THE SURVEYOR. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES ARE IN THE EXACT LOCATIONS INDICATED. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES. CALL UNDERGROUND SERVICE ALERT (USA) 1-800-642-2444 A MINIMUM OF 48 HOURS PRIOR TO ANY EXCAVATIONS.



SHEET GENERAL NOTES

1. CONTRACTOR MUST COMPLY WITH BUSINESS AND PROFESSIONS CODE SECTION 8771 (b) REGARDING REFERENCING, PRESERVING AND RECONSTRUCTING SURVEY MONUMENTS, WHETHER OR NOT SURVEY MONUMENTS ARE SHOWN IN THESE PLANS.
2. IF SURVEY MONUMENT IS DAMAGED BY CONTRACTORS OPERATIONS, CONTRACTOR SHALL REPLACE SURVEY MONUMENT AT CONTRACTORS EXPENSE.

LEGEND

TEMPORARY CONTROL POINT

R/W WILDER RIDGE ROAD R/W

ALIGNMENT LINE

MATTOLE ROAD CONSTRUCTION CENTERLINE GEOMETRY - "TOE" ALIGNMENT

Segment	Type	Length	Radius	Direction	Start Station	End Station
L12	LINE	3.55	-	N55° 44' 46.01"W	0+00.00	0+03.55
C8	CURVE	37.83	50.00		0+03.55	0+41.38
L13	LINE	32.06	-	N12° 23' 52.47"W	0+41.38	0+73.43
C9	CURVE	168.07	680.04		0+73.43	2+41.51
L14	LINE	71.91	-	N26° 33' 31.68"W	2+41.51	3+13.42
C10	CURVE	42.09	349.58		3+13.42	3+55.51
L15	LINE	34.53	-	N33° 27' 28.70"W	3+55.51	3+90.05

MATTOLE ROAD CONSTRUCTION CENTERLINE GEOMETRY - "R" ALIGNMENT

Segment	Type	Length	Radius	Direction	Start Station	End Station
L1	LINE	8.13	-	N23° 12' 23.90"W	0+00.00	0+08.13
C1	CURVE	140.63	265.79		0+08.13	1+48.76
L2	LINE	18.75	-	N53° 31' 17.80"W	1+48.76	1+67.50
C2	CURVE	104.90	272.34		1+67.50	2+72.40
L3	LINE	22.79	-	N31° 27' 12.40"W	2+72.40	2+95.19
C3	CURVE	113.85	911.76		2+95.19	4+09.04
L4	LINE	33.92	-	N24° 17' 56.29"W	4+09.04	4+42.96
C4	CURVE	61.73	626.36		4+42.96	5+04.69
L5	LINE	97.67	-	N18° 39' 06.71"W	5+04.69	6+02.37
C5	CURVE	81.73	287.89		6+02.37	6+84.10
L6	LINE	84.58	-	N34° 55' 05.66"W	6+84.10	7+68.68

RSP TOE ALIGNMENT - ALIGNMENT "KEY"

Segment	Type	Length	Radius	Direction	Start Station	End Station
L7	LINE	62.96	-	N34° 54' 23.73"W	-0+00.00	0+62.96
L8	LINE	38.11	-	N17° 44' 13.78"W	0+62.96	1+01.07
L9	LINE	104.22	-	N29° 10' 07.18"W	1+01.07	2+05.28
L10	LINE	138.74	-	N21° 12' 06.33"W	2+05.28	3+44.02
C6	CURVE	9.85	???		3+44.02	3+53.87
C7	CURVE	24.29	???		3+53.87	3+78.16
L11	LINE	28.35	-	N20° 35' 15.90"W	3+78.16	4+06.51

65% DESIGN SUBMITTAL - 12/9/2022

REGISTERED PROFESSIONAL ENGINEER JEREMY SHANE SVEHLA No. C72169 Exp. CIVIL STATE OF CALIFORNIA DRAFT

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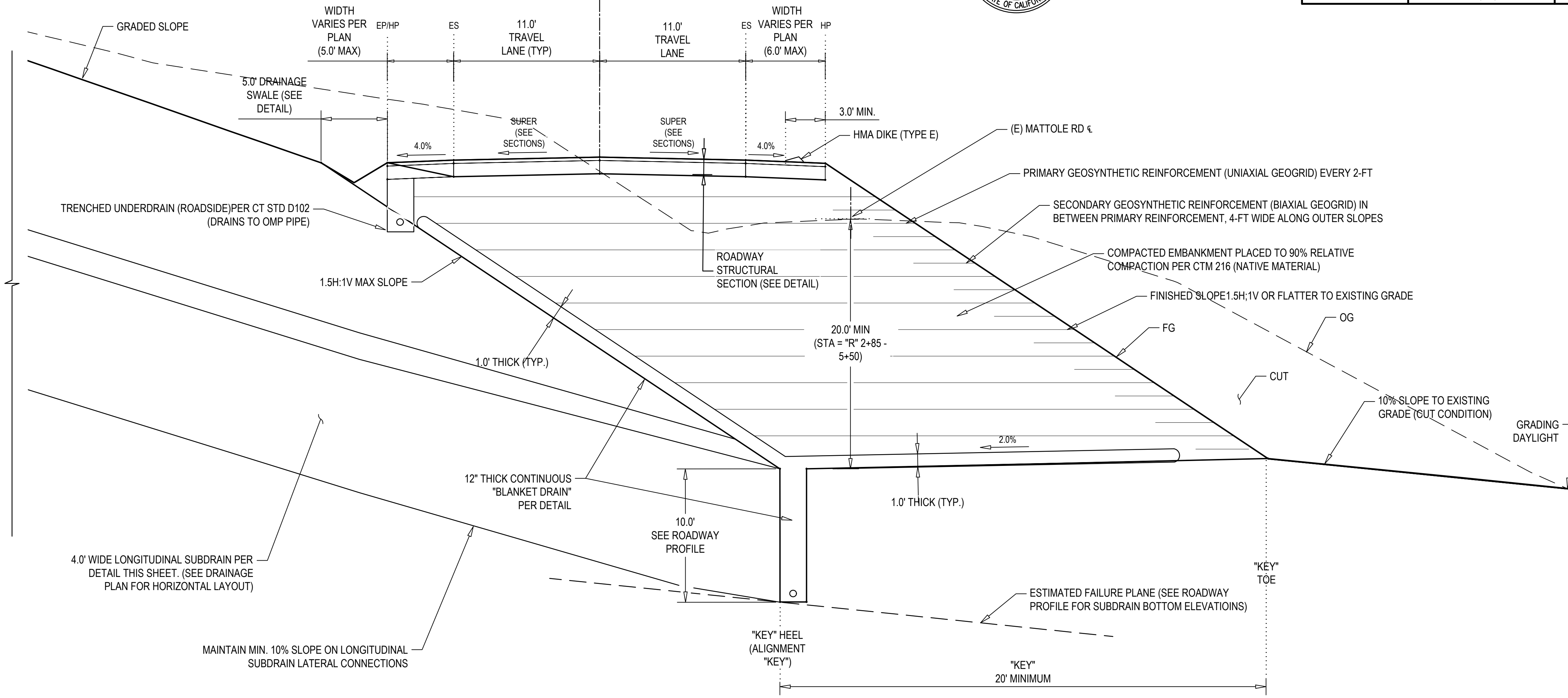
BAR IS ONE INCH ON ORIGINAL DRAWING

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

ROAD NAME: MATTOLE ROAD	DESIGN SECTION ENGINEERING	COUNTY OF HUMBOLDT DEPARTMENT OF PUBLIC WORKS	SHEET 4
ROAD NO: F3C010			
MILE POST: 5.25	DESIGNED BY: C. HAYES	STORM DAMAGE REPAIR MATTOLE ROAD PM 5.25	OF
PROJECT NO.: ER-32LO(109)PR	DRAWN BY: C. HAYES		
CONTRACT NO.: 217419	REVIEWED BY: J. SVEHLA	TYPICAL SECTIONS	21
PLOT DATE: 12/09/2022	APPROVED BY: J. SVEHLA		

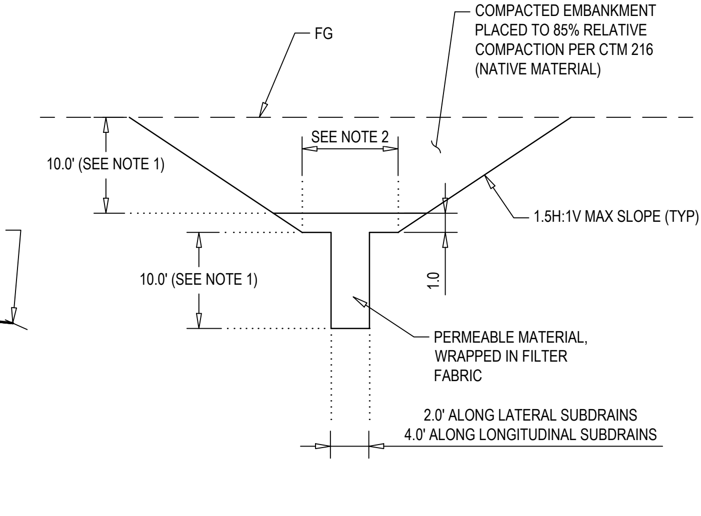


TYPICAL SECTION MATTOLE ROAD PM 5.25

NOT TO SCALE STA "R" 2+00 - 6+15

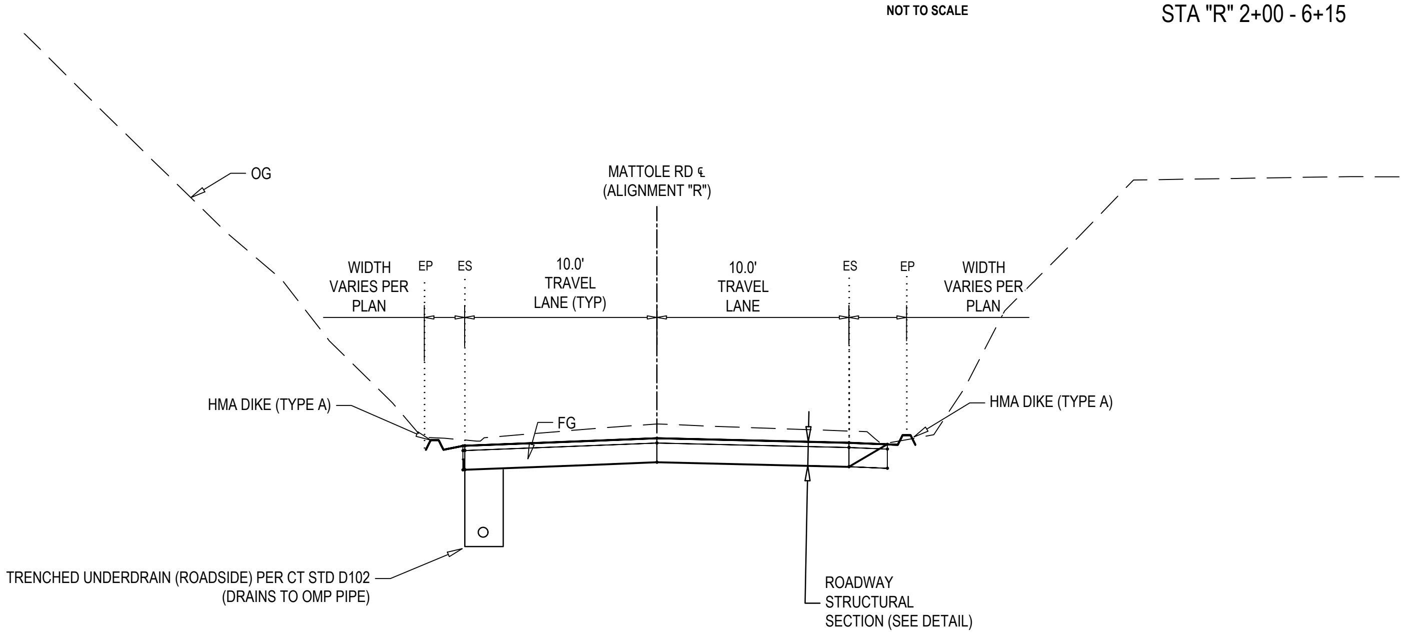
SHEET GENERAL NOTES

1. HORIZONTAL LOCATION AND DEPTH OF UNDERDRAINS MAY VARY IN FIELD DEPENDING ON SUBSURFACE CONDITIONS. LOCATIONS AND DEPTHS MAY BE MODIFIED TO CAPTURE SPRING SEEPAGE OBSERVED IN FIELD DURING THE TIME OF CONSTRUCTION. PRIOR TO MODIFICATION OF THIS PLAN, CONTRACTOR SHALL CONSULT WITH PROJECT CIVIL OR GEOTECHNICAL ENGINEER.
2. SUBDRAIN BENCH WIDTH SHALL BE THE WIDTH REQUIRED TO FIT CONSTRUCTION EQUIPMENT



