INFORMATION HANDOUT

For Contract No. 01-0B3104
At DN-199-8.7, 21.7

Identified by
Project ID 0112000115

PERMITS

PLAC – Department of the Army, San Francisco District, United States Army Corps of Engineers

Nationwide Permit (NWP)
File No. 2015-00074N, dated April 14, 2015

WATER QUALITY

PLAC - California Regional Water Quality Control Board, North Coast Region

Water Quality Certification
WDID No. 1B15012WNDN
Dated March April 7, 2015

AGREEMENTS

PLAC - California Department of Fish and Wildlife, Region 1 - Northern

Streambed Alteration Agreement
Notification No. 1600-2015-0032-R1
Dated April 28, 2015

MATERIALS INFORMATION

Revised Foundation Report for Patrick Creek Slip Out No. 1 ERS dated March 16, 2015

Geotechnical Design Report for Patrick Creek Slip Out No. 2 ERS dated February 2, 2015

Naturally Occurring Asbestos Summary Report State Route 199, Post Miles 8.71 (Patrick Creek) and 24.67 (Middle Fork), dated February 18, 2015

0B310
PATRICK CREEK SLIPOUTS

DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, U.S. ARMY CORPS OF ENGINEERS
1455 MARKET STREET, 16th Floor
SAN FRANCISCO, CALIFORNIA 94103-1398

APRIL 14 2015

Regulatory Division

SUBJECT: File No. 2015-00074N

Ms. Gail Popham
California Department of Transportation District 1
1656 Union Street
Eureka, California 95501

Dear Ms. Popham:

This letter is in reference to your submittal received February 6, 2015, concerning Department of the Army permit authorization for the Patrick Creek Slipouts Project, which would complete bank stabilization at two locations on State Route 199 at post miles 8.7 to 21.7 (Lat. 41.8134, Long. -123.1044), adjacent to the Smith River and the Middle Fork Smith River, in Del Norte County, California.

Post-mile 8.7 is approximately 1.5 miles north of the Myrtle Creek Bridge, between the towns of Hiouchi and Gasquet. The existing roadway at PM 8.7 consists of two 11 to 12-foot-wide lanes, with minimal or no northbound shoulder and a 0 to 1-foot southbound shoulder. A 181-foot long railing wall is proposed to be constructed on the east side of the road 18 feet from centerline. The final roadway configuration would consist of two 11 to 12-foot lanes, a 0 to 1-foot southbound shoulder, and a 4-foot northbound shoulder. There would be no work in the wetted channel of the Smith River. Post-mile 21.7 is approximately 1.1 miles south of the SR 199 Patrick Creek Bridge. At PM 21.7, the existing roadway consists of two 12-foot lanes with an approximately 4-foot northbound shoulder and a 4-foot southbound shoulder with a paved drainage ditch about 4-feet in width. A 50-foot long gabion wall would be constructed on the south side of the road 18 feet from centerline. The final roadway configuration would consist of two 11 to 12-foot lanes, a 4-foot southbound shoulder, and a 4-foot northbound shoulder. There would be no work in the wetted channel of the Middle Fork Smith River.

Due to the steep slopes of the banks, the project may result in an inadvertent discharge of fill, considered to be more than incidental, into the Smith River or Middle Fork Smith River. Impacts would not be expected to be greater than 0.05 cubic yard of fill. All work shall be completed at the site locations indicated in the drawings entitled: "Plans and Cross Sections (Appendix C of the Natural Environmental Study dated October 30, 2014)," sheets 1-10, all received February 6, 2015 (enclosure 1).

Section 404 of the Clean Water Act (CWA) generally regulates the discharge of dredged or fill material below the plane of ordinary high water in non-tidal waters of the United States, below the high tide line in tidal waters of the United States, and within the lateral extent of

wetlands adjacent to these waters. A Preliminary Jurisdictional Determination (JD) has been completed for your site. Preliminary JD's are written indications that there may be waters of the U.S. on a parcel or indications of the approximate location(s) of waters of the U.S. on a parcel. The enclosed delineation map entitled, "USACE File #2015-00074, SR 199 Repairs at PM 8.7 and 21.7 Jurisdictional Determination" in two sheets, dated February 25, 2015 (enclosure 2), depicts the extent and location of wetlands and other waters of the United States within the boundary area of the site that **may be** subject to U.S. Army Corps of Engineers' regulatory authority under Section 404 of the Clean Water Act. The basis for this preliminary jurisdictional determination is fully explained in the enclosed *Preliminary Jurisdictional Determination Form*. You are requested to sign and date this form and return it to this office within two weeks of receipt.

You are advised that the preliminary jurisdictional determination may **not** be appealed through the U.S. Army Corps of Engineers' *Administrative Appeal Process*, as described in 33 C.F.R. Section 331 (65 Fed. Reg. 16,486; Mar. 28, 2000). Under the provisions of 33 C.F.R Section 331.5(b)(9), non-appealable actions include preliminary jurisdictional determinations since they are considered to be only advisory in nature and make no definitive conclusions on the jurisdictional status of the water bodies in question. However, you may request this office to provide an approved jurisdictional determination that precisely identifies the scope of jurisdictional waters on the site; an approved jurisdictional determination may be appealed through the *Administrative Appeal Process*. If you anticipate requesting an approved jurisdictional determination at some future date, you are advised not to engage in any on-site grading or other construction activity in the interim to avoid potential violations and penalties under Section 404 of the Clean Water Act. Finally, you may provide this office new information for further consideration and request a reevaluation of this preliminary jurisdictional determination.

Based on a review of the information you submitted, your project qualifies for authorization under Department of the Army Nationwide Permit (NWP) 14 *Linear Transportation Projects*, 77 Fed. Reg. 10,184, February 21, 2012 (enclosure 3), pursuant to Section 404 of the CWA of 1972, as amended (33 U.S.C. § 1344 *et seq.*). The project must be in compliance with the terms of the NWP, the general conditions of the Nationwide Permit Program, and the San Francisco District regional conditions cited in enclosure 4. You must also be in compliance with any special conditions specified in this letter for the NWP authorization to remain valid. Non-compliance with any term or condition could result in the revocation of the NWP authorization for your project, thereby requiring you to obtain an Individual Permit from the Corps. This NWP authorization does not obviate the need to obtain other State or local approvals required by law.

This verification will remain valid until March 18, 2017, unless the NWP authorization is modified, suspended, or revoked. Activities which have commenced (i.e., are under construction) or are under contract to commence in reliance upon a NWP will remain authorized

provided the activity is completed within 12 months of the date of a NWP's expiration, modification, or revocation, unless discretionary authority has been exercised on a case-by-case basis to modify, suspend, or revoke the authorization in accordance with 33 C.F.R. § 330.4(e) and 33 C.F.R. §§ 330.5 (c) or (d). This verification will remain valid if, during the time period between now and March 18, 2017, the activity complies with any subsequent modification of the NWP authorization. The Chief of Engineers will periodically review NWPs and their conditions and will decide to either modify, reissue, or revoke the permits. If a NWP is not modified or reissued within five years of its effective date, it automatically expires and becomes null and void. It is incumbent upon you to remain informed of any changes to the NWPs. Changes to the NWPs would be announced by Public Notice posted on our website (http://www.spn.usace.army.mil/ Missions/Regulatory.aspx). Upon completion of the project and all associated mitigation requirements, you shall sign and return the Certification of Compliance (enclosure 5) verifying that you have complied with the terms and conditions of the permit.

General Condition 18 stipulates that project authorization under a NWP does not allow for the incidental take of any federally-listed species in the absence of a biological opinion with incidental take provisions. As the principal federal lead agency for this project, the Caltrans (through an agreement with Federal Highways) used programmatic consultations with the U.S. Fish and Wildlife Service (USFWS) (Letter of Concurrence File No. AFWO-12B0001-1210001) and National Marine Fisheries Service (NMFS) (programmatic Biological Opinion No. 2013-9731) to address project related impacts to listed species, pursuant to section 7(a) of the Endangered Species Act of 1973, as amended,16 U.S.C. § 1531 *et seq*. Both programmatic documents covered impacts to listed fish, marbled murrelet, and northern spotted owls and designated critical habitat for these species.

To ensure compliance with this NWP authorization and to further minimize adverse impacts to water quality and other aquatic resources, including federally listed threatened and endangered species and designated critical, the project is subject to the following Special Conditions:

1. The USFWS and NMFS concurred with the determination that the project was not likely to adversely affect northern spotted owl, federally threatened marbled murrelet, and designated critical habitat for these species, SONCC coho salmon, coho critical habitat and EFH for Pacific salmon. This concurrence was premised, in part, on project work restrictions outlined in programmatic Letter of Concurrence File No. AFWO-12B0001-12I0001 and programmatic Biological Opinion No. 2013-9731, respectively. These work restrictions are incorporated as special conditions to the NWP authorization for your project to ensure unauthorized incidental take of species and loss of critical habitat does not occur.

2. Best management practices (BMP's) will be implemented including installation of silt fences, straw bales, gravel bags, and fiber roles, as appropriate. Placement of these materials will control sediment discharge and minimize sediment release into receiving waters. Additional BMP's are outlined on page 5 of the PCN.

3. Fueling activities will occur in designated upland locations.

4. No concrete washings or water from concrete will be allowed to flow into waterways. No concrete will be poured within flowing water in waterways. Waste management best management practices will be implemented.

5. No debris, sand, silt, trash, concrete or washings thereof, oil or other petroleum products or washings thereof, or other foreign materials shall be allowed to enter or be placed where it may be washed by rainfall or runoff into waters of the U.S. Upon project completion, any and all excess construction materials, debris, and/or other excess project materials shall be removed to an appropriate upland disposal site.

6. All construction materials (new and old) will be stored in a contained area in the staging area.

7. All debris will be transported to an appropriate disposal landfill.

8. The permittee shall restore all temporarily impacted areas to pre-construction contours. All disturbed areas shall be revegetated with pre-existing and/or native wetland vegetation.

You may refer any questions on this matter to Carol Heidsiek of our Regulatory staff by telephone at 707-443-0855 or by email at Carol.A.Heidsiek@usace.army.mil. All correspondence should be addressed to the Regulatory Division, North Branch, Eureka Field Office, 601 Startare Drive, Box 14, Eureka, California 95501, referencing the file number at the head of this letter.

The San Francisco District is committed to improving service to our customers. My Regulatory staff seeks to achieve the goals of the Regulatory Program in an efficient and cooperative manner, while preserving and protecting our nation's aquatic resources. If you

would like to provide comments on our Regulatory Program, please complete the Customer Service Survey Form available on our website: http://www.spn.usace.army.mil/Missions/Regulatory.aspx

Sincerely,

for Jane M. Hicks
Chief, Regulatory Division

Enclosures

Copies Furnished (w/o encls):

NMFS, Arcata, CA
USFWS, Arcata, CA
CA RWQCB, Santa Rosa, CA

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
01	DN	199	PM 8.7		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

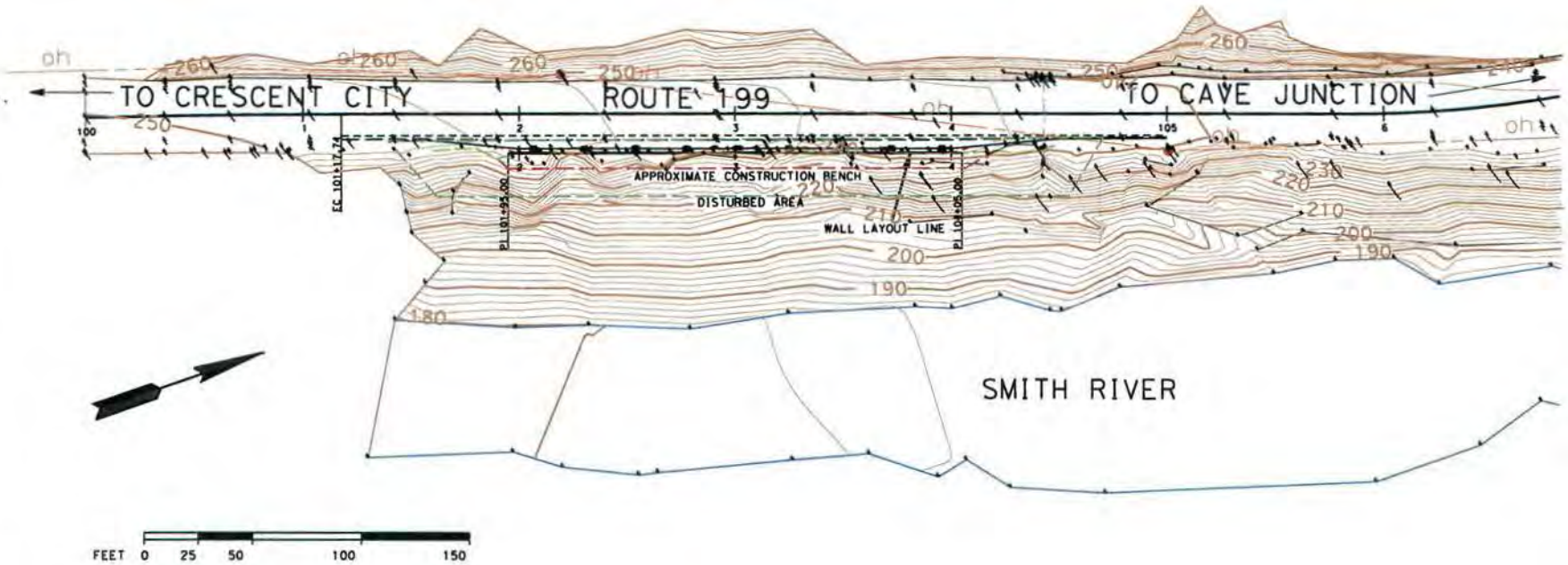
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ELECTRONIC COPIES OF THIS PLAN SHEET.