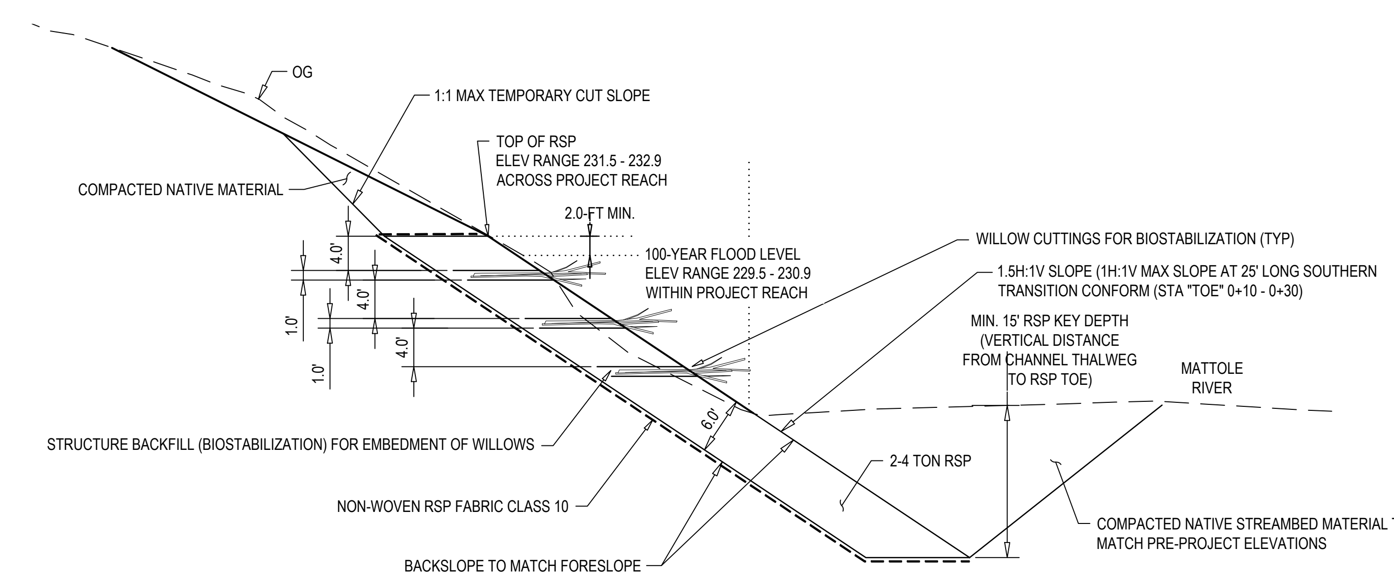
TYPICAL SECTION HILLSIDE SUBDRAIN

NOT TO SCALE



TYPICAL SECTION MATTOLE ROAD PM 5.25

NOT TO SCALE STA "R" 0+30 - 1+35



TYPICAL SECTION STREAMBANK BIOSTABILIZATION SECTION

NOT TO SCALE

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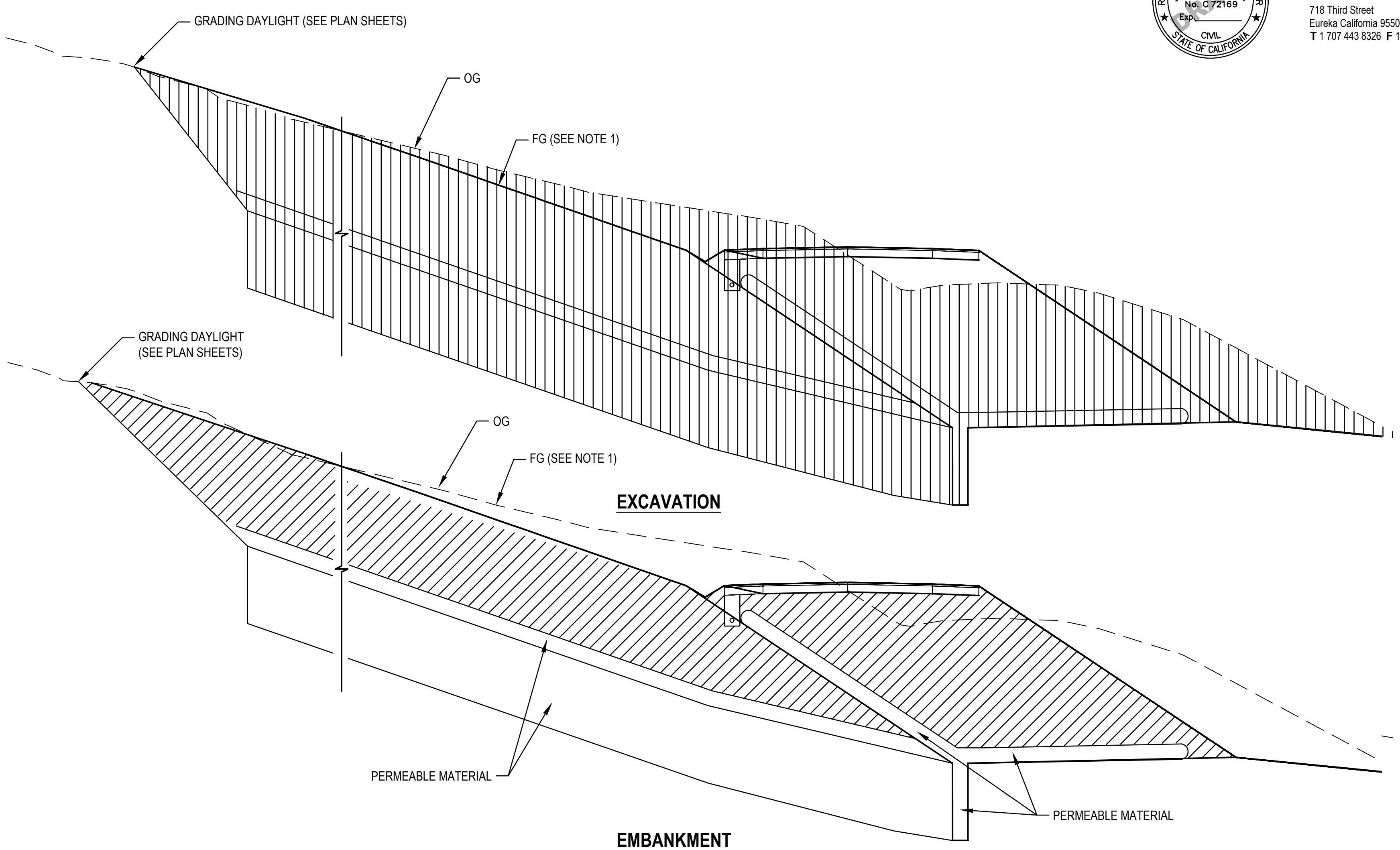
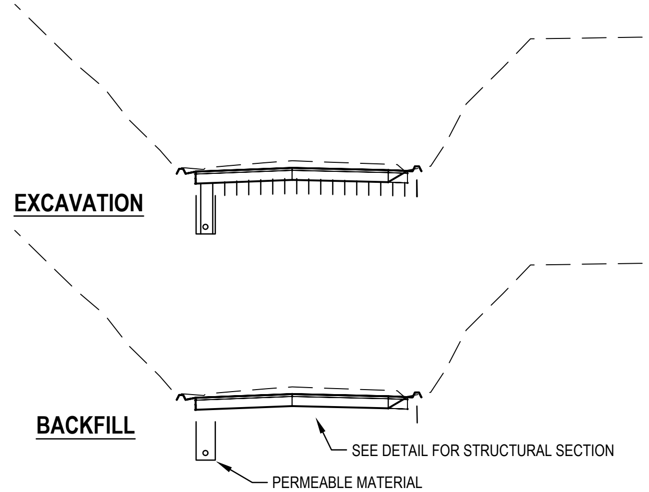
BAR IS ONE INCH ON ORIGINAL DRAWING	ROAD NAME: MATTOLE ROAD	DESIGN SECTION ENGINEERING	COUNTY OF HUMBOLDT DEPARTMENT OF PUBLIC WORKS	SHEET 5
	ROAD NO: F3C010			
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	MILE POST: 5.25	DESIGNED BY: C. HAYES	STORM DAMAGE REPAIR MATTOLE ROAD PM 5.25	OF
	PROJECT NO.: ER-32LO(109)PR	DRAWN BY: C. HAYES		21
	CONTRACT NO.: 217419	REVIEWED BY: J. SVEHLA	PAY DIAGRAMS	
	PLOT DATE: 12/09/2022	APPROVED BY: J. SVEHLA		



PAYMENT LIMITS OF EXCAVATION AND EMBANKMENT ROADWAY EMBANKMENT AND LONGITUDINAL SUBDRAINS

NOT TO SCALE

STA "R" 2+00 - 6+15



PAYMENT LIMITS OF EXCAVATION AND EMBANKMENT ROADWAY

NOT TO SCALE

STA "R" 0+30 - 1+35

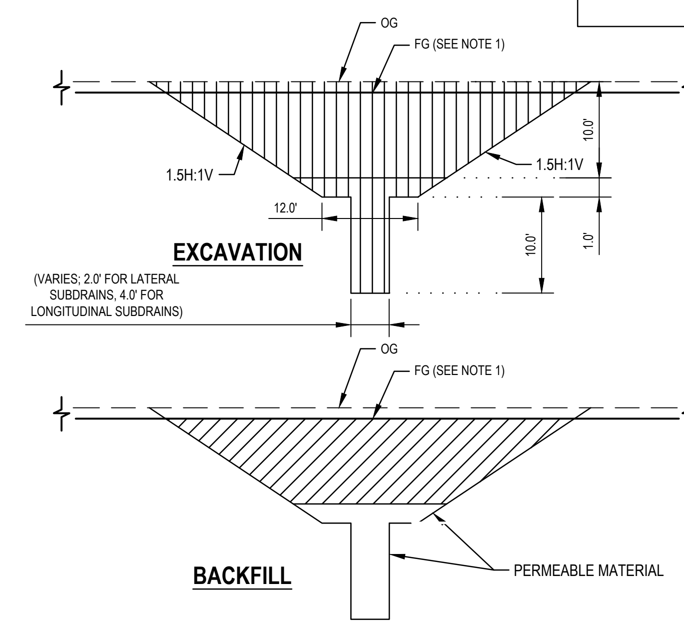
SHEET GENERAL NOTES

1. FINISH GRADING AT HILLSIDE SUBDRAIN AREA SHALL BE GRADED WITH SMOOTH SLOPE TO PROMOTE SHEET FLOW FROM SURFACE WATER DRAINAGE. SEE EROSION CONTROL PLAN FOR EROSION CONTROL AND SLOPE STABILIZATION DETAILS.

LEGEND

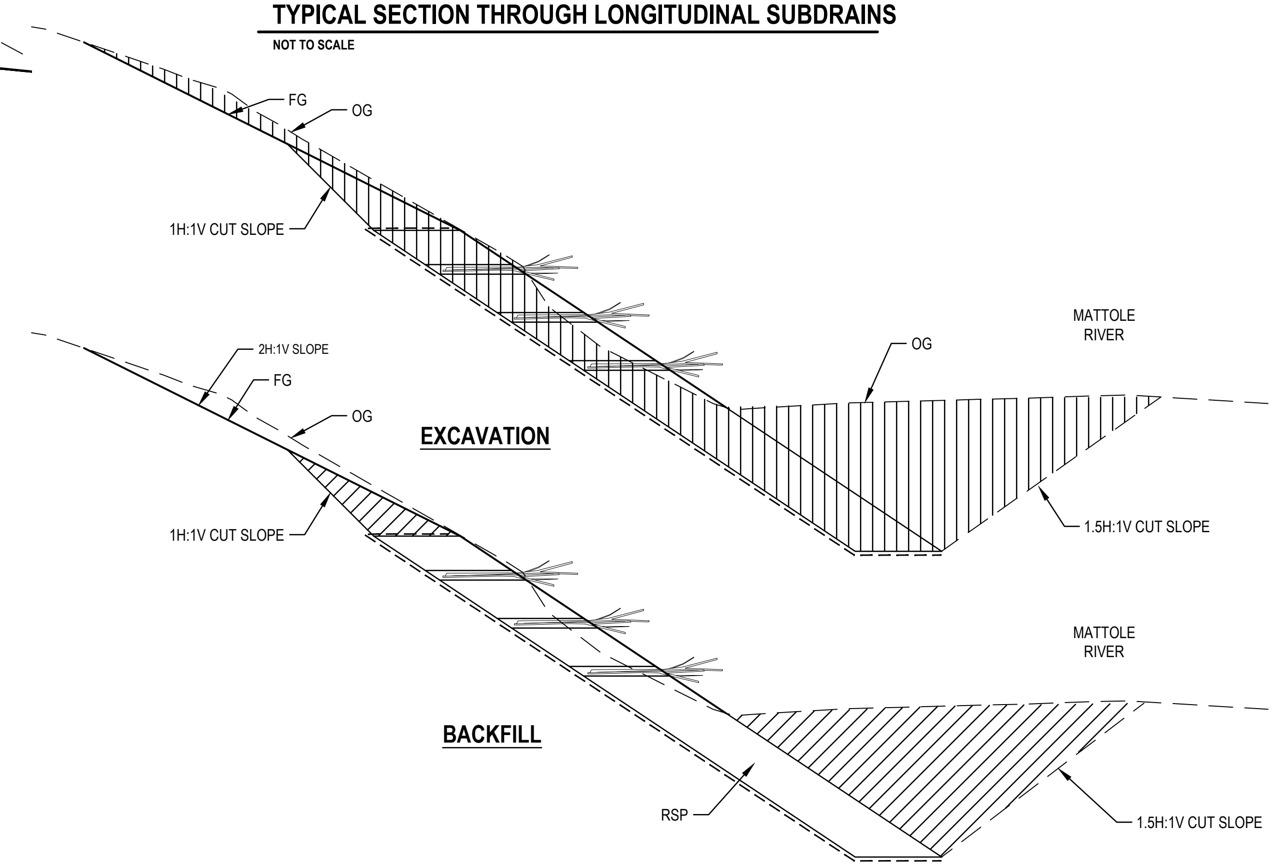
EXCAVATION

EMBANKMENT



PAYMENT LIMITS OF EXCAVATION AND EMBANKMENT TYPICAL SECTION THROUGH LONGITUDINAL SUBDRAINS

NOT TO SCALE



PAYMENT LIMITS OF EXCAVATION AND EMBANKMENT RSP STREAMBANK BIOSTABILIZATION

NOT TO SCALE

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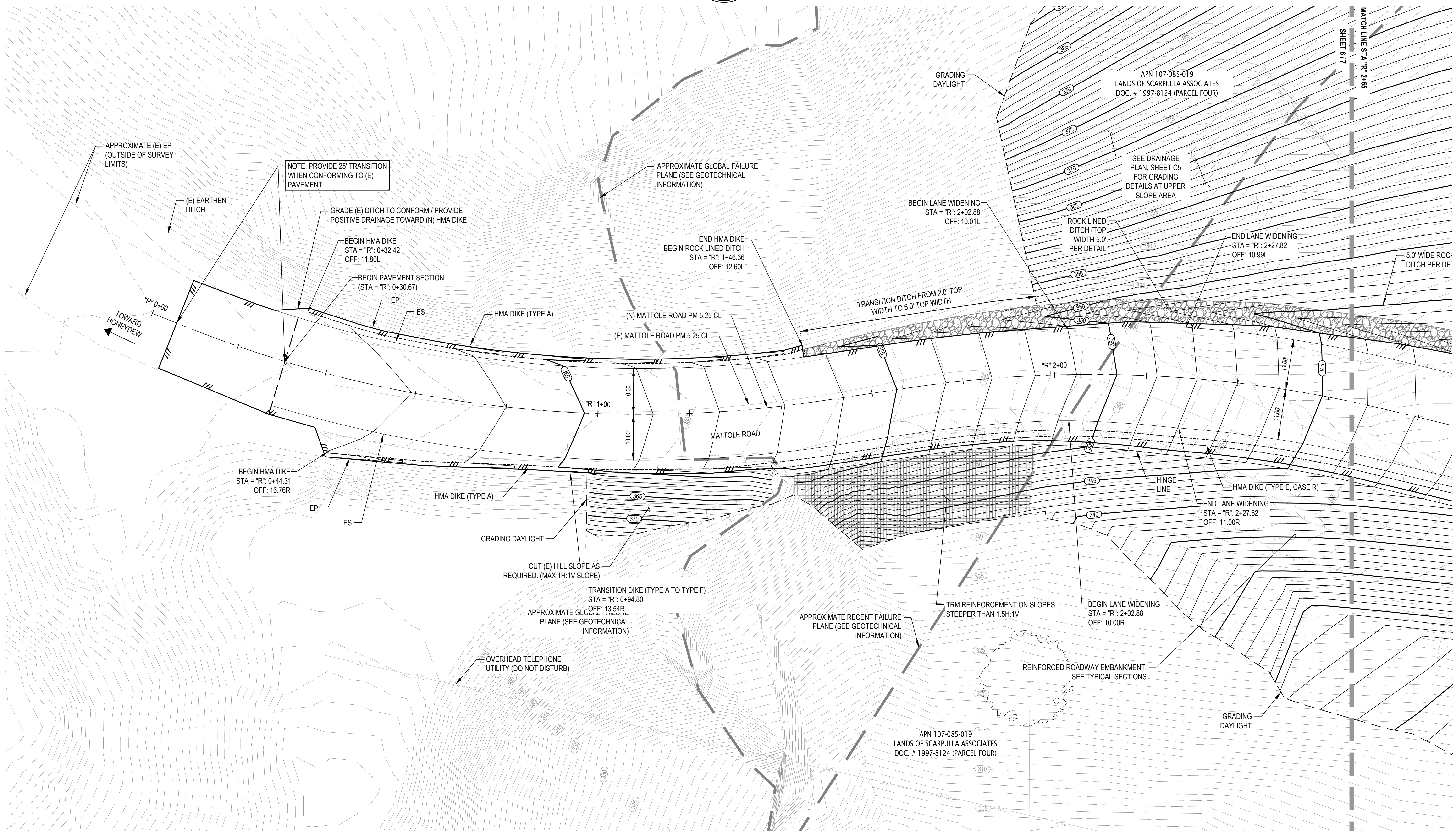
ROAD NAME:	MATTOLE ROAD	DESIGN SECTION ENGINEERING	
ROAD NO:	F3C010		
MILE POST:	5.25	DESIGNED BY: C. HAYES	
PROJECT NO.:	ER-32L0(109)PR	DRAWN BY: C. HAYES	
CONTRACT NO.:	217419	REVIEWED BY: J. SVEHLA	
PLOT DATE:	12/09/2022	APPROVED BY: J. SVEHLA	

COUNTY OF HUMBOLDT
DEPARTMENT OF PUBLIC WORKS

STORM DAMAGE REPAIR MATTOLE ROAD PM 5.25

ROADWAY PLAN - 1 OF 3

SHEET 6 OF 21



MATTOLE ROAD PM 5.25 ROADWAY PLAN 1 OF 3

0 10' 20'

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ROAD NO:	F3C010
MILE POST:	5.25
PROJECT NO.:	ER-32L0(109)PR
CONTRACT NO.:	217419
PLOT DATE:	12/09/2022

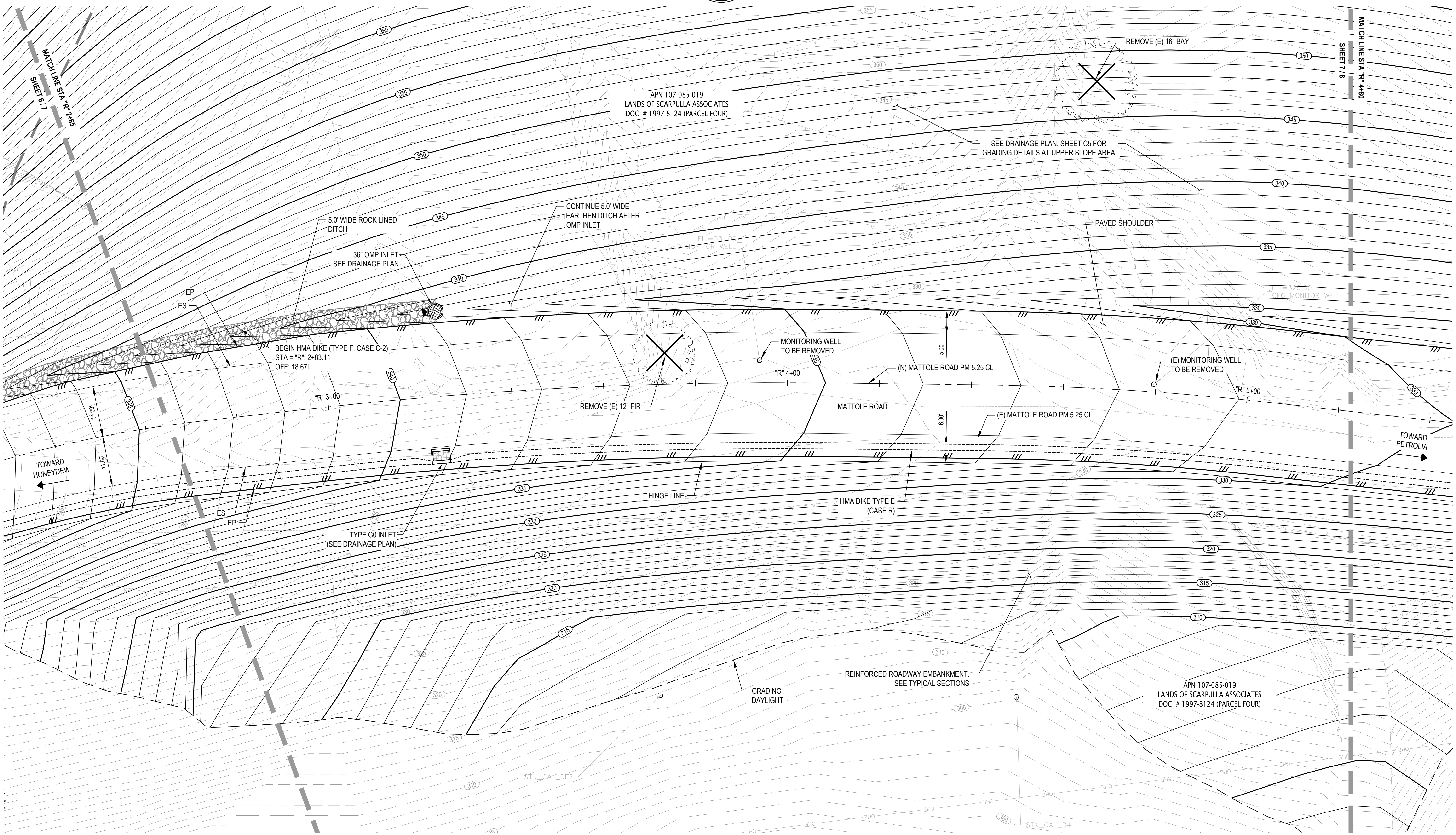
DESIGN SECTION
ENGINEERING
DESIGNED BY: C. HAYES
DRAWN BY: C. HAYES
REVIEWED BY: J. SVEHLA
APPROVED BY: J. SVEHLA

COUNTY OF HUMBOLDT
DEPARTMENT OF PUBLIC WORKS

STORM DAMAGE REPAIR MATTOLE ROAD PM 5.25

ROADWAY PLAN - 2 OF 3

SHEET 7 OF 21



MATTOLE ROAD PM 5.25 ROADWAY PLAN 2 OF 3

0 10' 20'

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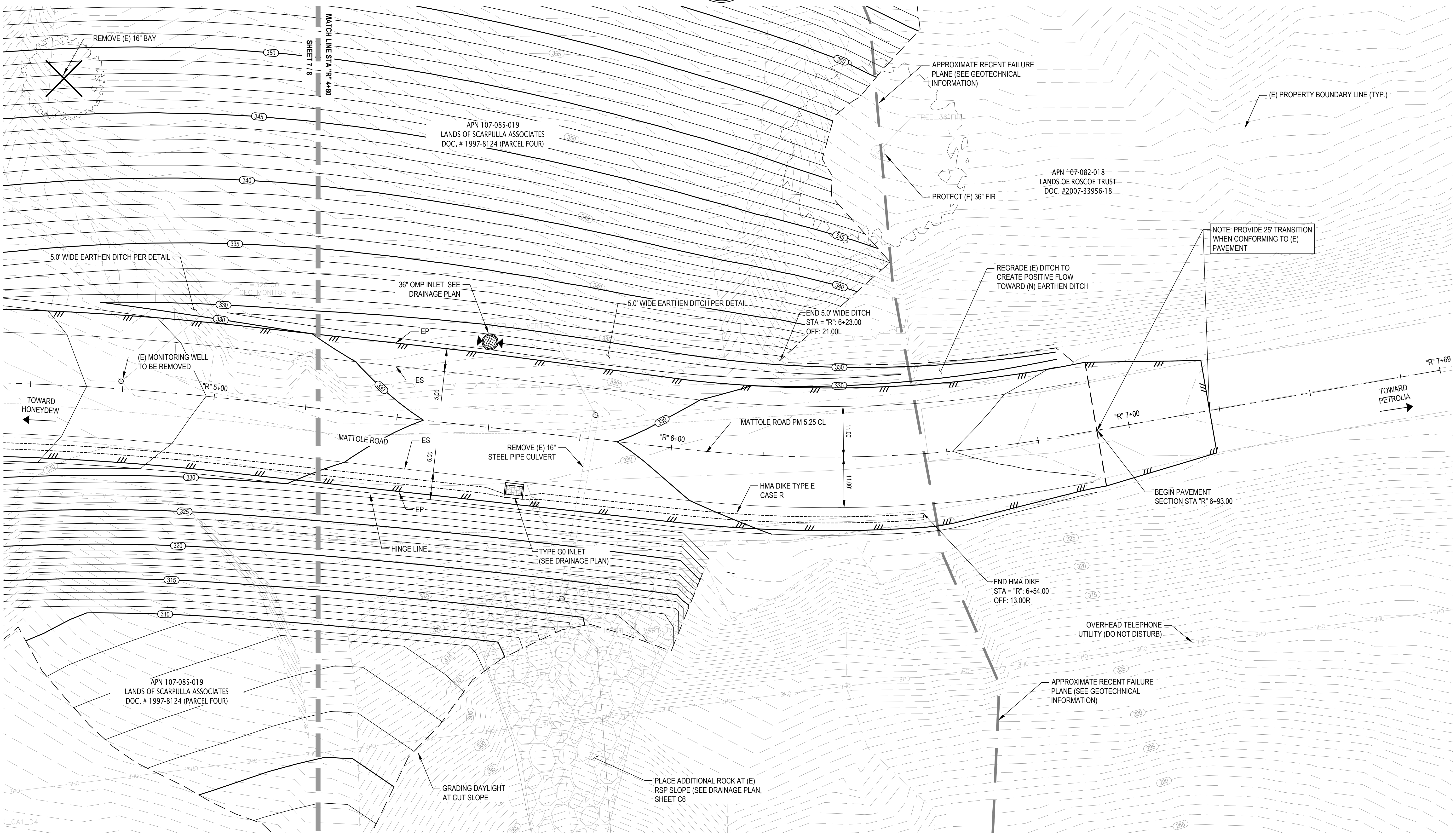
ROAD NAME:	MATTOLE ROAD	DESIGN SECTION ENGINEERING	COUNTY OF HUMBOLDT DEPARTMENT OF PUBLIC WORKS	SHEET 8 OF 21
ROAD NO:	F3C010			
MILE POST:	5.25	DESIGNED BY: C. HAYES	STORM DAMAGE REPAIR MATTOLE ROAD PM 5.25	
PROJECT NO.:	ER-32LO(109)PR	DRAWN BY: C. HAYES		
CONTRACT NO.:	217419	REVIEWED BY: J. SVEHLA	ROADWAY PLAN - 3 OF 3	
PLOT DATE:	12/09/2022	APPROVED BY: J. SVEHLA		



MATTOLE ROAD PM 5.25 ROADWAY PLAN 3 OF 3

0 10' 20'

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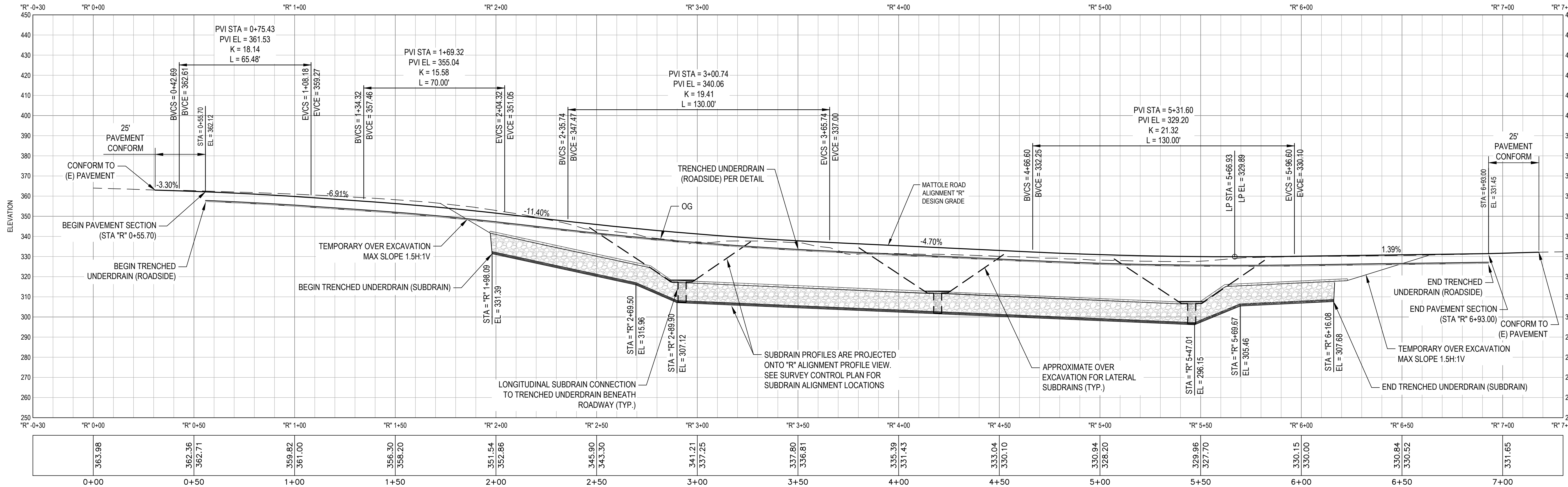
ROAD NO:	F3C010		
MILE POST:	5.25	DESIGNED BY: R. RHOSES	STORM DAMAGE REPAIR MATTOLE ROAD PM 5.25
PROJECT NO.:	ER-32LO(109)PR	DRAWN BY: R. RHOSES	
CONTRACT NO.:	217419	REVIEWED BY: J. SVEHLA	ROADWAY PROFILE AND SUPERELEVATION
PLOT DATE:	12/09/2022	APPROVED BY: J. SVEHLA	

SHEET 9 OF 21

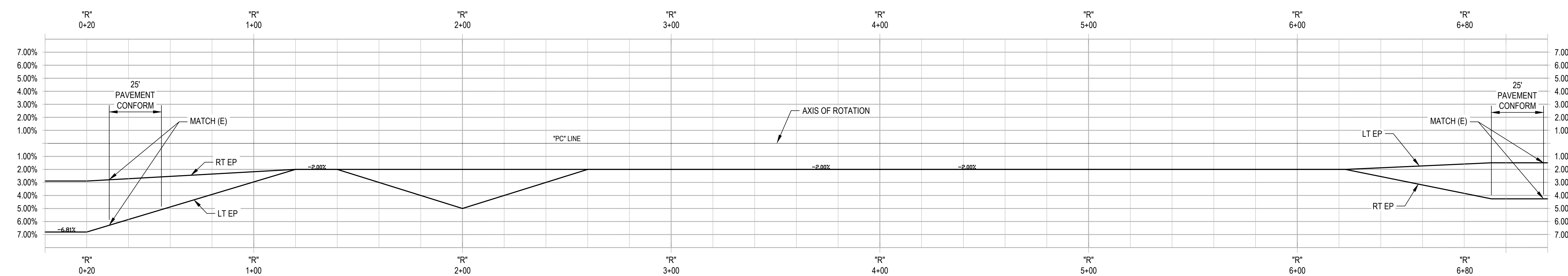
STATION



MATTOLE ROAD PM 5.25 ROADWAY PROFILE

0 25' 50' HORIZONTAL

0 25' 50' VERTICAL



MATTOLE ROAD PM 5.25 SUPERELEVATION

0 25' 50' HORIZONTAL

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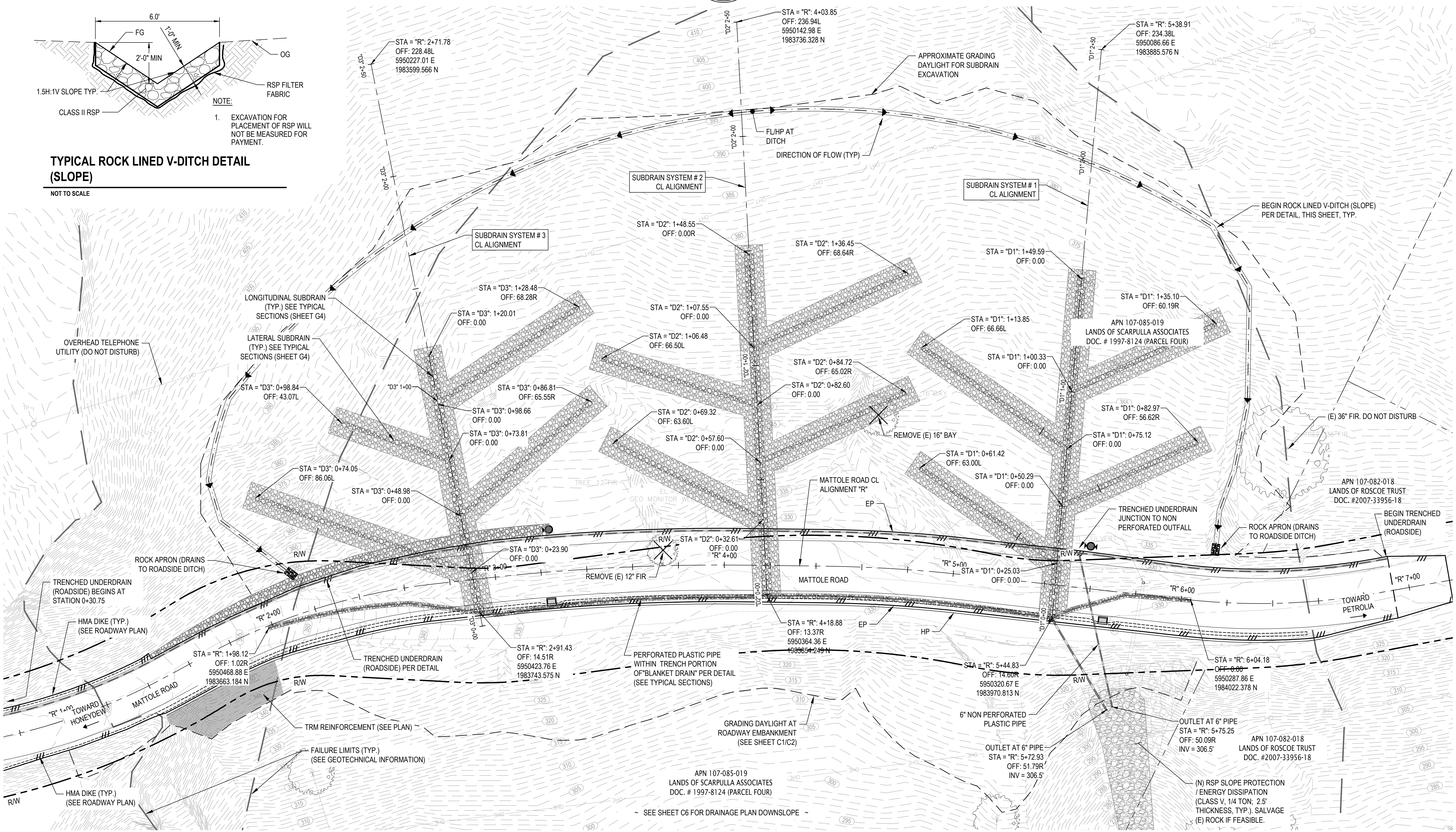
ROAD NO:	F3C010		
MILE POST:	5.25	DESIGNED BY: C. HAYES	STORM DAMAGE REPAIR MATTOLE ROAD PM 5.25
PROJECT NO.:	ER-32L0(109)PR	DRAWN BY: C. HAYES	
CONTRACT NO.:	217419	REVIEWED BY: J. SVEHLA	DRAINAGE PLAN - 1 OF 2
PLOT DATE:	12/09/2022	APPROVED BY: J. SVEHLA	



MATTOLE ROAD PM 5.25 DRAINAGE PLAN 1 OF 2

0 10' 20' 40'