REGISTERED PROFESSIONAL ENGINEER CIVIL STATE OF CALIFORNIA

APPENDIX C. PLANS AND CROSS SECTIONS

0B310 - Location 1 - RETAINING WALL, DN 199 PM 8.7

- DISTURBED AREA (APPROX. 0.19 ACRES)
- FILL LINE
- CUT LINE (APPROX. 0.06 ACRES)
- WALL LAYOUT LINE



REVISED BY | DATE REVISED

CALCULATED-DESIGNED BY | CHECKED BY

FUNCTIONAL SUPERVISOR

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

DESIGN

LAST REVISION 07-15-14 | DATE PLOTTED => #DATE | TIME PLOTTED => #TIME

BORDER LAST REVISED 3/1/2007 | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | USERNAME => #USER DGN FILE => #REQUEST | CU 0313 | 0112000115

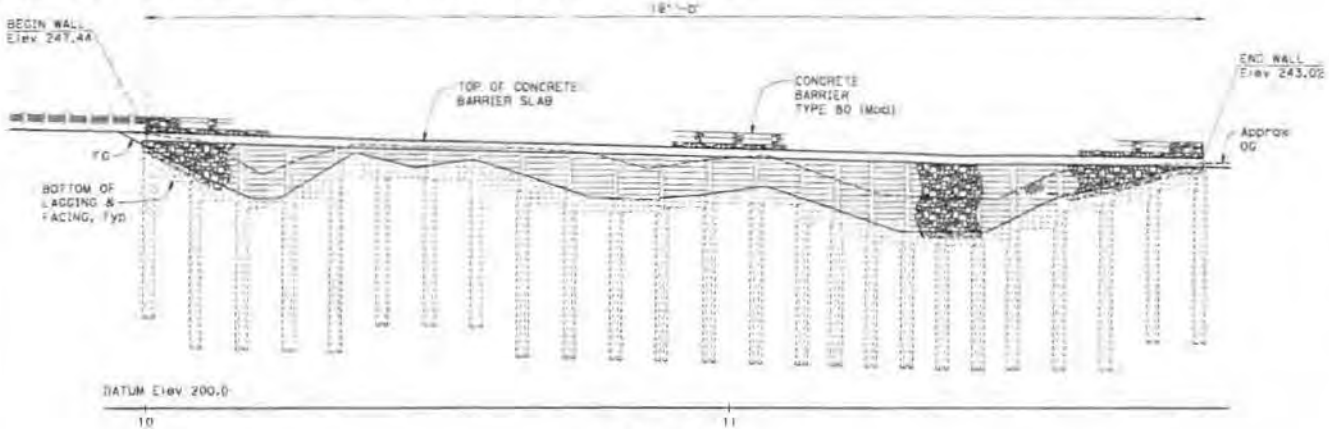
Enclosure 1

0B310 - Location 1 - RETAINING WALL, DN 199 PM 8.7

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
01	DN	199			

REGISTERED CIVIL ENGINEER X DATE

PLANS APPROVAL DATE



ELEVATION

1" = 10'

INDEX TO PLANS

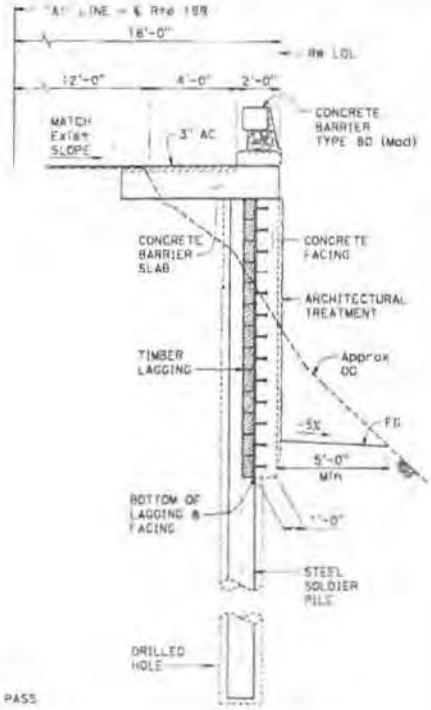
1 GENERAL PLAN
2 STRUCTURE PLAN
3 FOUNDATION PLAN
4 WALL DETAILS NO. 1
5 WALL DETAILS NO. 2
6 WALL DETAILS NO. 3
7 CONCRETE BARRIER TYPE 80 (Mod)
8 FUTURE BICYCLE RAILING DETAILS
9 LOG OF TEST BORINGS (1 OF 2)
10 LOG OF TEST BORINGS (2 OF 2)

STANDARD PLANS 2010

A10A	ABBREVIATIONS (1 OF 2)
A10B	ABBREVIATIONS (2 OF 2)
A10C	LINES AND SYMBOLS (1 OF 3)
A10D	LINES AND SYMBOLS (2 OF 3)
A10E	LINES AND SYMBOLS (3 OF 3)
A10F	LEGEND - SOIL (1 OF 2)
A10G	LEGEND - SOIL (2 OF 2)
A10H	LEGEND - ROCK
RSP B11-60	CONCRETE BARRIER TYPE 80 (1 OF 2)

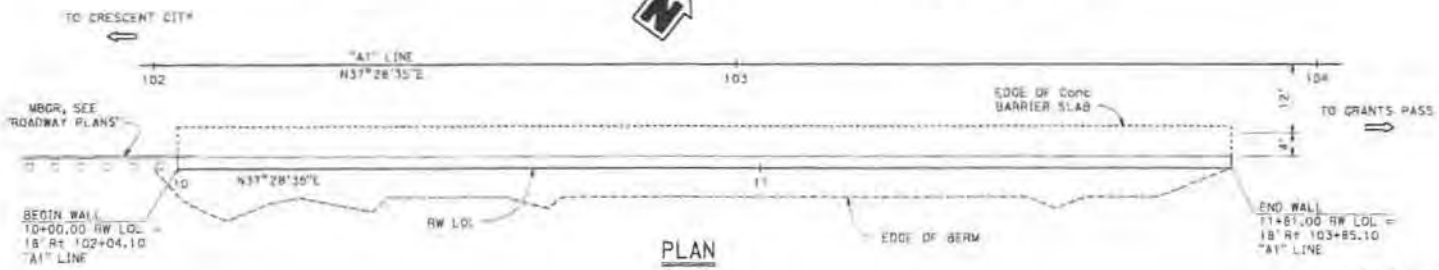
STANDARD PLAN SHEET NO.

DETAIL NO.



TYPICAL SECTION

3/8" = 1'-0"



PLAN

1" = 10'

UNCHECKED DETAILS

Jeff Sims DESIGN ENGINEER	DESIGN	Kevin Harper	CHECKED	LOAD & RESISTANCE FACTOR DESIGN			
	DETAILS	Bob Huddleston	CHECKED	LAYOUT	Kevin Harper	CHECKED	
	QUANTITIES		CHECKED	SPECIFICATIONS		PLANS CHECKED	

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
STRUCTURE DESIGN
DESIGN BRANCH 1