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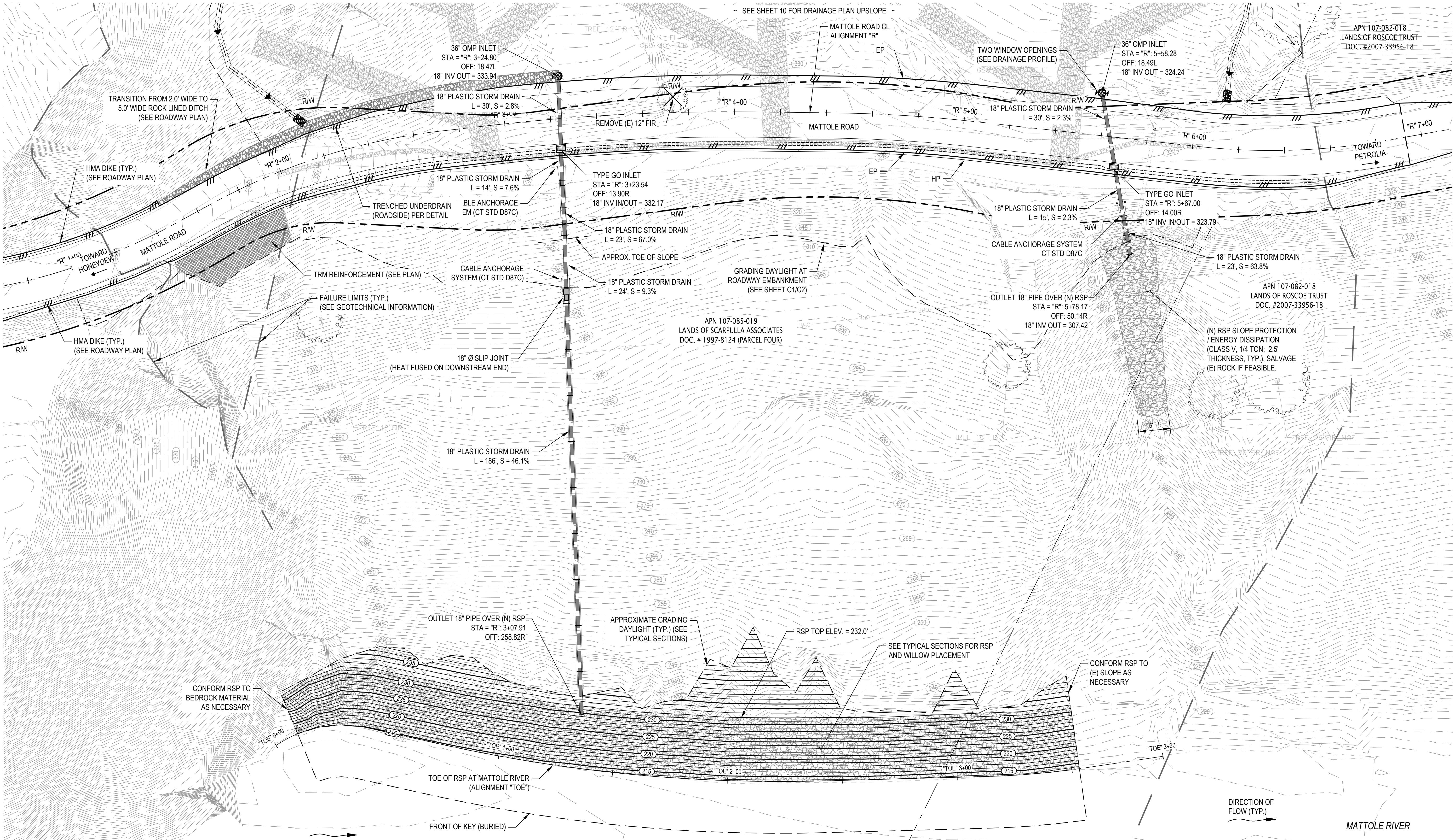
	ROAD NO: F3C010		
	MILE POST: 5.25	DESIGNED BY: C. HAYES	STORM DAMAGE REPAIR MATTOLE ROAD PM 5.25
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	PROJECT NO.: ER-32L0(109)PR	DRAWN BY: C. HAYES	
	CONTRACT NO.: 217419	REVIEWED BY: J. SVEHLA	DRAINAGE PLAN - 2 OF 2 AND RSP PLAN
	PLOT DATE: 12/09/2022	APPROVED BY: J. SVEHLA	

SHEET 11 OF 21



MATTOLE ROAD PM 5.25 DRAINAGE PLAN 2 OF 2 AND RSP PLAN

0 10' 20' 40'

N

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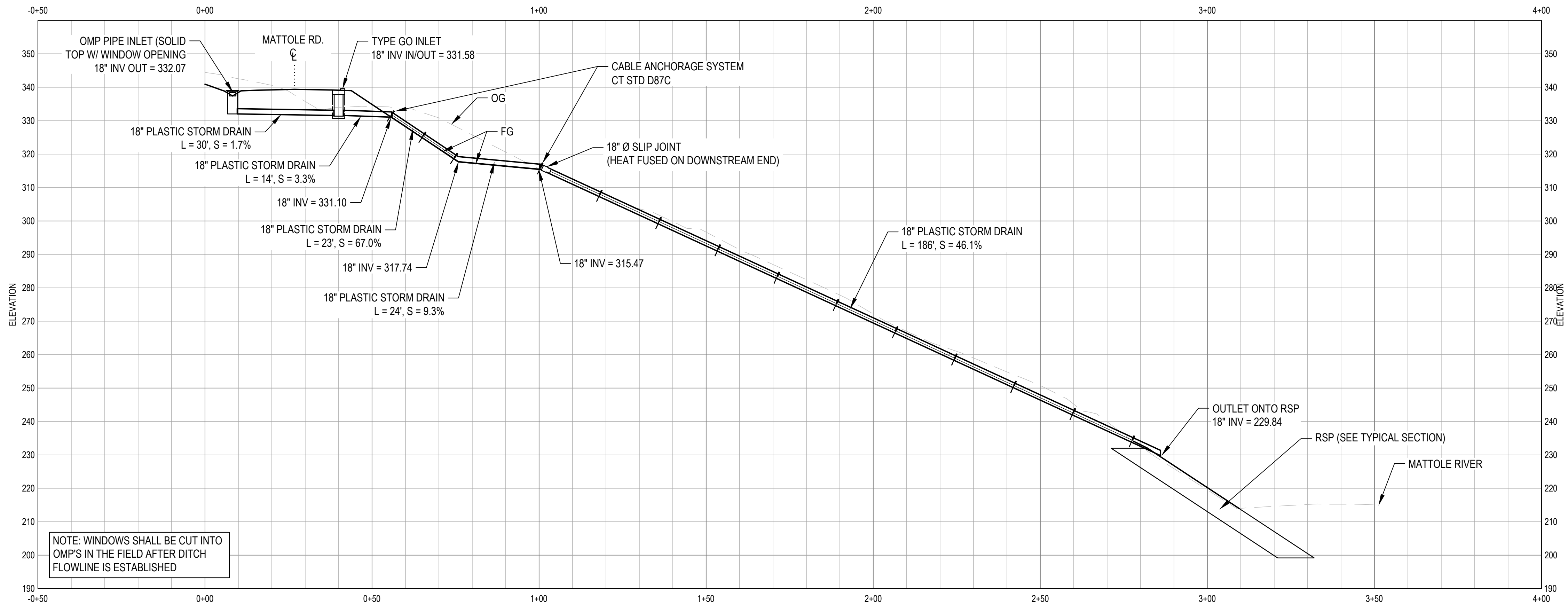
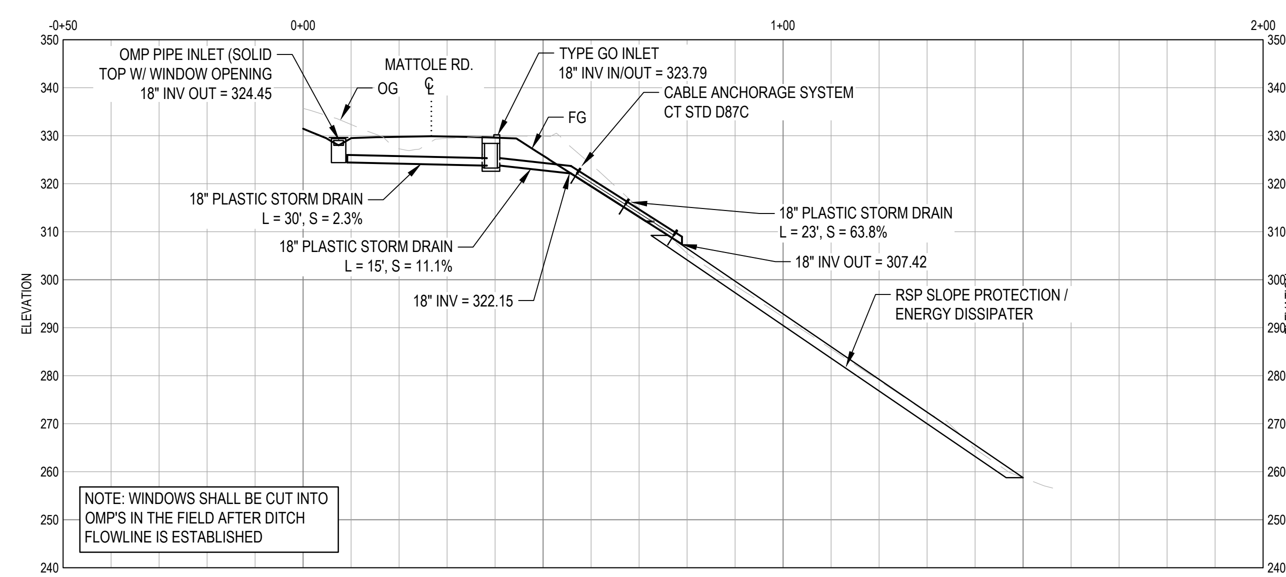
MILE POST:	5.25	DESIGNED BY: C. HAYES	STORM DAMAGE REPAIR MATTOLE ROAD PM 5.25
PROJECT NO.:	ER-32LO(109)PR	DRAWN BY: C. HAYES	
CONTRACT NO.:	217419	REVIEWED BY: J. SVEHLA	DRAINAGE PROFILES
PLOT DATE:	12/09/2022	APPROVED BY: J. SVEHLA	



DRAINAGE PROFILE - DRAINAGE SYSTEM 1

0 10' 20' 40' HORIZONTAL
0 10' 20' 40' VERTICAL



DRAINAGE PROFILE - DRAINAGE SYSTEM 2

0 10' 20' 40' HORIZONTAL
0 10' 20' 40' VERTICAL

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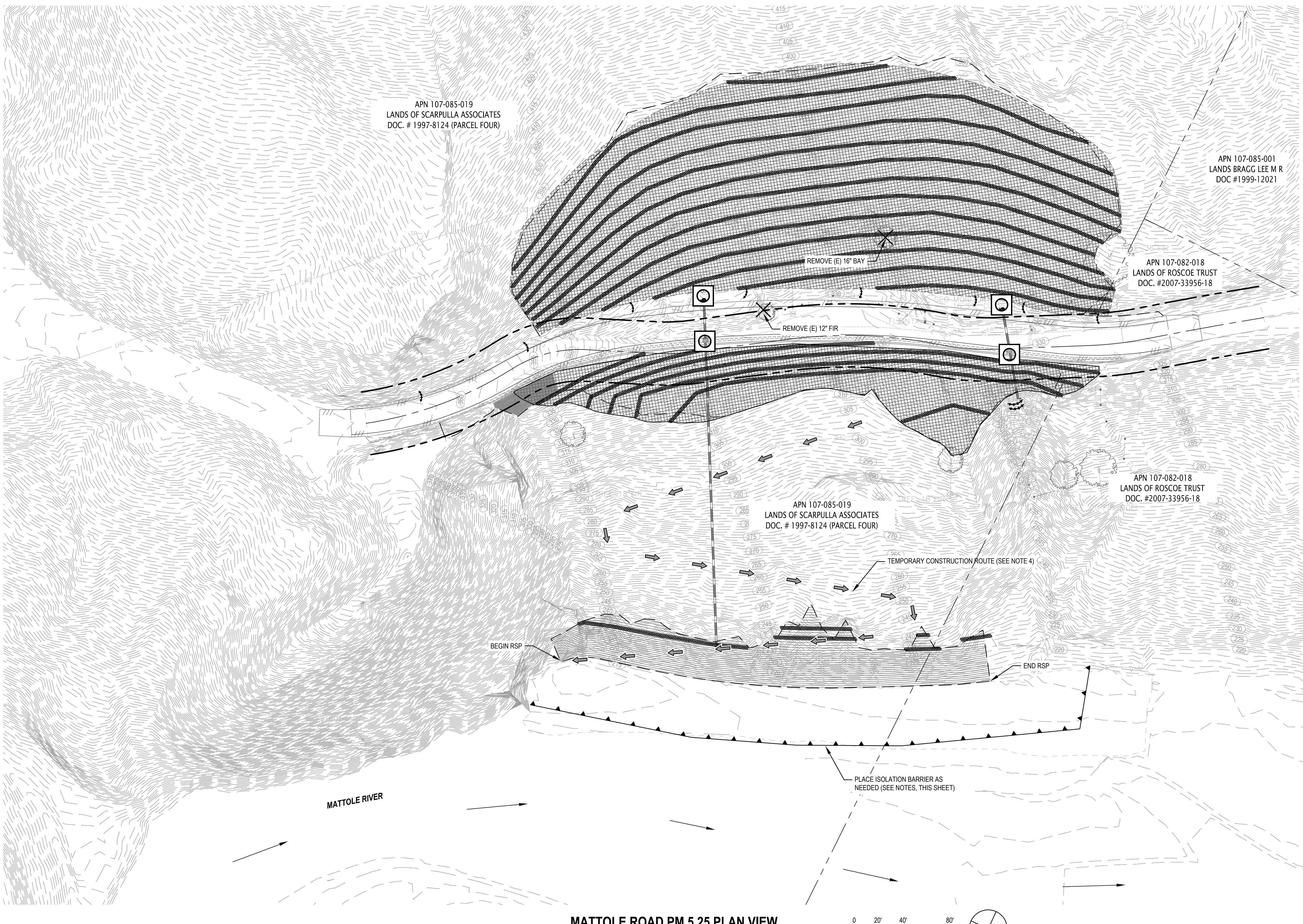
PLOT DATE:	12/09/2022	APPROVED BY: J. SVEHLA	

COUNTY OF HUMBOLDT
DEPARTMENT OF PUBLIC WORKS

STORM DAMAGE REPAIR MATTOLE ROAD PM 5.25

EROSION CONTROL PLAN



MATTOLE ROAD PM 5.25 PLAN VIEW

LEGEND

- INSTREAM WORK ISOLATION BARRIER (SILT FENCE, AQUA DAM, COFFER DAM). SUBJECT TO FLOW CONDITIONS SEE DETAIL
- CONSTRUCTION ACCESS ROUTE
- HAND SOWN SEED AND ROLLED EROSION CONTROL PRODUCT
- TEMPORARY CHECK DAMS
- TEMPORARY SILT FENCE
- FIBER ROLLS
- TEMPORARY DRAINAGE INLET PROTECTION
- REMOVE TREE
- CONSTRUCTION EQUIPMENT AND MATERIAL STAGING AREAS

GENERAL NOTES

1. CONTRACTOR TO PROVIDE INSTREAM WORK ISOLATION PLAN SUBMITTAL IN ACCORDANCE TO THIS PLAN FOR REVIEW AND APPROVAL.
2. CONTRACTOR IS RESPONSIBLE FOR INSTALLING, MAINTAINING AND REMOVING THE INSTREAM WORK ISOLATION SYSTEM. THE SYSTEM SHALL ACCOMMODATE A RIVER FLOW EVENT FROM AN UNSEASONABLE RAINFALL RUNOFF EVENT.
3. FISH AND WILDLIFE PERMIT CONDITIONS MUST BE FOLLOWED WHEN DIVERTING STREAM.
4. TEMPORARY CONSTRUCTION ROUTE SHOWN HEREON IS APPROXIMATE AND SHALL BE FIELD VERIFIED BY HUMBOLDT COUNTY PRIOR TO PLACEMENT. EROSION CONTROL BMPS SUCH AS STRAW WATTLE, NETTING AND SEEDING SHALL BE INSTALLED FOR ALL GRADED SLOPES RELATING TO CONSTRUCTION ACCESS (NOT SHOWN ON THIS PLAN)

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ROAD NO:	F3C010		
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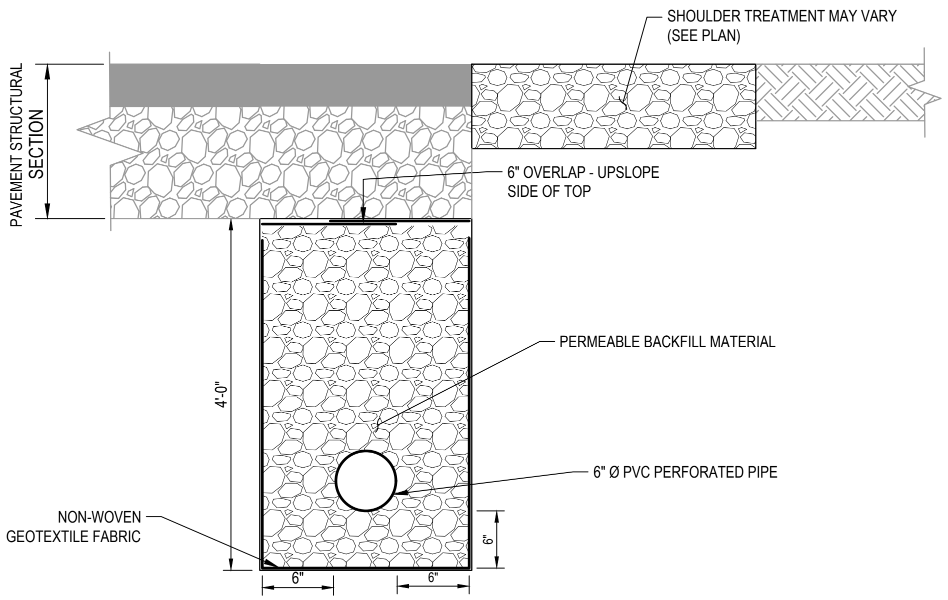
PROJECT NO.:	ER-32L0(109)PR	DRAWN BY: C. HAYES	
CONTRACT NO.:	217419	REVIEWED BY: J. SVEHLA	
PLOT DATE:	12/09/2022	APPROVED BY: J. SVEHLA	

COUNTY OF HUMBOLDT
DEPARTMENT OF PUBLIC WORKS

STORM DAMAGE REPAIR MATTOLE ROAD PM 5.25

CONSTRUCTION DETAILS

SHEET 14 OF 21



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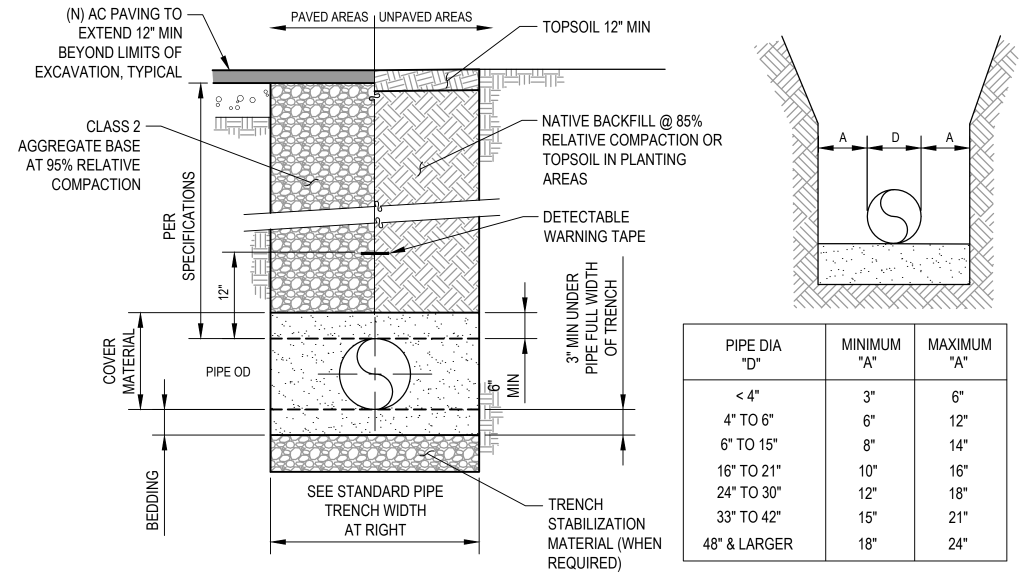


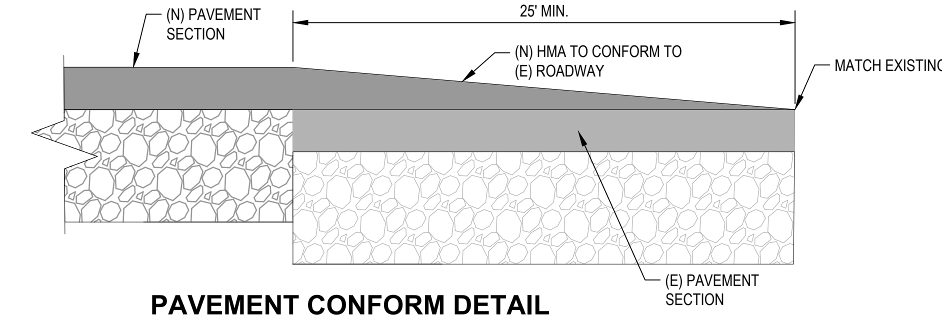
PIPE DIA "D"	MINIMUM "A"	MAXIMUM "A"
< 4"	3"	6"
4" TO 6"	6"	12"
6" TO 15"	8"	14"
16" TO 21"	10"	16"
24" TO 30"	12"	18"
33" TO 42"	15"	21"
48" & LARGER	18"	24"

NOTES:

1. WIDER TRENCHES MAY REQUIRE HIGHER STRENGTH PIPE AND/OR SPECIAL BEDDING.
2. DIFFERING TRENCH WIDTHS REQUIRE PRIOR APPROVAL OF ENGINEER.
3. IN MAKING EXCAVATIONS FOR THIS PROJECT, THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR PROVIDING & INSTALLING ADEQUATE SHEETING, SHORING & BRACING AS MAY BE NECESSARY AS A PRECAUTION AGAINST SLIDES OR CAVE-INS, AND TO PROTECT ALL (E) IMPROVEMENTS OF ANY KIND, EITHER ON PUBLIC OR PRIVATE PROPERTY, FULLY FROM DAMAGE.
4. SATISFACTORY NATIVE BACKFILL MATERIAL USED AS UTILITY TRENCH BACKFILL BELOW UNPAVED AREAS SHALL BE APPROVED BY THE ENGINEER PRIOR TO USE.
5. 2-SACK SLURRY BACKFILL MAY BE USED IN TRENCH WHEN MINIMUM PIPE COVER NOT POSSIBLE, WHEN APPROVED BY COUNTY'S REPRESENTATIVE.
6. DETECTABELE WARNING TAPE SHALL BE BRIGHT COLORED, CONTINUOUSLY PRINTED, MINIMUM 6" WIDE BY 4 MIL. THICK, MANUFACTURED FOR DIRECT BURIAL.
7. FOR TRENCHING OUTSIDE OF LIMITS OF NEW IMPROVEMENTS GROUND SHALL BE RESTORED TO PRE-PROJECT CONDITIONS, WHICH MAY INCLUDE SEEDING AND/OR MULCHING.
8. WHEN TRENCH IS DUG INTO "OBVIOUS LOOSE" FINE GRAINED UNIFORM SANDS, DEEPEN THE TRENCH 12" BELOW THE DEPTH OF UTILITIES. REPLACE W/ 2-SACK SLURRY OR PEA GRAVEL.

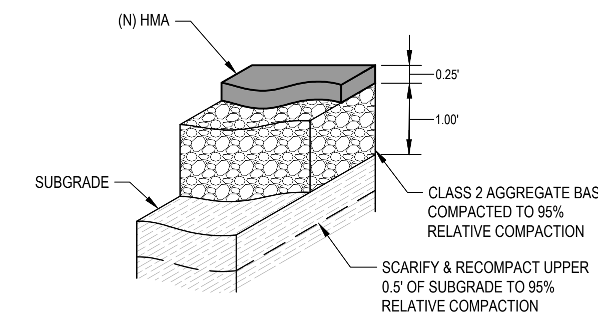
TYPICAL TRENCH DETAIL

SCALE: NTS



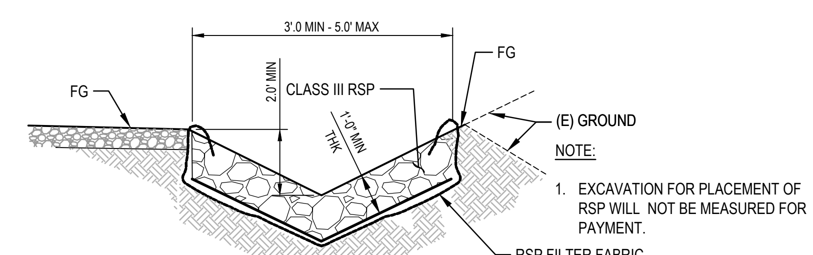
PAVEMENT CONFORM DETAIL

SCALE: NTS



TYPICAL PAVEMENT STRUCTURAL SECTION DETAIL

SCALE: NTS

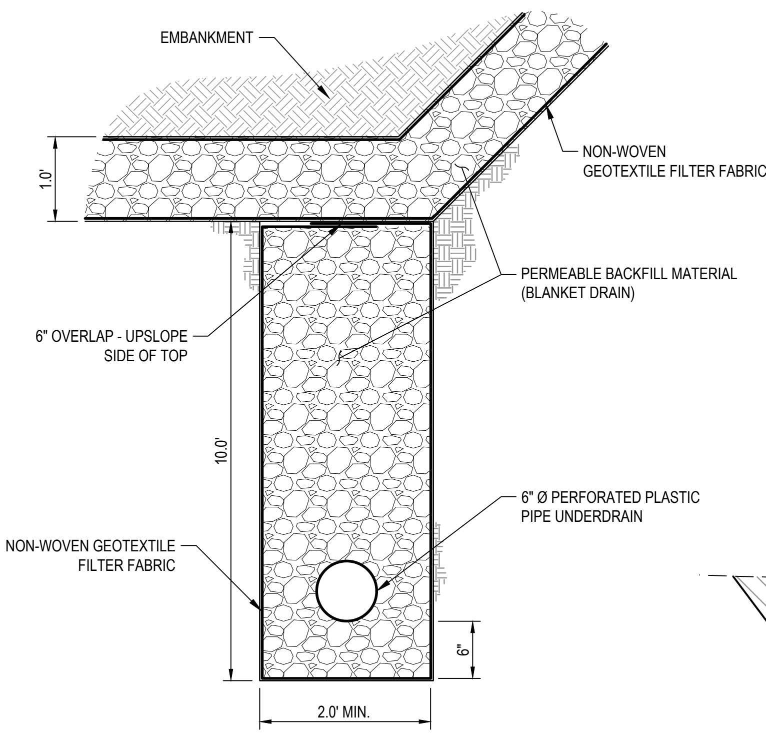


NOTE:

1. EXCAVATION FOR PLACEMENT OF RSP WILL NOT BE MEASURED FOR PAYMENT.

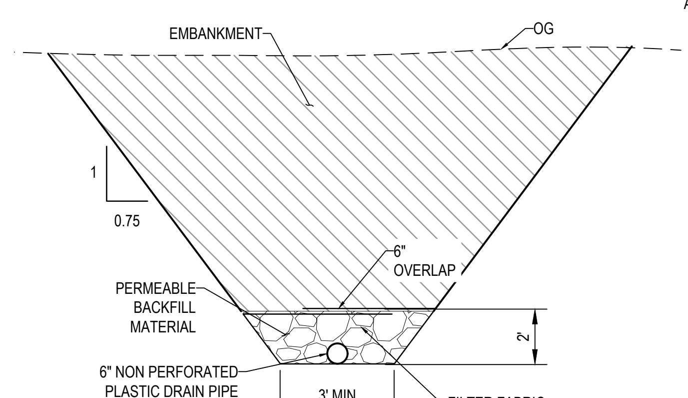
TYPICAL ROCK-LINED DITCH DETAIL (ROADSIDE)

SCALE: NTS



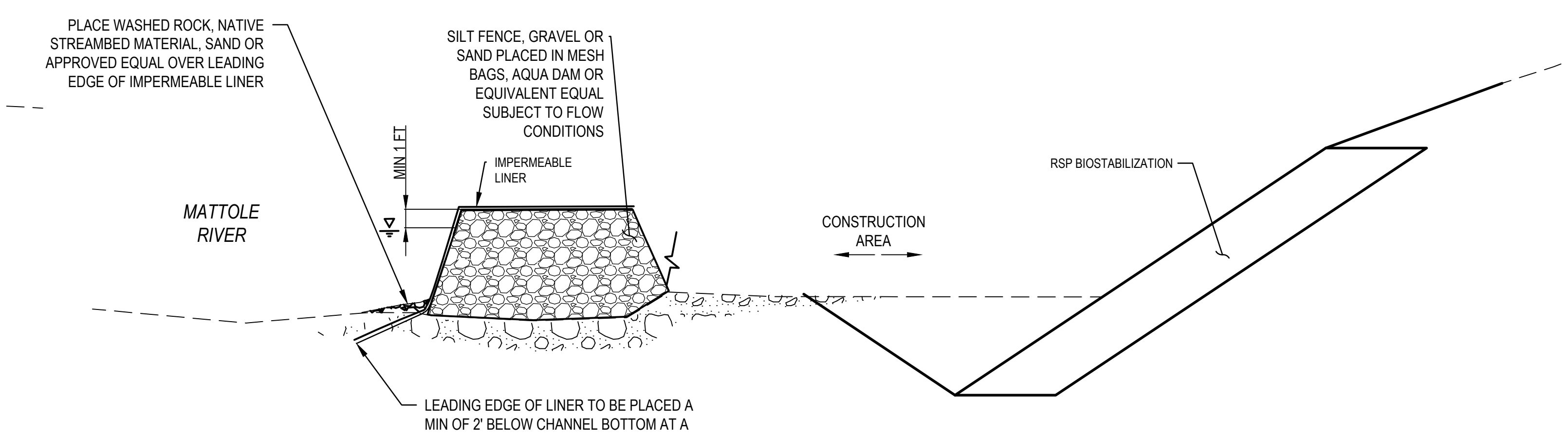
TYPICAL TRENCH UNDERDRAIN (SUBDRAIN) & BLANKET DRAIN

NOT TO SCALE



SUBDRAIN OUTLET DETAIL

SCALE: NTS



INSTREAM WORK TEMPORARY ISOLATION BARRIER

NOT TO SCALE

65% DESIGN SUBMITTAL - 12/9/2022

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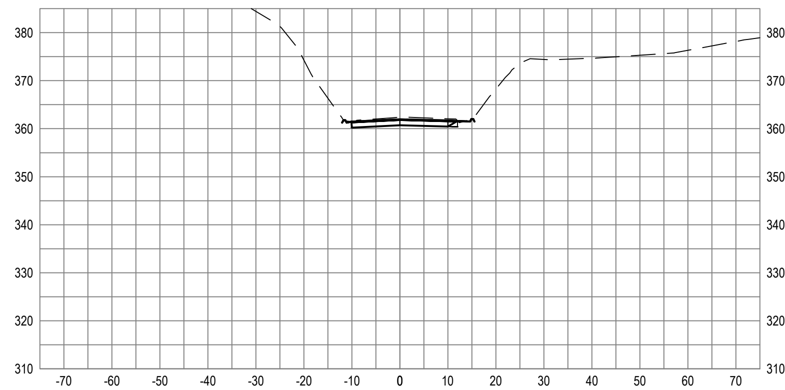
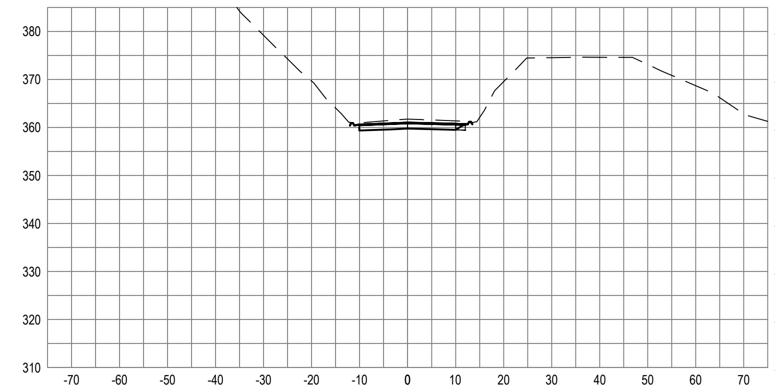
BAR IS ONE INCH ON ORIGINAL DRAWING IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	ROAD NAME: MATTOLE ROAD ROAD NO: F3C010 MILE POST: 5.25 PROJECT NO.: ER-32LO(109)PR CONTRACT NO.: 217419 PLOT DATE: 12/09/2022	DESIGN SECTION ENGINEERING DESIGNED BY: C. HAYES DRAWN BY: C. HAYES REVIEWED BY: J. SVEHLA APPROVED BY: J. SVEHLA	COUNTY OF HUMBOLDT DEPARTMENT OF PUBLIC WORKS STORM DAMAGE REPAIR MATTOLE ROAD PM 5.25 DESIGN SECTIONS - 1 OF 4

SHEET 15 OF 21



SECTION - STA "R" 0+60



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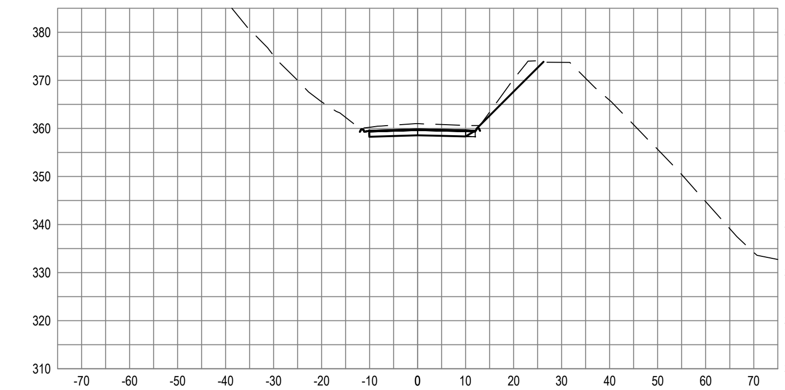

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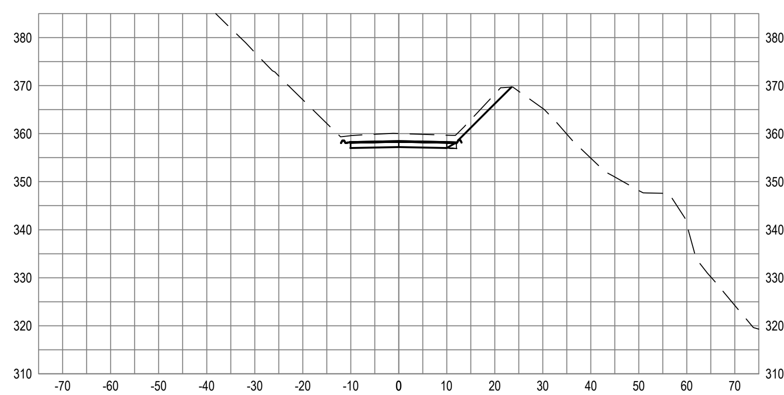