BRIDGE NO.
POST MILE 8.7

PATRICK CREEK SLIPOUT WALL
GENERAL PLAN

UNIT: 3576
PROJECT NUMBER & PHASE: 0112000111
CONTRACT NO.: 01-0B310

DUPLICATE PRINTS BEARING EARLIER REVISION DATES

SHEET 7 OF 10

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
01	DN	199			

REGISTERED CIVIL ENGINEER X DATE

PLANS APPROVAL DATE

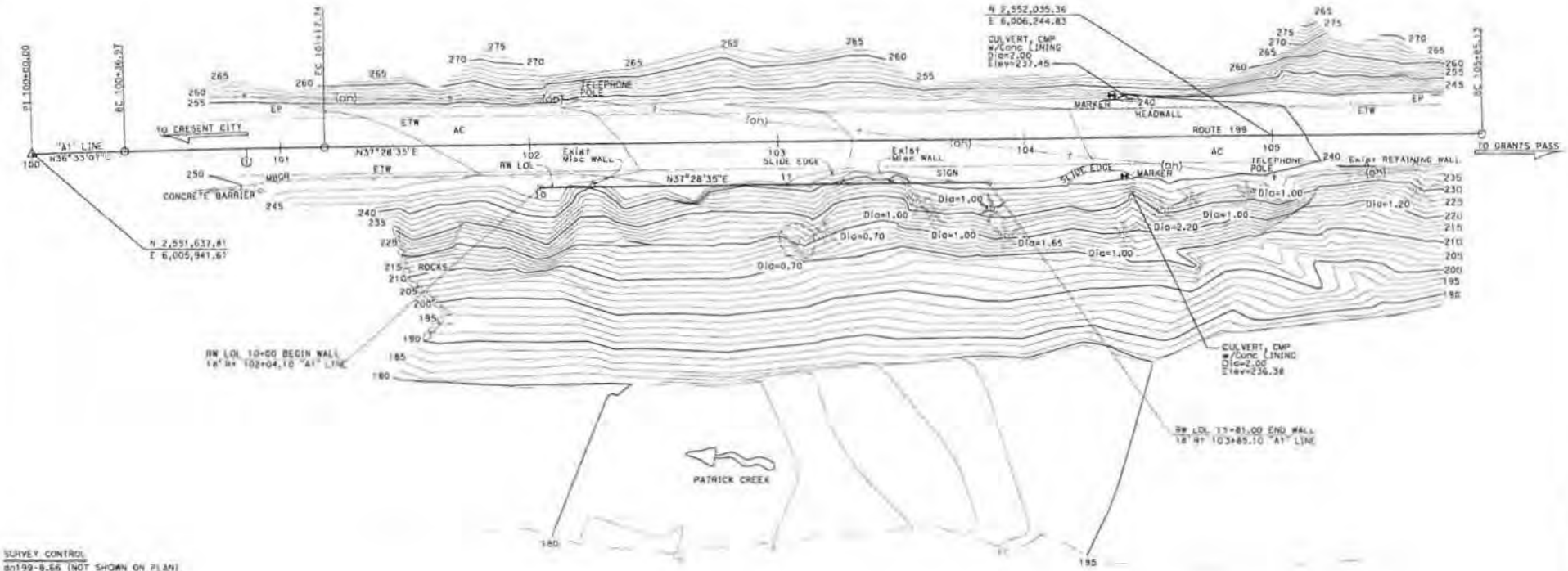
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this print sheet.

KEVIN HARPER 42323 Exp. 3/31/16 CIVIL

CURVE DATA

R	Δ	T	L
5000.00	00°55'32"	40.39	80.77

0B310 - Location 1 - RETAINING WALL, DN 199 PM 8.7



SURVEY CONTROL

dn199-8.66 (NOT SHOWN ON PLAN)
Fnd CAPED Alum 3/4" REBAR
111.27 Ft N27°04'13"E TO
Sta 100+00.00 ROUTE 199
N 2,551,538.73
E 6,005,890.97
Elev = 250.41

dn199-8.84 (NOT SHOWN ON PLAN)
Fnd CAPED Alum 3/4" REBAR
17.60 Ft Rt ROUTE 199
Sta 107+90.67
N 2,552,278.56
E 6,006,407.03
Elev = 236.94

PRELIMINARY INVESTIGATION SECTION							
SCALE	VERT.DATUM NAVD88	PHOTOGRAMMETRY AS OF: X					
1"=20'	HORZ.DATUM NAD83 (2004.69)	SURVEYED	BY DISTRICT	CHECKED	BY J. BORDEN	04/2014	
ALIGNMENT TIES Dia+ TRAVERSE SHEET		DRAFTED	BY T. ZOLN/NOV 04/2014	CHECKED	BY S. SOU	04/2014	

DESIGN	BY Kevin Harper	CHECKED	X
DETAILS	BY Bob Huddleston	CHECKED	X
QUANTITIES	BY X	CHECKED	X

STRUCTURES FOUNDATION PLAN SHEET (ENGLISH) (REV. 08-21-13)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS: 1 2 3 4

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
STRUCTURE DESIGN
DESIGN BRANCH 1

BRIDGE NO.
POST MILE 8.7

UNIT: 3576
PROJECT NUMBER & PHASE: 0112000115L
CONTRACT NO.: 01-0B310A

PATRICK CREEK SLIPOUT WALL
FOUNDATION PLAN

DLORGANIZE PRINTS BEARING EARLIER REVISION DATES

3 10

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
01	DN	199			

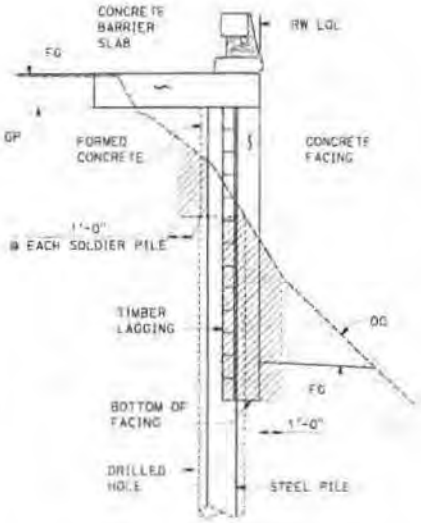
REGISTERED CIVIL ENGINEER X DATE

PLANS APPROVAL DATE

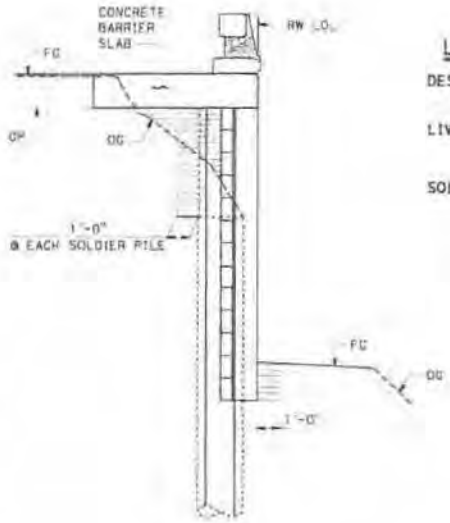
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of scanned copies of this plan sheet.

KEVIN HARPER No. 49921 Exp. 3/31/18 CIVIL

0B310 - Location 1 - RETAINING WALL, DN 199 PM 8.7



EXCAVATION



BACKFILL

LIMITS OF PAYMENT FOR EXCAVATION AND BACKFILL

3/16" = 1'-0"

LEGEND:

- Indicates Roadway Excavation
- Indicates Stucture Excavation
- Indicates Structure Backfill

GENERAL NOTES
LOAD AND RESISTANCE FACTOR DESIGN

DESIGN: AASHTO Bridge Design Specifications, 6th edition with California Amendments

LIVE LOADING:

2'-0" level earth surcharge

SOIL PARAMETERS:

(For determination of design lateral earth pressures)

Above bottom of facing:

$\phi = 38°$, $\gamma = 120$ pcf

Below bottom of facing:

Pile No.	ϕ	γ_{sat} (pcf)	Distance to cohesive layer (C = 5000 psf)
1-2	44°	62.5	10'
3-4	44°	62.5	20'
5-7	54°	62.5	20'
8-9	43°	62.5	2'
10-12	43°	62.5	20'
13	47°	62.5	20'
14-15	45°	62.5	20'
16-20	45°	62.5	11'
21	48°	62.5	13'
22	56°	62.5	20'
23	53°	62.5	20'
24-25	49°	62.5	20'

REINFORCED CONCRETE:

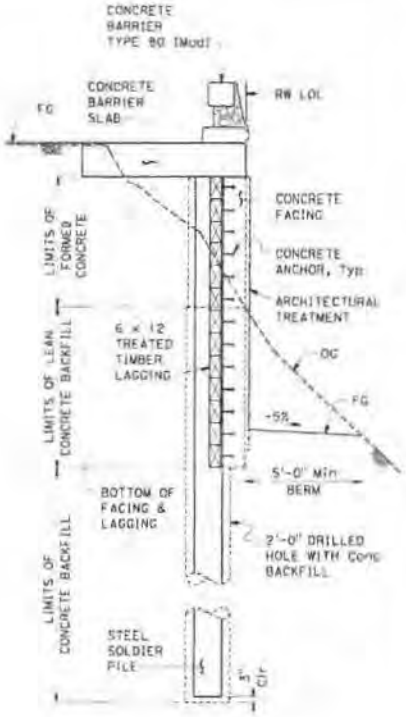
fy = 60 ksi
f'c = 3.6 ksi
n = 8

STRUCTURAL STEEL:

fy = 50 ksi

STRUCTURAL TIMBER:

Treated Douglas Fir No. 2 or better
Timber to be full sawn



TYPICAL SECTION

3/16" = 1'-0"

DESIGN	BY Kevin Harper	CHECKED X
DETAILS	BY Bob Huddleston	CHECKED X
QUANTITIES	BY X	CHECKED X

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
STRUCTURE DESIGN
DESIGN BRANCH 1

BRIDGE NO.
POST MILE 8.7

PATRICK CREEK SLIPOUT WALL
WALL DETAILS NO. 1

UNIT: 3576
PROJECT NUMBER & PHASE: 0112000157
CONTRACT NO.: 01-0B3104

DESIGNED PRINTS BEARING EARLIER REVISION DATES

REVISED | REVISED | REVISED | REVISED

SHEET 4 TOTAL 10

District	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

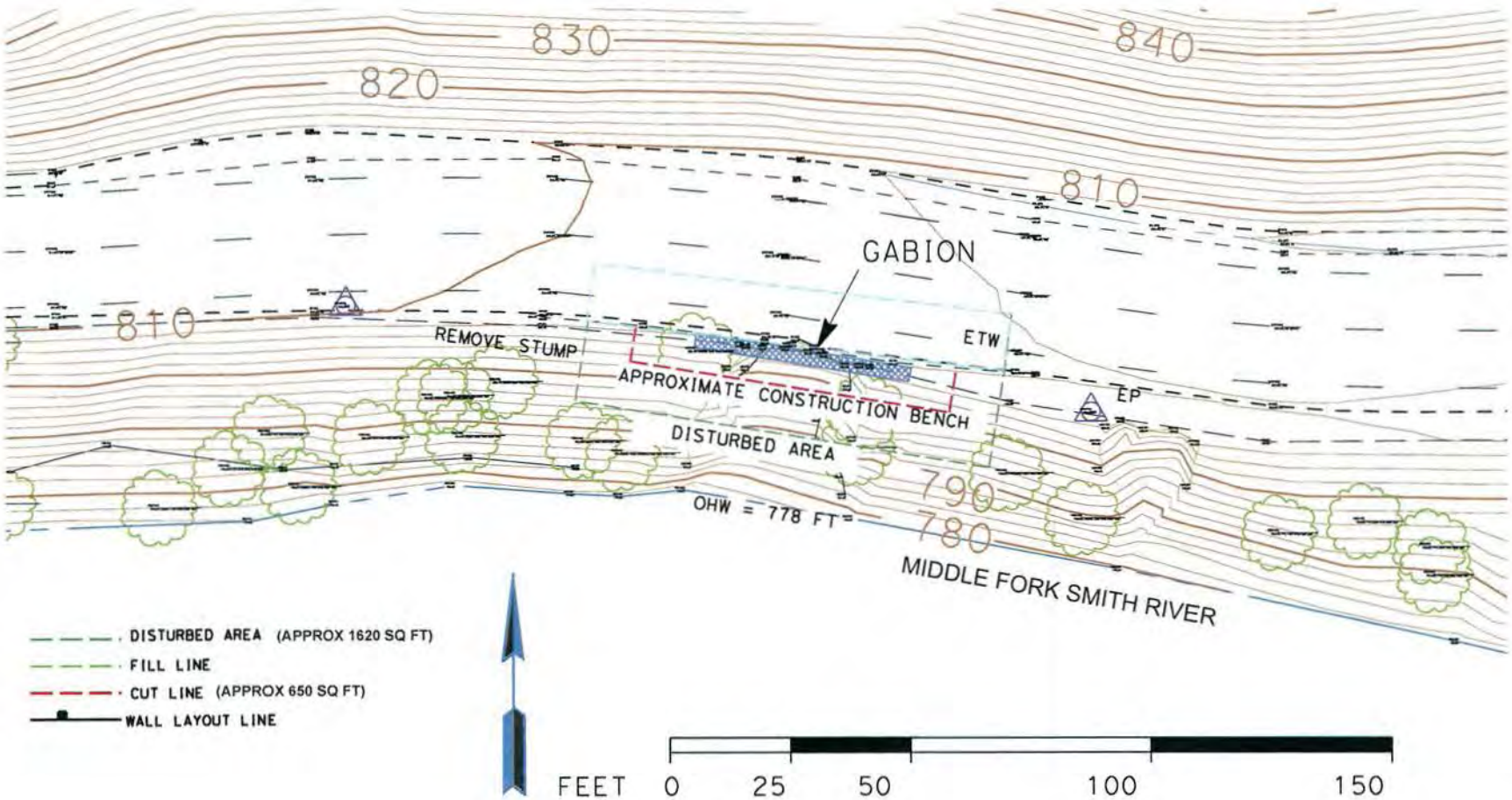
REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

REGISTERED PROFESSIONAL ENGINEER CIVIL STATE OF CALIFORNIA

0B310 - Location 2 - GABION WALL, DN 199 PM 21.6



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

FUNCTIONAL SUPERVISOR

CALCULATED-DESIGNED BY

CHECKED BY

REVISED BY

DATE REVISED

LAST REVISION 00-00-00

DATE PLOTTED => DATE

TIME PLOTTED => TIME

BORDER LAST REVISED 7/2/2010

USERNAME => $USER

DGN FILE => $REQUEST

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 0000

PROJECT NUMBER & PHASE 00000000001

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
01	DN	199	PM 21.7		

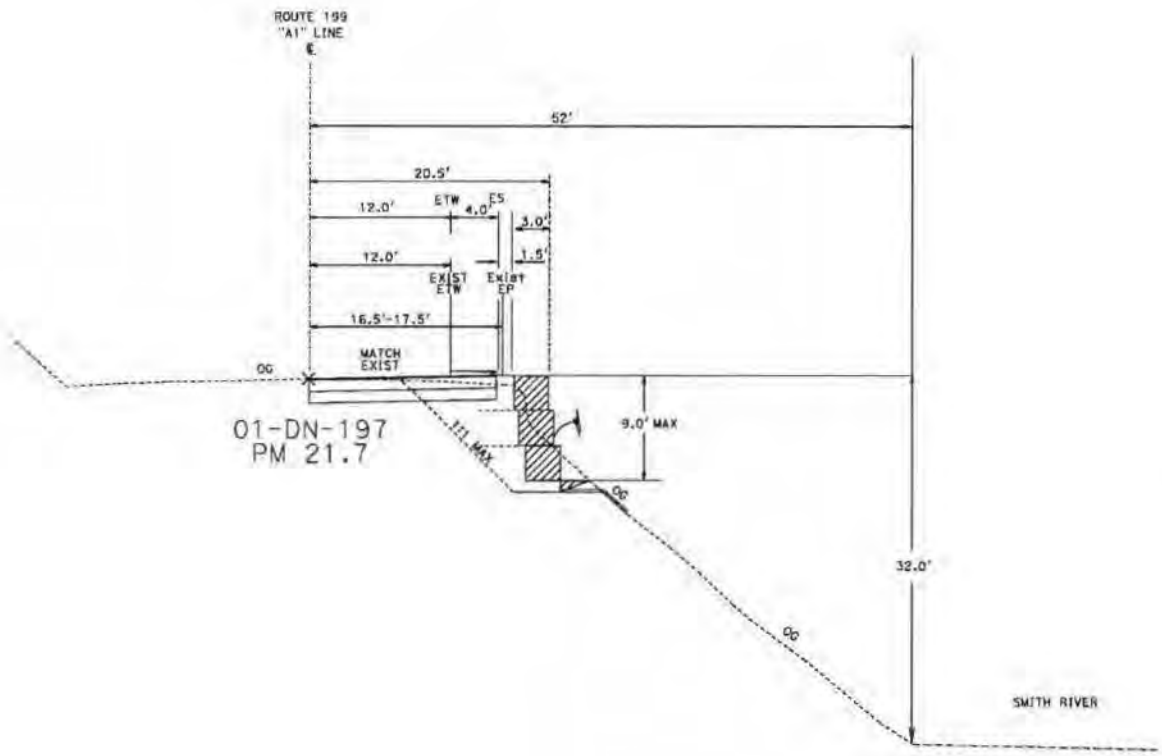
REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ELECTRONIC COPIES OF THIS PLAN SHEET.