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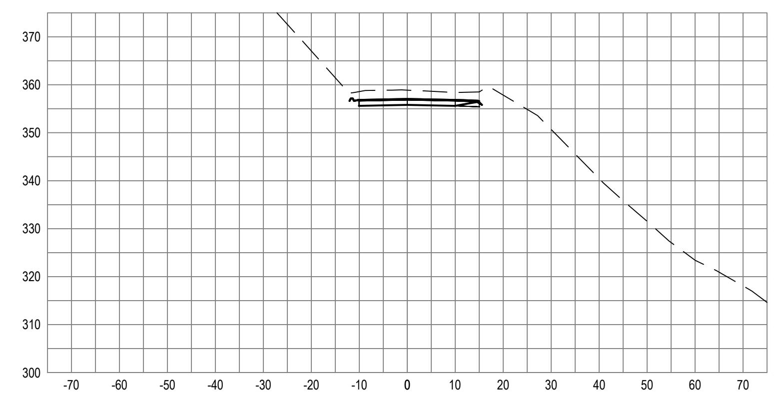
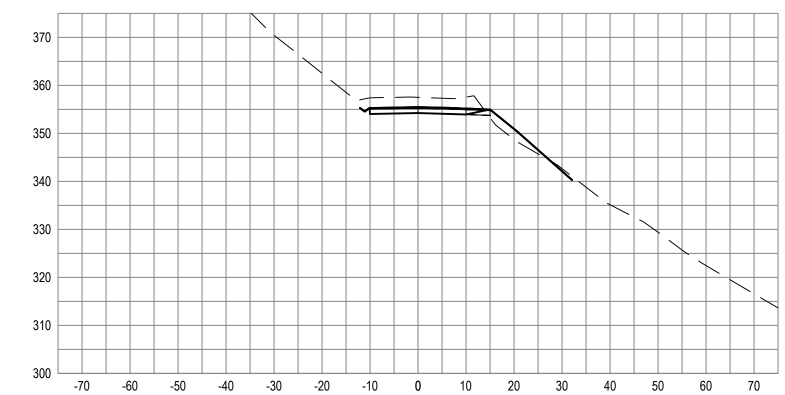
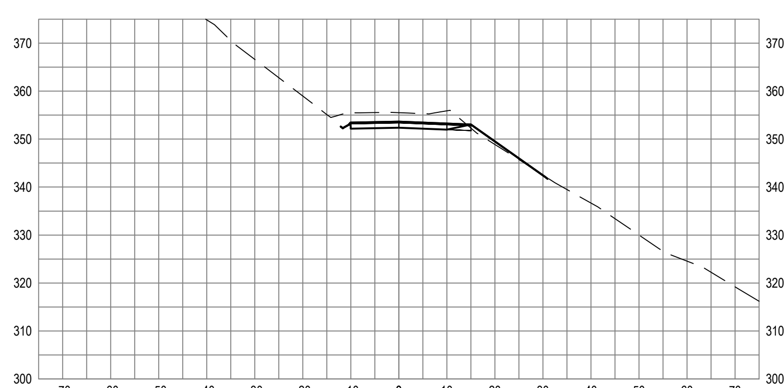


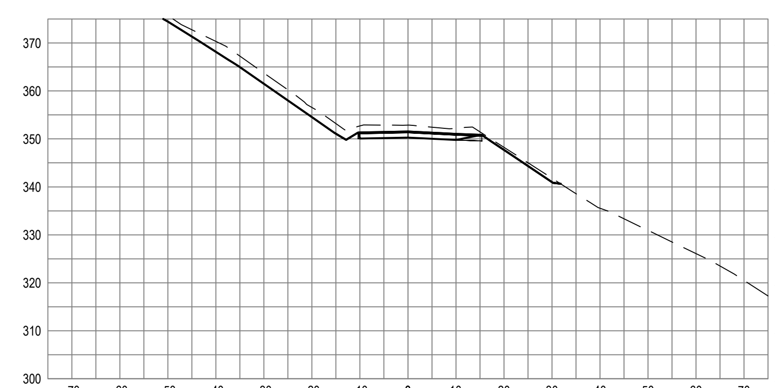
SECTION - STA "R" 1+40



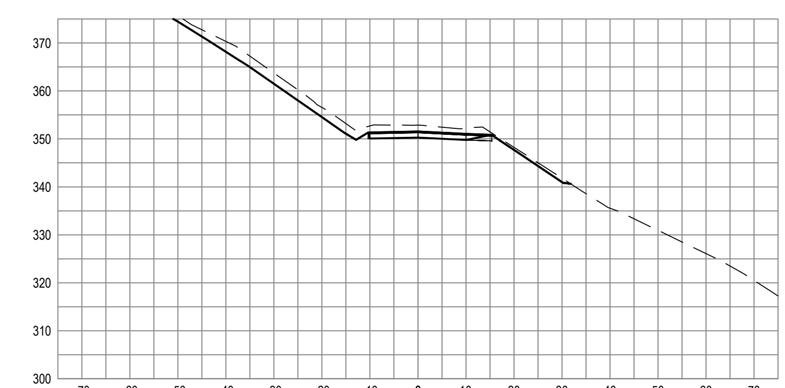
SECTION - STA "R" 1+60



SECTION - STA "R" 1+80



SECTION - STA "R" 2+00



SECTION - STA "R" 2+00

65% DESIGN SUBMITTAL - 12/9/2022

REGISTERED PROFESSIONAL ENGINEER
JEREMY SHANE SVEHLA
No. C 72169
Exp. ______
CIVIL
STATE OF CALIFORNIA

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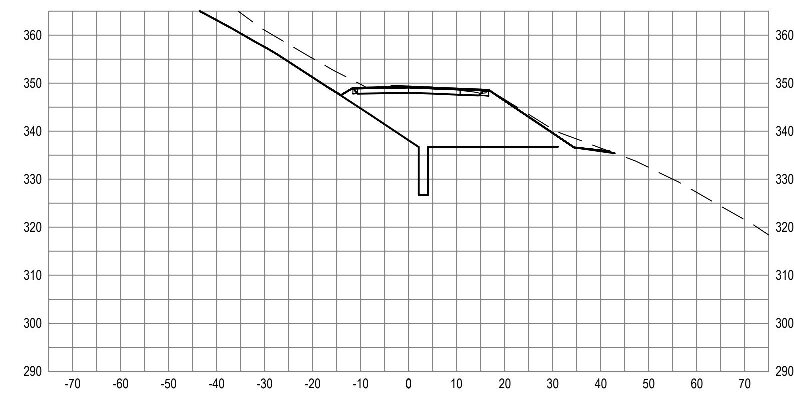
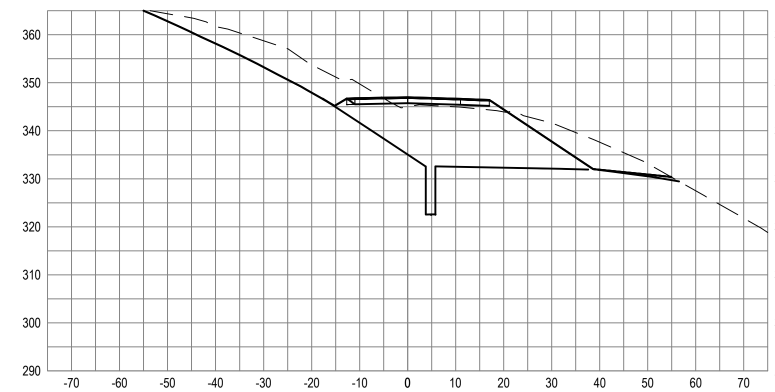
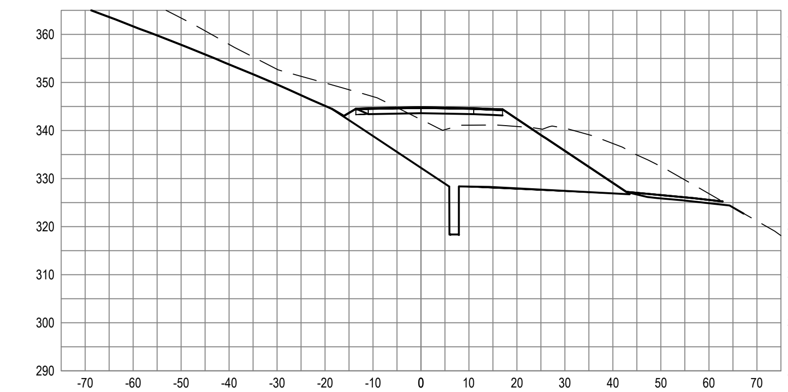
BAR IS ONE INCH ON ORIGINAL DRAWING	ROAD NAME: MATTOLE ROAD	DESIGN SECTION ENGINEERING	COUNTY OF HUMBOLDT DEPARTMENT OF PUBLIC WORKS	SHEET 16 OF 21
	ROAD NO: F3C010			
	MILE POST: 5.25	DESIGNED BY: C. HAYES	STORM DAMAGE REPAIR MATTOLE ROAD PM 5.25	
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	PROJECT NO.: ER-32L0(109)PR	DRAWN BY: C. HAYES	DESIGN SECTIONS - 2 OF 4	
	CONTRACT NO.: 217419	REVIEWED BY: J. SVEHLA		
	PLOT DATE: 12/09/2022	APPROVED BY: J. SVEHLA		



SECTION - STA "R" 2+20

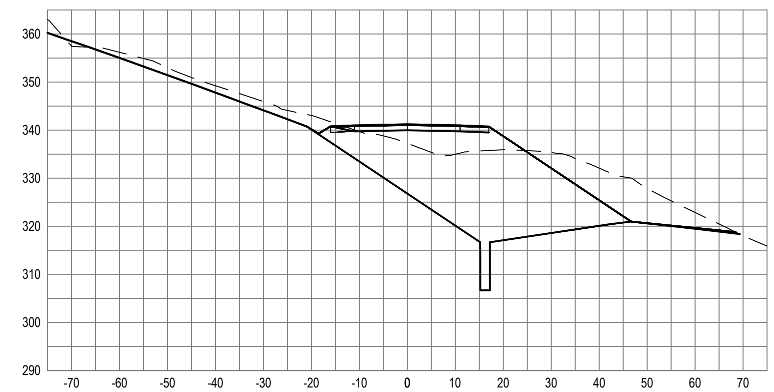


SECTION - STA "R" 2+40

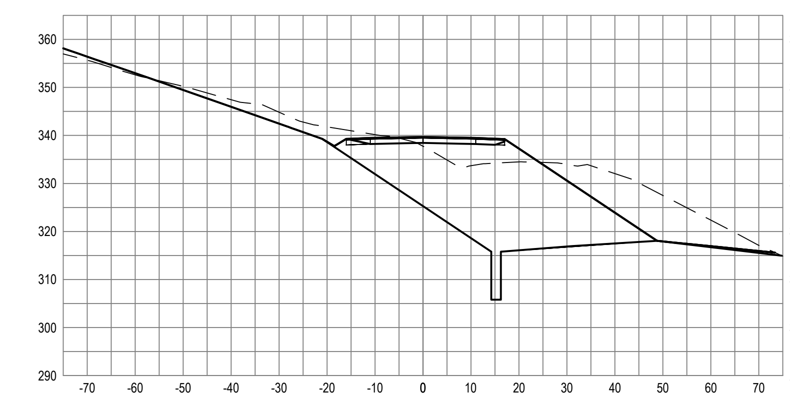


SECTION - STA "R" 2+60

SECTION - STA "R" 2+80



SECTION - STA "R" 3+00



SECTION - STA "R" 3+20

SECTION - STA "R" 3+40

SECTION - STA "R" 3+60

SECTION - STA "R" 3+80

65% DESIGN SUBMITTAL - 12/9/2022

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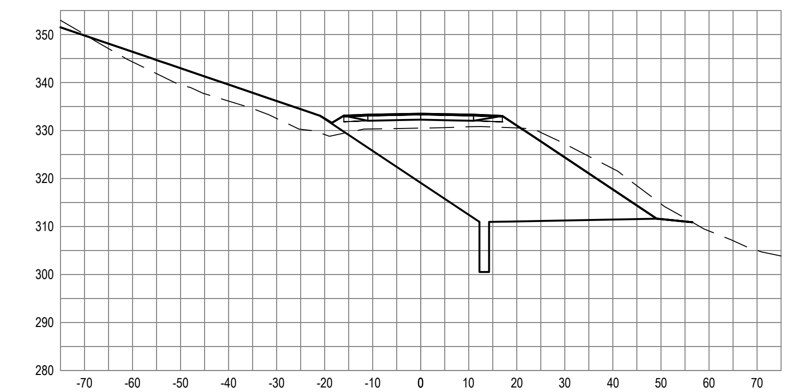
BAR IS ONE INCH ON ORIGINAL DRAWING IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	ROAD NAME: MATTOLE ROAD	DESIGN SECTION ENGINEERING	COUNTY OF HUMBOLDT DEPARTMENT OF PUBLIC WORKS	SHEET 17 OF 21
	ROAD NO: F3C010			
	MILE POST: 5.25	DESIGNED BY: C. HAYES	STORM DAMAGE REPAIR MATTOLE ROAD PM 5.25	
	PROJECT NO.: ER-32LO(109)PR	DRAWN BY: C. HAYES	DESIGN SECTIONS - 3 OF 4	
	CONTRACT NO.: 217419	REVIEWED BY: J. SVEHLA		
	PLOT DATE: 12/09/2022	APPROVED BY: J. SVEHLA		

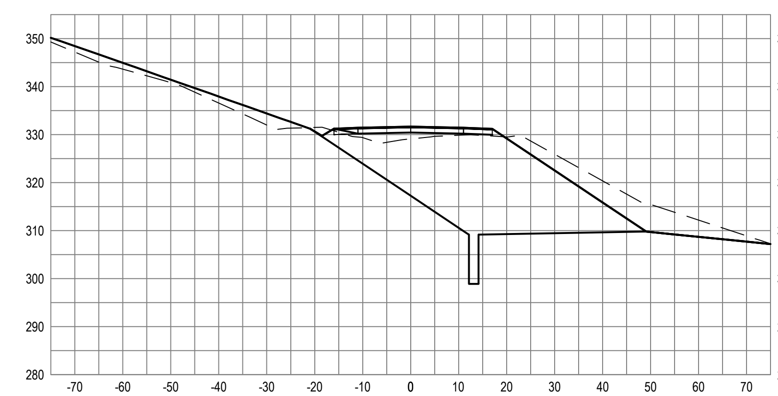
SECTION - STA "R" 4+00

SECTION - STA "R" 4+20



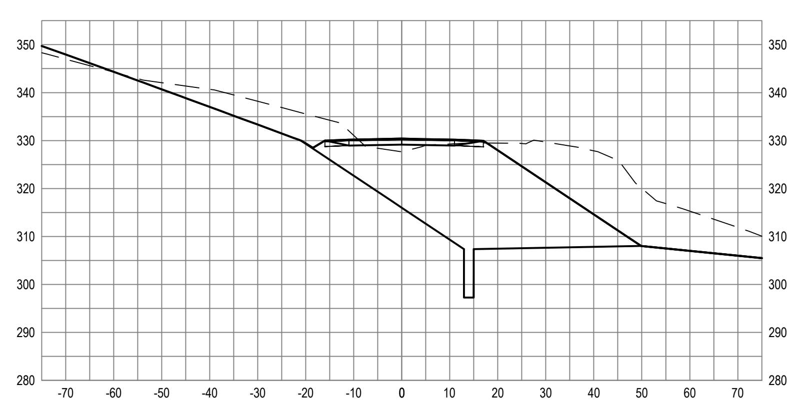
SECTION - STA "R" 4+40

SECTION - STA "R" 4+60

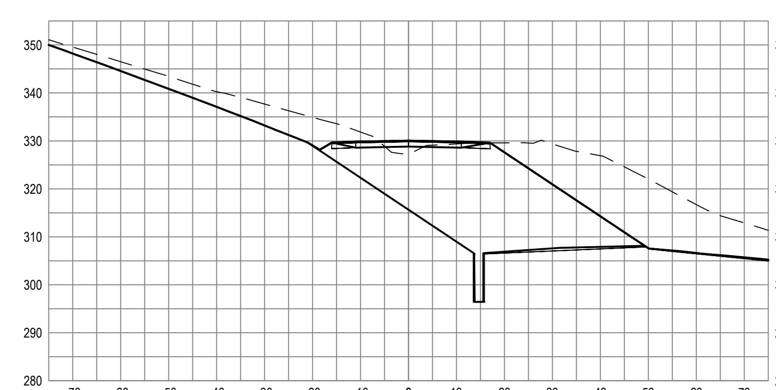


SECTION - STA "R" 4+80

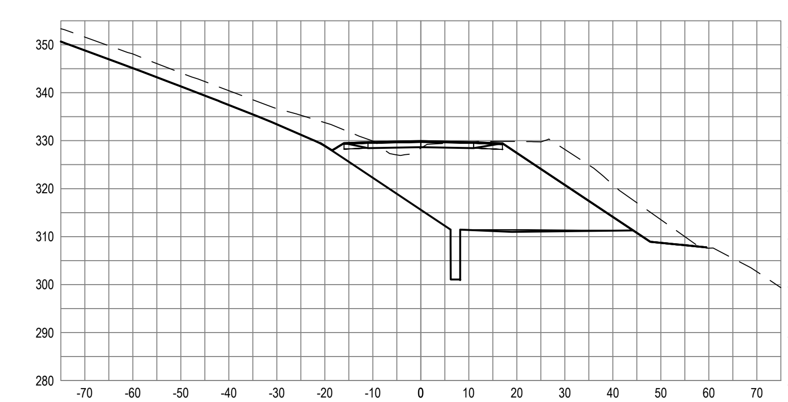
SECTION - STA "R" 5+00



SECTION - STA "R" 5+20



SECTION - STA "R" 5+40



SECTION - STA "R" 5+60

65% DESIGN SUBMITTAL - 12/9/2022

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DRAFT

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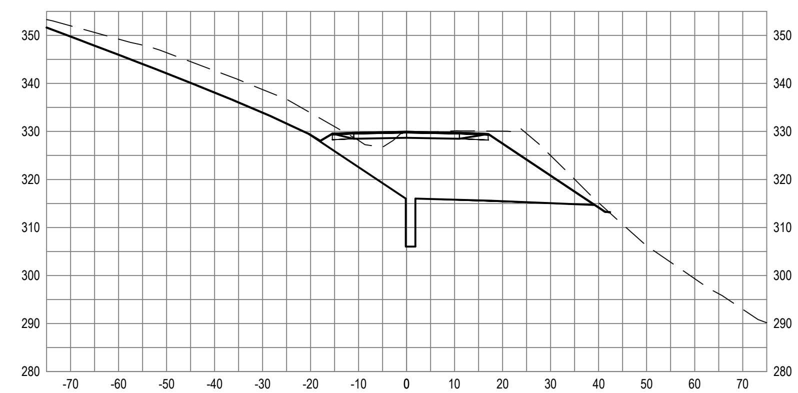
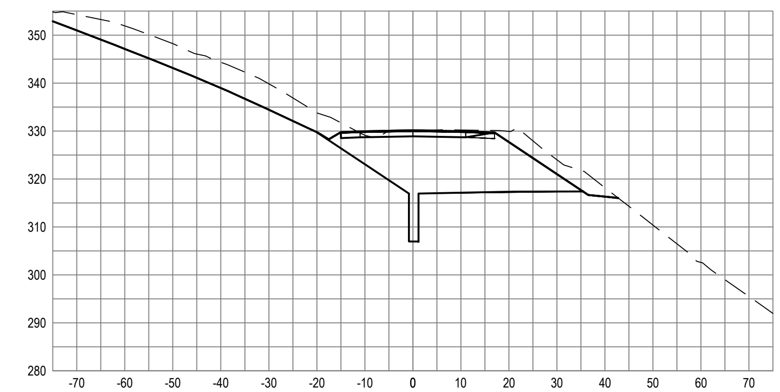
BAR IS ONE INCH ON ORIGINAL DRAWING