REGISTERED PROFESSIONAL ENGINEER CIVIL STATE OF CALIFORNIA

0B310 - Location 2 - GABION WALL, DN 199 PM 21.6



TYPICAL CROSS SECTIONS

NO SCALE

X-1

REVISED BY | DATE REVISED

CALCULATED-DESIGNED BY | CHECKED BY

FUNCTIONAL SUPERVISOR

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans DESIGN

F:\PROJ\01\0B310\Design\Cross Sections\21.7 Typical.dgn

LAST REVISION DATE PLOTTED => 15-SEP-2014 TIME PLOTTED => 14:13

11-07-13

BORDER LAST REVISED 3/1/2007

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

USERNAME => s120692 DGN FILE => 21.7 Typical.dgn

CU 0313

0112000115

U.S. Fish and Wildlife Service

National Wetlands Inventory

0B310-Location 1-PM 8.7

Feb 26, 2015

Wetlands

- Freshwater Emergent
- Freshwater Forested/Shrub
- Estuarine and Marine Deepwater
- Estuarine and Marine
- Freshwater Pond
- Lake
- Riverine
- Other

Riparian

- Herbaceous
- Forested/Shrub

Riparian Status

- Digital Data

OHWL= 199 FEET

US Army Corps of Engineers
San Francisco District
Regulatory Branch

Preliminary Jurisdictional Determination (PJD) Pursuant to Section 404 of the CWA For USACE file #2015-00074, PM 8.7 and 21.7 SR 199, Del Norte County, CA (Lat. 41.8134, Long. -123.1044).

Other Waters

Project Boundary

FILE NO: 2015-00074 **DATE:** 2/25/15

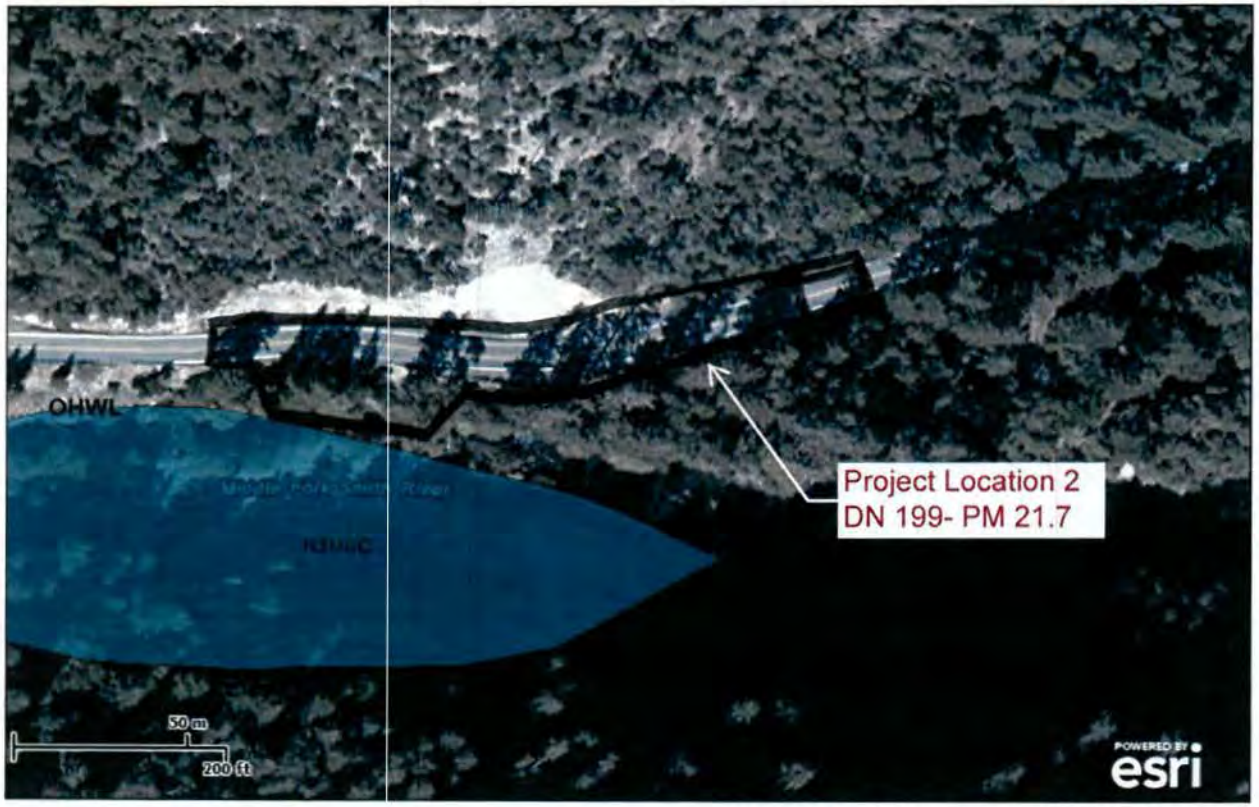
Enclosure 2

U.S. Fish and Wildlife Service

National Wetlands Inventory

0B310 Location 2-PM 21.7

Feb 26, 2015



Wetlands

- Freshwater Emergent
- Freshwater Forested/Shrub
- Estuarine and Marine Deepwater
- Estuarine and Marine
- Freshwater Pond
- Lake
- Riverine
- Other

Riparian

- Herbaceous
- Forested/Shrub

Riparian Status

- Digital Data

OHWL= 777.9 FEET

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

PRELIMINARY JURISDICTIONAL DETERMINATION FORM
San Francisco District

This Preliminary Jurisdictional Determination finds that there *"may be"* waters of the United States in the subject review area and identifies all such aquatic features, based on the following information:

Regulatory Division: North Branch **File Number**: 2015-00074-Select **PJD Completion Date**: 2/25/15

Review Area Location
City/County: SR 199/ Del Norte State: California
Nearest Named Waterbody: Smith River/Middle Fork Smith R.
Approximate Center Coordinates of Review Area
Latitude (degree decimal format): 41.8387°N
Longitude (degree decimal format): -123.9471°W
Approximate Total Acreage of Review Area: 0.8 acres

File Name: 0B310

Applicant or Requestor Information
Name: Gail Popham
Company Name: California Department of Transportation
Street/P.O. Box: 1656 Union St.
City/State/Zip Code: Eureka, CA 95501

Estimated Total Amount of Waters in Review Area

Non-Wetland Waters: 420 lineal feet 1 feet wide and/or 0.01 acre(s) Flow Regime: Perennial

Wetlands: 0 lineal feet 0 feet wide and/or 0 acre(s) Cowardin Class: Select

Name of Section 10 Waters Occurring in Review Area
Tidal: 0
Non-Tidal: 0

☒ Office (Desk) Determination
☒ Field Determination:
Date(s) of Site Visit(s): 2/25/15

SUPPORTING DATA: Data reviewed for Preliminary JD (check all that apply – checked items should be included in case file and, where checked and requested, appropriately reference sources below)

☒ Maps. Plans, plots or plat submitted by or on behalf of applicant/requestor (specify):

☐ Data sheets submitted by or on behalf of applicant/requestor (specify):

- ☐ Corps concurs with data sheets/delineation report.
- ☐ Corps does not concur with data sheets/delineation report.