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

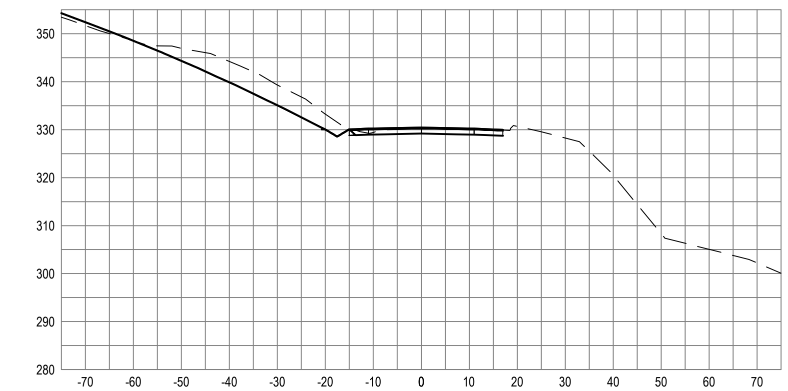
ROAD NAME: MATTOLE ROAD	DESIGN SECTION ENGINEERING	COUNTY OF HUMBOLDT DEPARTMENT OF PUBLIC WORKS	SHEET 18 OF 21
ROAD NO: F3C010			
MILE POST: 5.25	DESIGNED BY: C. HAYES	STORM DAMAGE REPAIR MATTOLE ROAD PM 5.25	
PROJECT NO.: ER-32LO(109)PR	DRAWN BY: C. HAYES	DESIGN SECTIONS - 4 OF 4	
CONTRACT NO.: 217419	REVIEWED BY: J. SVEHLA		
PLOT DATE: 12/09/2022	APPROVED BY: J. SVEHLA		



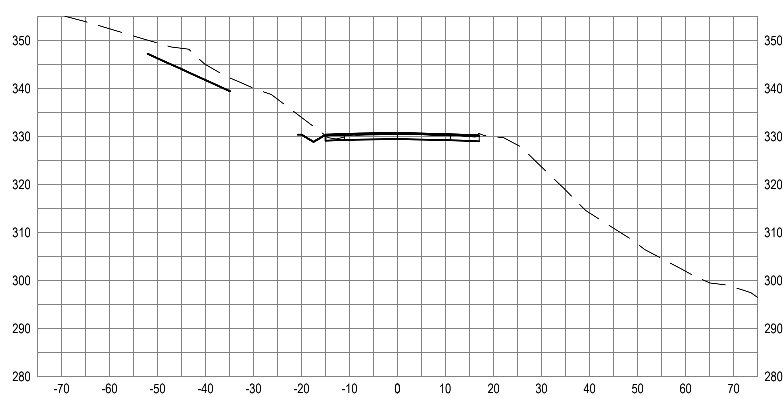
SECTION - STA "R" 5+80



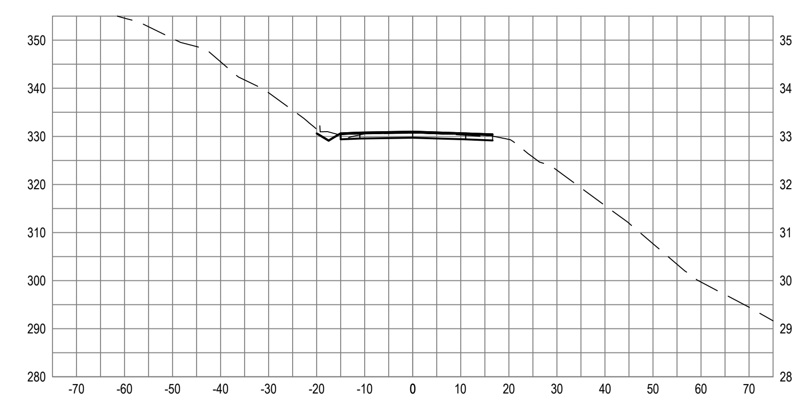
SECTION - STA "R" 6+00



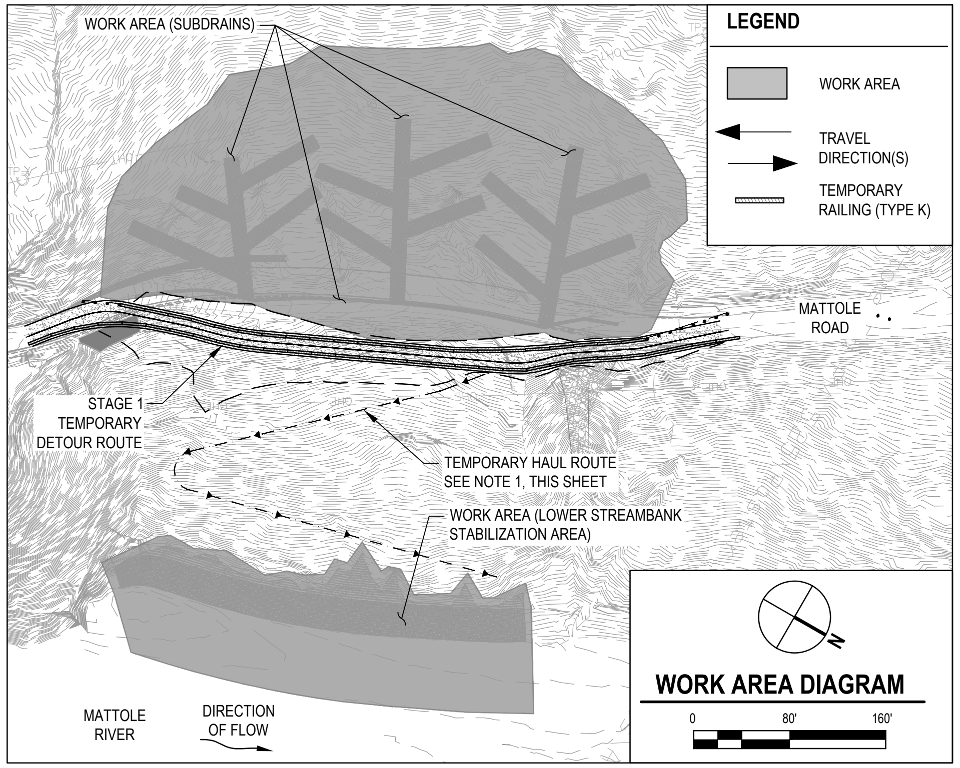
SECTION - STA "R" 6+20



SECTION - STA "R" 6+40



SECTION - STA "R" 6+60



WORK AREA DIAGRAM

GENERAL NOTES

1. TEMPORARY CONSTRUCTION ROUTE OPTION SHOWN HEREON IS APPROXIMATE AND SHALL BE FIELD VERIFIED BY THE CONTRACTOR AND HUMBOLDT COUNTY PRIOR TO PLACEMENT. THE TEMPORARY CONSTRUCTION ROAD SHALL BE REMOVED AND RESTORED BACK TO PRE-PROJECT CONDITIONS. EROSION CONTROL BMPS SUCH AS STRAW WATTLE, NETTING AND SEEDING SHALL BE INSTALLED FOR ALL GRADED SLOPES RELATING TO CONSTRUCTION ACCESS (NOT SHOWN ON THIS PLAN)
2. THIS PLAN REPRESENTS ONE OPTION OF CONSTRUCTION PHASING. IF A MODIFICATION TO THIS PHASING PLAN IS DEEMED NECESSARY DURING CONSTRUCTION, THE CONTRACTOR SHALL SUBMIT A CONSTRUCTION PHASING PLAN FOR REVIEW AND APPROVAL BY THE COUNTY OF HUMBOLDT.

REGISTERED PROFESSIONAL ENGINEER
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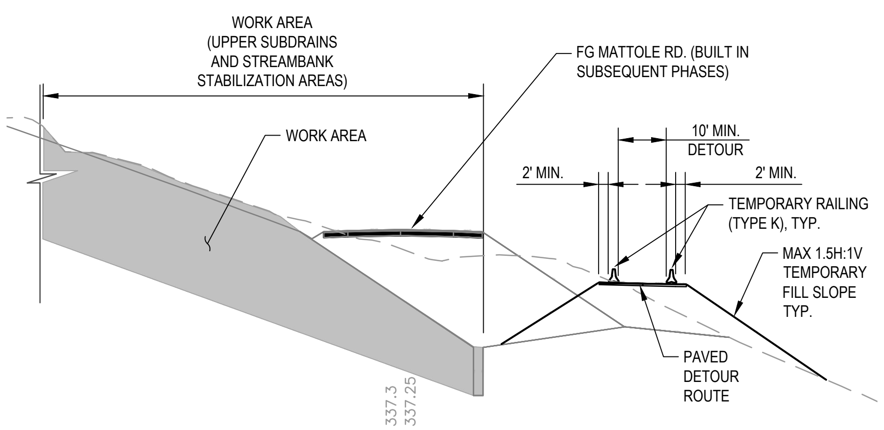
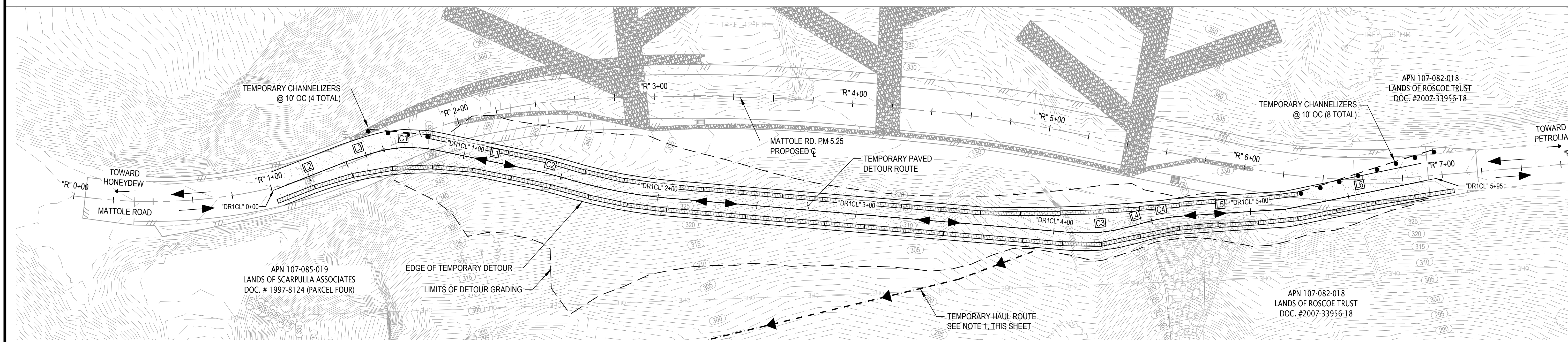
BAR IS ONE INCH ON ORIGINAL DRAWING IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	ROAD NAME: MATTOLE ROAD ROAD NO: F3C010 MILE POST: 5.25 PROJECT NO.: ER-32L0(109)PR CONTRACT NO.: 217419 PLOT DATE: 12/09/2022	DESIGN SECTION ENGINEERING DESIGNED BY: C. HAYES DRAWN BY: C. HAYES REVIEWED BY: J. SVEHLA APPROVED BY: J. SVEHLA	COUNTY OF HUMBOLDT DEPARTMENT OF PUBLIC WORKS STORM DAMAGE REPAIR MATTOLE ROAD PM 5.25 STAGE CONSTRUCTION - STAGE 1	SHEET 19 OF 21



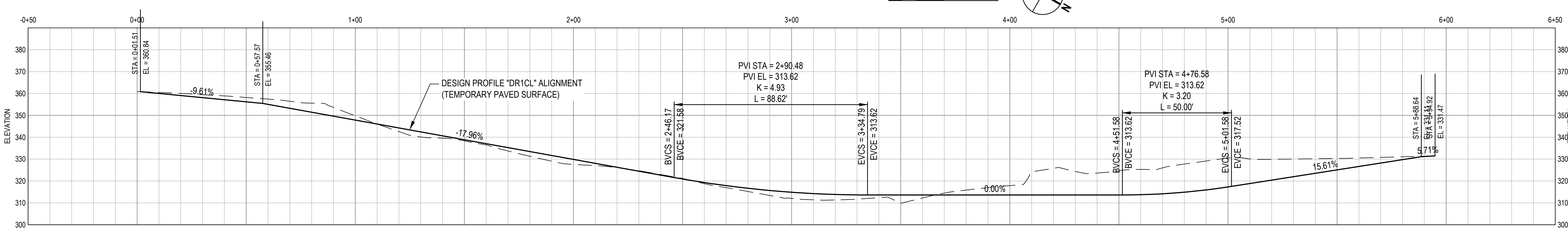
STAGE 1: PM 5.25 TYPICAL SECTION

SCALE: NTS

CONSTRUCTION CENTERLINE GEOMETRY - "DR1CL" ALIGNMENT						
Segment	Type	Length	Radius	Direction	Start Station	End Station
L2	LINE	41.01	-	N51° 27' 53.31"W	"DR1CL" 0+00.00	"DR1CL" 0+41.01
L3	LINE	12.44	-	N47° 37' 48.09"W	"DR1CL" 0+41.01	"DR1CL" 0+53.45
C1	CURVE	31.59	61.72		"DR1CL" 0+53.45	"DR1CL" 0+85.04
L1	LINE	49.24	-	N18° 17' 57.97"W	"DR1CL" 0+85.04	"DR1CL" 1+34.28
C2	CURVE	18.33	226.79		"DR1CL" 1+34.28	"DR1CL" 1+52.60
C3	CURVE	31.76	86.12		"DR1CL" 4+07.99	"DR1CL" 4+39.75
L4	LINE	5.84	-	N46° 15' 04.09"W	"DR1CL" 4+39.75	"DR1CL" 4+45.59
C4	CURVE	20.00	92.08		"DR1CL" 4+45.59	"DR1CL" 4+65.59
L5	LINE	52.69	-	N33° 48' 21.86"W	"DR1CL" 4+65.59	"DR1CL" 5+18.27
L6	LINE	76.70	-	N41° 35' 58.80"W	"DR1CL" 5+18.27	"DR1CL" 5+94.98



STAGE CONSTRUCTION PLAN - STAGE 1



STAGE 1 DETOUR ROUTE PROFILE VIEW

0 25' 50' HORIZONTAL

0 25' 50' VERTICAL

ROAD NAME: MATTOLE ROAD	DESIGN SECTION ENGINEERING	COUNTY OF HUMBOLDT DEPARTMENT OF PUBLIC WORKS	SHEET 20 OF 21
ROAD NO: F3C010	DESIGNED BY: C. HAYES	STORM DAMAGE REPAIR MATTOLE ROAD PM 5.25	
MILE POST: 5.25	DRAWN BY: C. HAYES	STAGE CONSTRUCTION - STAGE 2	
PROJECT NO.: ER-32L0(109)PR	REVIEWED BY: J. SVEHLA		
CONTRACT NO.: 217419	APPROVED BY: J. SVEHLA		
PLOT DATE: 12/09/2022			

BAR IS ONE INCH ON ORIGINAL DRAWING

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REGISTERED PROFESSIONAL ENGINEER
JEREMY SHANE SVEHLA
No. C72169
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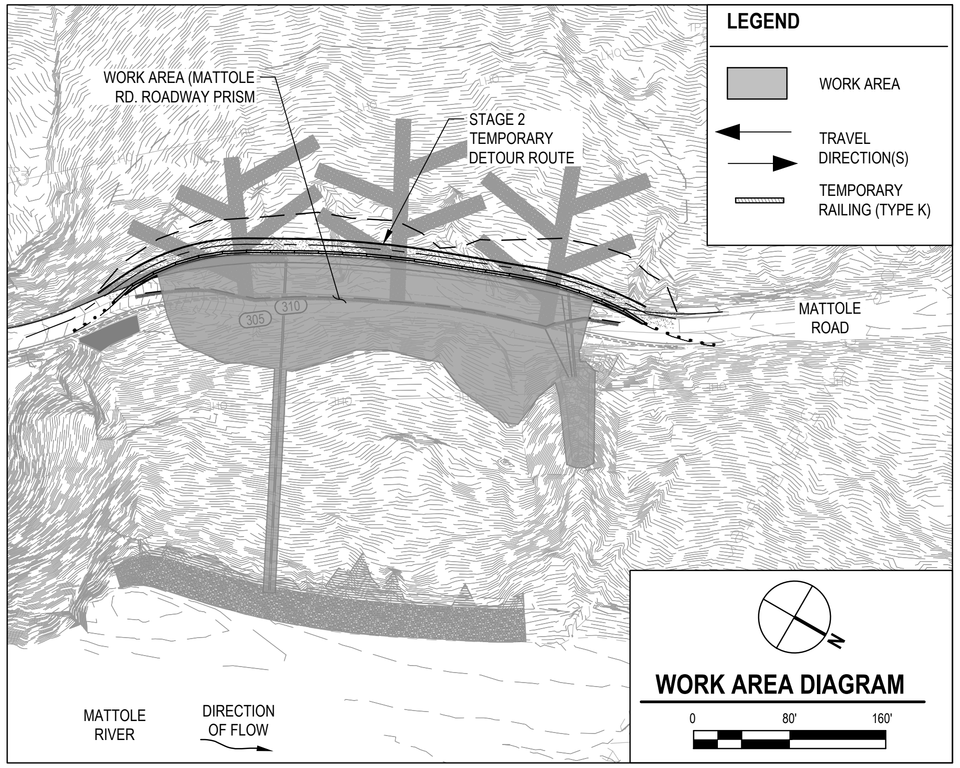

WORK AREA DIAGRAM

GENERAL NOTES

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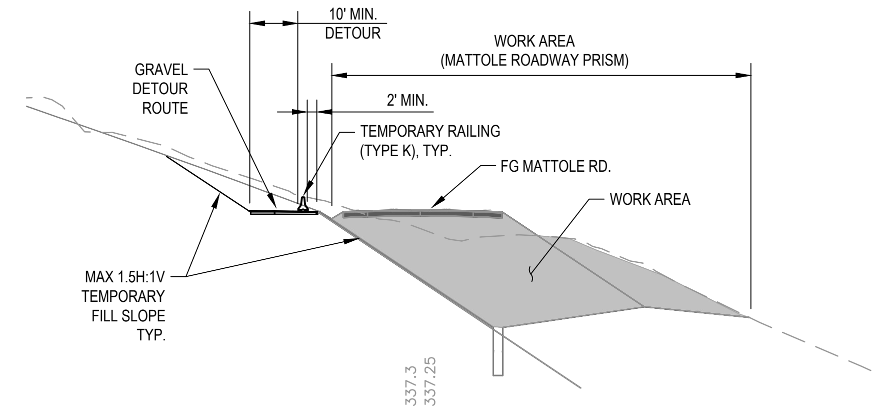
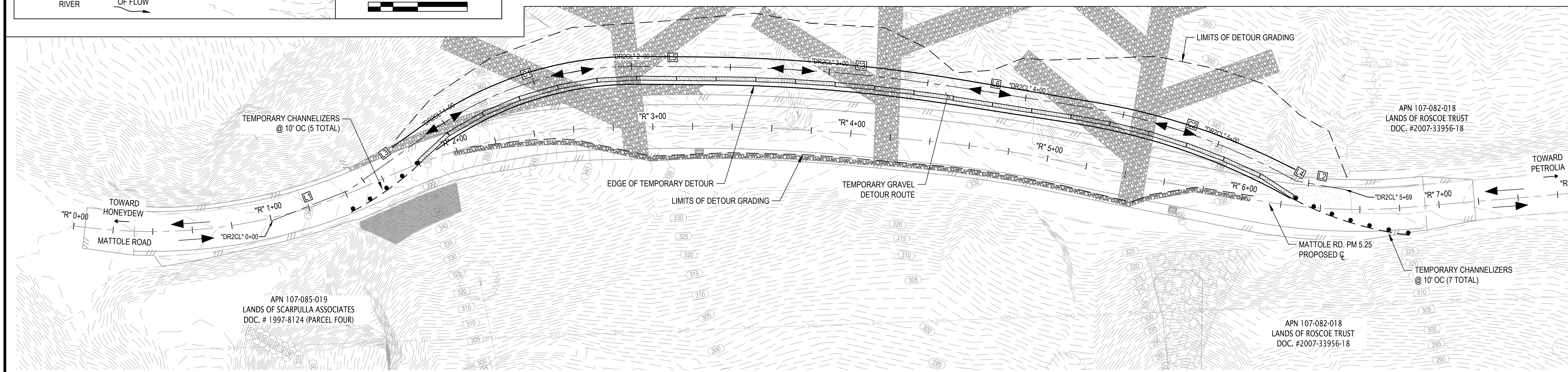


STAGE 2: PM 5.25 TYPICAL SECTION

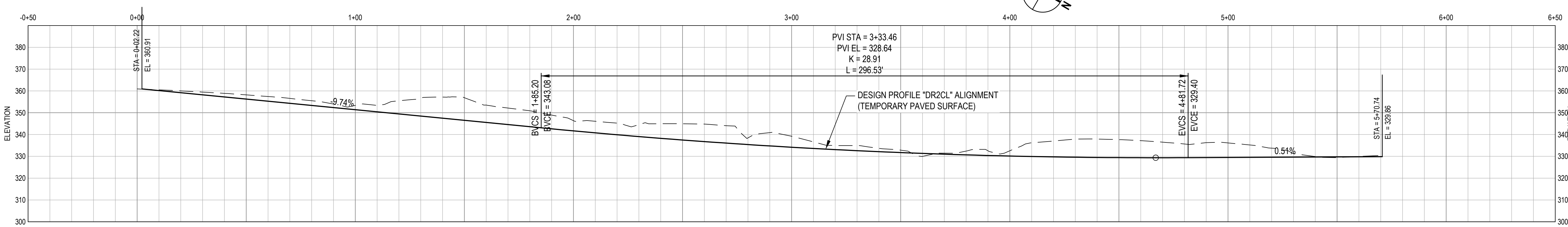
SCALE: NTS

CONSTRUCTION CENTERLINE GEOMETRY - "DR2CL" ALIGNMENT						
Segment	Type	Length	Radius	Direction	Start Station	End Station
L1	LINE	41.01	-	N51° 27' 53.31"W	"DR1CL" 0+00.00	"DR1CL" 0+41.01
L3	LINE	51.28	-	N65° 26' 20.18"W	"DR1CL" 0+41.01	"DR1CL" 0+92.29
C1	CURVE	110.71	176.97		"DR1CL" 0+92.29	"DR1CL" 2+03.00
L5	LINE	35.67	-	N29° 35' 40.76"W	"DR1CL" 2+03.00	"DR1CL" 2+38.67
C3	CURVE	124.48	852.04		"DR1CL" 2+38.67	"DR1CL" 3+63.16
L6	LINE	62.77	-	N21° 13' 25.51"W	"DR1CL" 3+63.16	"DR1CL" 4+25.93
C2	CURVE	117.06	332.25		"DR1CL" 4+25.93	"DR1CL" 5+42.99
L4	LINE	0.62	-	N1° 02' 13.58"W	"DR1CL" 5+42.99	"DR1CL" 5+43.61
L2	LINE	25.16	-	N20° 07' 01.78"W	"DR1CL" 5+43.61	"DR1CL" 5+68.77



STAGE CONSTRUCTION PLAN - STAGE 2

0 25' 50'



STAGE 2 DETOUR ROUTE PROFILE VIEW

0 25' 50' HORIZONTAL

0 25' 50' VERTICAL

REGISTERED PROFESSIONAL ENGINEER JEREMY SHANE SVEHLA No. C 72169 Exp. CIVIL STATE OF CALIFORNIA DRAFT

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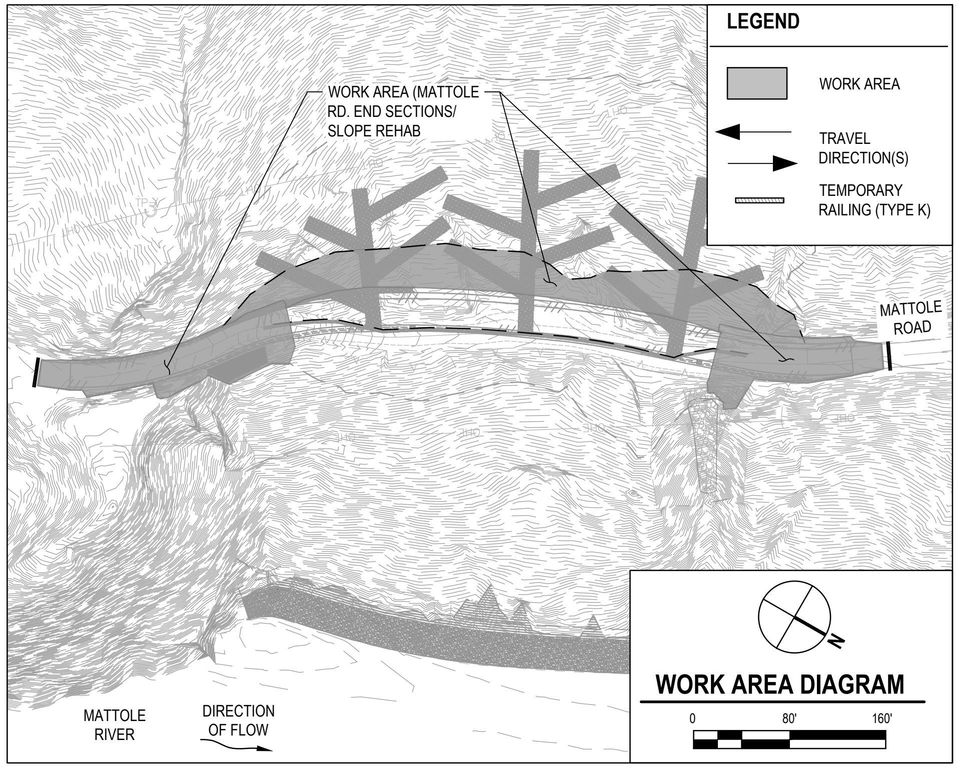

WORK AREA DIAGRAM

GENERAL NOTES

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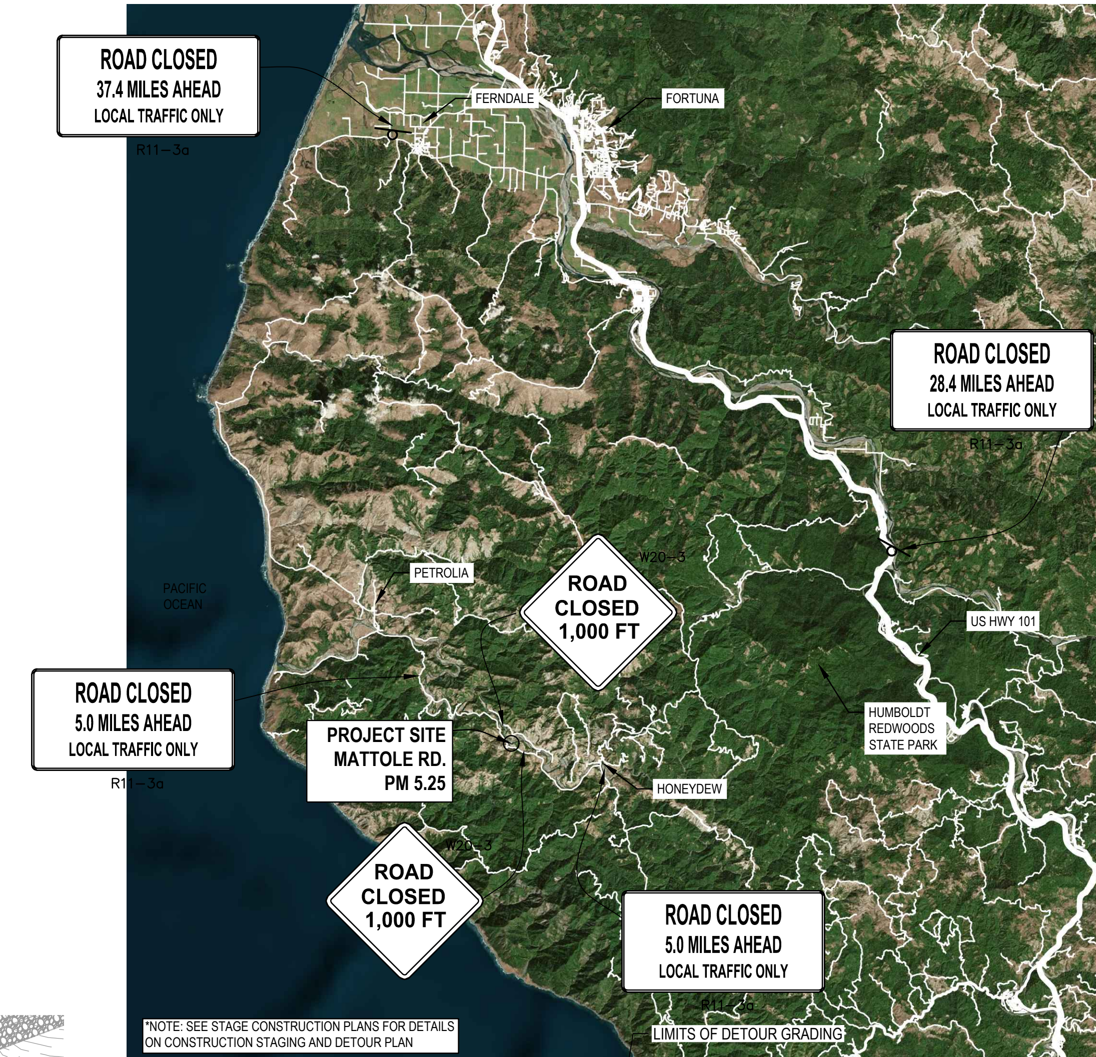
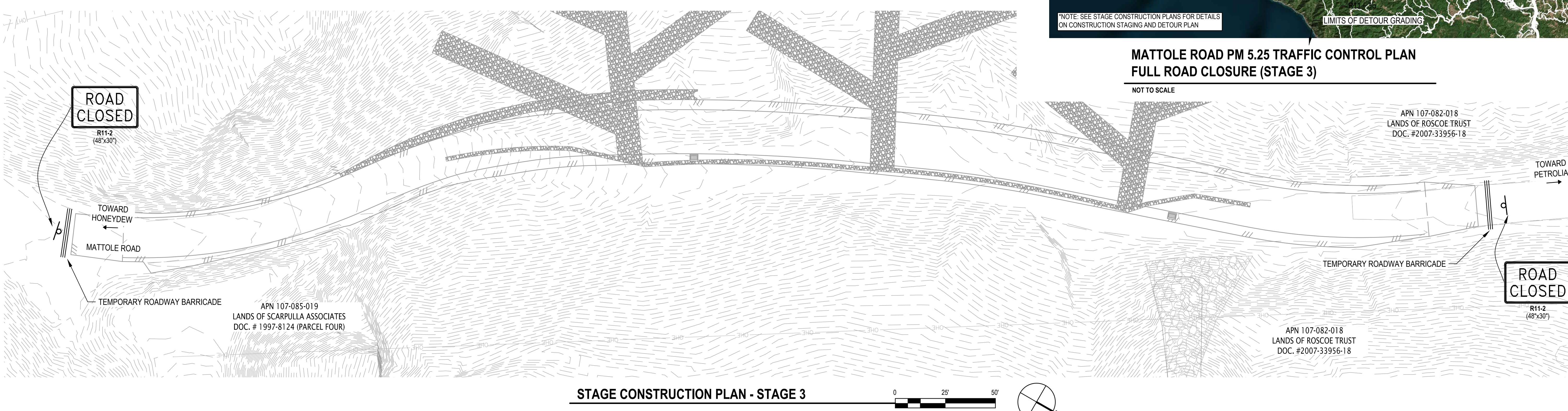


MATTOLE ROAD PM 5.25 TRAFFIC CONTROL PLAN
FULL ROAD CLOSURE (STAGE 3)

NOT TO SCALE



STAGE CONSTRUCTION PLAN - STAGE 3