☐ Data sheets prepared by the Corps.
☐ Corps navigable waters' study (specify):
☒ U.S. Geological Survey Hydrologic Atlas:
- ☐ USGS NHD data.
- ☒ USGS HUC maps.

☒ U.S. Geological Survey map(s) (cite quad name/scale):
☐ USDA Natural Resources Conservation Service Soil Survey.
☐ National wetlands inventory map(s) (specify): USFWS National Wetland Invetory August 2013
☐ State/Local wetland inventory map(s) (specify):
☐ FEMA/FIRM maps.
☐ 100-year Floodplain Elevation (specify, if known):
☒ Photographs: ☒ Aerial (specify name and date): NAIP 2010
☒ Other (specify name and date): Site photographs, Caltrans 2014
☐ Previous JD determination(s) (specify File No. and date of response letter):
☒ Other information (specify): No wetlands impacted. Temporary impacts to 0.01-acre other waters. See attached chart for all wetlands/waters in the project vicinity.

IMPORTANT NOTE: If the information recorded on this form has not been verified by the Corps, the form should not be relied upon for later jurisdictional determinations.

Gail Popham 2/25/15

Signature and Date of Regulatory Project Manager (REQUIRED)

Signature and Date of Person Requesting Preliminary JD (REQUIRED, unless obtaining the signature is impracticable)

EXPLANATION OF PRELIMINARY AND APPROVED JURISDICTIONAL DETERMINATIONS:

1. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site. Nevertheless, the permit applicant or other person who requested this preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.

2. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "preconstruction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following: (1) the permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters; (2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions; (3) that the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) that the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant's acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an approved JD or a preliminary JD, that JD will be processed as soon as is practicable. Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331, and that in any administrative appeal, jurisdictional issues can be raised (see 33 C.F.R. 331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable.

Aquatic Resource I.D.	Latitude (degree decimal format)	Longitude (degree decimal format)	Cowardin Class and Flow Regime	Estimated Area or Lineal Feet of Aquatic Resource	Type of Aquatic Resource
pm8.7	41.8119°N	-124.0448°W	Select Flow: Perennial	330 lineal ft 1 ft wide 0.005 acre(s)	River
pm21.7	41.8716°N	-123.8505°W	Select Flow: Perennial	90 lineal ft 1 ft wide 0.005 acre(s)	River
	°N	- °W	Select Flow: Select	lineal ft ft wide acre(s)	Select
	°Select	- °Select	Select Flow: Select	lineal ft ft wide acre(s)	Select
	°Select	- °Select	Select Flow: Select	lineal ft ft wide acre(s)	Select
	°Select	- °Select	Select Flow: Select	lineal ft ft wide acre(s)	Select
	°Select	- °Select	Select Flow: Select	lineal ft ft wide acre(s)	Select
	°Select	- °Select	Select Flow: Select	lineal ft ft wide acre(s)	Select
	°Select	- °Select	Select Flow: Select	lineal ft ft wide acre(s)	Select
	°Select	- °Select	Select Flow: Select	lineal ft ft wide acre(s)	Select
	°Select	- °Select	Select Flow: Select	lineal ft ft wide acre(s)	Select
	°Select	- °Select	Select Flow: Select	lineal ft ft wide acre(s)	Select
	°Select	- °Select	Select Flow: Select	lineal ft ft wide acre(s)	Select
	°Select	- °Select	Select Flow: Select	lineal ft ft wide acre(s)	Select
	°Select	- °Select	Select Flow: Select	lineal ft ft wide acre(s)	Select
	°Select	- °Select	Select Flow: Select	lineal ft ft wide acre(s)	Select
	°Select	- °Select	Select Flow: Select	lineal ft ft wide acre(s)	Select

14. Linear Transportation Projects.

Activities required for the construction, expansion, modification, or improvement of linear transportation projects (e.g., roads, highways, railways, trails, airport runways, and taxiways) in waters of the United States. For linear transportation projects in non-tidal waters, the discharge cannot cause the loss of greater than 1/2-acre of waters of the United States. For linear transportation projects in tidal waters, the discharge cannot cause the loss of greater than 1/3-acre of waters of the United States. Any stream channel modification, including bank stabilization, is limited to the minimum necessary to construct or protect the linear transportation project; such modifications must be in the immediate vicinity of the project. This NWP also authorizes temporary structures, fills, and work necessary to construct the linear transportation project. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. Temporary fills must be removed in their entirety and the affected areas returned to preconstruction elevations. The areas affected by temporary fills must be revegetated, as appropriate. This NWP cannot be used to authorize non-linear features commonly associated with transportation projects, such as vehicle maintenance or storage buildings, parking lots, train stations, or aircraft hangars.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if: (1) The loss of waters of the United States exceeds 1/10-acre; or (2) there is a discharge in a special aquatic site, including wetlands. (See general condition 31.) (Sections 10 and 404)

Note: Some discharges for the construction of farm roads or forest roads, or temporary roads for moving mining equipment, may qualify for an exemption under Section 404(f) of the Clean Water Act (see 33 CFR 323.4).

Nationwide Permit General Conditions

1. Navigation
2. Aquatic Life Movements
3. Spawning Areas
4. Migratory Bird Breeding Areas
5. Shellfish Beds
6. Suitable Material
7. Water Supply Intakes
8. Adverse Effects From Impoundments
9. Management of Water Flows
10. Fills Within 100–Year Floodplains
11. Equipment
12. Soil Erosion and Sediment Controls
13. Removal of Temporary Fills
14. Proper Maintenance
15. Single and Complete Project
16. Wild and Scenic Rivers
17. Tribal Rights
18. Endangered Species
19. Migratory Birds and Bald and Golden Eagles
20. Historic Properties
21. Discovery of Previously Unknown Remains and Artifacts
22. Designated Critical Resource Waters
23. Mitigation
24. Safety of Impoundment Structures
25. Water Quality
26. Coastal Zone Management
27. Regional and Case-By-Case Conditions
28. Use of Multiple Nationwide Permits
29. Transfer of Nationwide Permit Verifications
30. Compliance Certification
31. Pre-Construction Notification

Note: To qualify for NWP authorization, the prospective permittee must comply with the following general conditions, as applicable, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer. Prospective permittees should contact the appropriate Corps district office to determine if regional conditions have been imposed on an NWP. Prospective permittees should also contact the appropriate Corps district office to determine the status of Clean Water Act Section 401 water quality certification and/ or Coastal Zone Management Act consistency for an NWP. Every person who may wish to obtain permit authorization under one or more NWPs, or who is currently relying on an existing or prior permit authorization under one or more NWPs, has been and is on notice that all of the provisions of 33 CFR 330.1 through 330.6 apply to every NWP authorization. Note especially 33 CFR 330.5 relating to the modification, suspension, or revocation of any NWP authorization.

1. Navigation. (a) No activity may cause more than a minimal adverse effect on navigation. (b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States. (c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the

structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

2. Aquatic Life Movements. No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species.

3. Spawning Areas. Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.

4. Migratory Bird Breeding Areas. Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

5. Shellfish Beds. No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWPs 4 and 48, or is a shellfish seeding or habitat restoration activity authorized by NWP 27.

6. Suitable Material. No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see Section 307 of the Clean Water Act).

7. Water Supply Intakes. No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

8. Adverse Effects From Impoundments. If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.

9. Management of Water Flows. To the maximum extent practicable, the preconstruction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization and storm water management activities, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the preconstruction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

10. Fills Within 100–Year Floodplains. The activity must comply with applicable FEMA-approved state or local floodplain management requirements.

11. Equipment. Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

12. Soil Erosion and Sediment Controls. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow.

13. Removal of Temporary Fills. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.

14. Proper Maintenance. Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety and compliance with applicable NWP general conditions, as well as any activity-specific conditions added by the district engineer to an NWP authorization.

15. Single and Complete Project. The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.

16. Wild and Scenic Rivers. No activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status. Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or study river (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service).

17. Tribal Rights. No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

18. Endangered Species. (a) No activity is authorized under any NWP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify the critical habitat of such species. No activity is authorized under any NWP which "may affect" a listed species or critical habitat, unless Section 7 consultation addressing the effects of the proposed activity has been completed. (b) Federal agencies should follow their own procedures for complying with the requirements of the ESA. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will review the documentation and determine whether it is sufficient to address ESA compliance for the NWP activity, or whether additional ESA consultation is necessary. (c) Non-federal permittees must submit a pre-construction notification to the district engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect federally listed endangered or threatened species or designated critical habitat, the pre-construction notification must include

the name(s) of the endangered or threatened species that might be affected by the proposed work or that utilize the designated critical habitat that might be affected by the proposed work. The district engineer will determine whether the proposed activity "may affect" or will have "no effect" to listed species and designated critical habitat and will notify the non- Federal applicant of the Corps' determination within 45 days of receipt of a complete pre-construction notification. In cases where the non- Federal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the project, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification the proposed activities will have "no effect" on listed species or critical habitat, or until Section 7 consultation has been completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps. (d) As a result of formal or informal consultation with the FWS or NMFS the district engineer may add species-specific regional endangered species conditions to the NWPs. (e) Authorization of an activity by a NWP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the U.S. FWS or the NMFS, The Endangered Species Act prohibits any person subject to the jurisdiction of the United States to take a listed species, where "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word "harm" in the definition of "take" means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering. (f) Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the U.S. FWS and NMFS or their world wide web pages at *http://www.fws.gov/* or *http://www.fws.gov/ipac* and *http://www.noaa.gov/fisheries.html* respectively.

19. Migratory Birds and Bald and Golden Eagles. The permittee is responsible for obtaining any "take" permits required under the U.S. Fish and Wildlife Service's regulations governing compliance with the Migratory Bird Treaty Act or the Bald and Golden Eagle Protection Act. The permittee should contact the appropriate local office of the U.S. Fish and Wildlife Service to determine if such "take" permits are required for a particular activity.

20. Historic Properties. (a) In cases where the district engineer determines that the activity may affect properties listed, or eligible for listing, in the National Register of Historic Places, the activity is not authorized, until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied. (b) Federal permittees should follow their own procedures for complying with the requirements of Section 106 of the National Historic Preservation Act. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will review the documentation and determine whether it is sufficient to address section 106 compliance for the NWP activity, or whether additional section 106 consultation is necessary. (c) Non-federal permittees must submit a pre-construction notification to the district engineer if the authorized activity may have the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the preconstruction notification must state which historic properties may be affected by the proposed work or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of or potential for the presence of historic resources can be sought from the State Historic Preservation Officer or Tribal Historic Preservation Officer, as appropriate, and the National

Register of Historic Places (see 33 CFR 330.4(g)). When reviewing pre-construction notifications, district engineers will comply with the current procedures for addressing the requirements of Section 106 of the National Historic Preservation Act. The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey. Based on the information submitted and these efforts, the district engineer shall determine whether the proposed activity has the potential to cause an effect on the historic properties. Where the non-Federal applicant has identified historic properties on which the activity may have the potential to cause effects and so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects or that consultation under Section 106 of the NHPA has been completed. (d) The district engineer will notify the prospective permittee within 45 days of receipt of a complete preconstruction notification whether NHPA Section 106 consultation is required. Section 106 consultation is not required when the Corps determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR 800.3(a)). If NHPA section 106 consultation is required and will occur, the district engineer will notify the non- Federal applicant that he or she cannot begin work until Section 106 consultation is completed. If the non- Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps. (e) Prospective permittees should be aware that section 110k of the NHPA (16 U.S.C. 470h–2(k)) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of Section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/ THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

21. Discovery of Previously Unknown Remains and Artifacts. If you discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by this permit, you must immediately notify the district engineer of what you have found, and to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The district engineer will initiate the Federal, Tribal and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

22. Designated Critical Resource Waters. Critical resource waters include, NOAA-managed marine sanctuaries and marine monuments, and National Estuarine Research Reserves. The district engineer may designate, after notice and opportunity for public comment, additional waters officially designated by a state as having particular environmental or ecological significance, such as outstanding national resource waters or state natural heritage sites. The district engineer may also designate additional critical resource waters after notice and opportunity for public comment. (a) Discharges of dredged or fill material into waters of the United States are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, 50, 51, and 52 for any activity within, or directly affecting, critical resource waters, including

wetlands adjacent to such waters. (b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, and 38, notification is required in accordance with general condition 31, for any activity proposed in the designated critical resource waters including wetlands adjacent to those waters. The district engineer may authorize activities under these NWPs only after it is determined that the impacts to the critical resource waters will be no more than minimal.

23. Mitigation. The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that adverse effects on the aquatic environment are minimal: (a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e., on site). (b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating for resource losses) will be required to the extent necessary to ensure that the adverse effects to the aquatic environment are minimal. (c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10-acre and require preconstruction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse effects of the proposed activity are minimal, and provides a project-specific waiver of this requirement. For wetland losses of 1/10- acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in minimal adverse effects on the aquatic environment. Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR part 332. (1) The prospective permittee is responsible for proposing an appropriate compensatory mitigation option if compensatory mitigation is necessary to ensure that the activity results in minimal adverse effects on the aquatic environment. (2) Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, wetland restoration should be the first compensatory mitigation option considered. (3) If permittee-responsible mitigation is the proposed option, the prospective permittee is responsible for submitting a mitigation plan. A conceptual or detailed mitigation plan may be used by the district engineer to make the decision on the NWP verification request, but a final mitigation plan that addresses the applicable requirements of 33 CFR 332.4(c)(2)–(14) must be approved by the district engineer before the permittee begins work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation (see 33 CFR 332.3(k)(3)). (4) If mitigation bank or in-lieu fee program credits are the proposed option, the mitigation plan only needs to address the baseline conditions at the impact site and the number of credits to be provided. (5) Compensatory mitigation requirements (e.g., resource type and amount to be provided as compensatory mitigation, site protection, ecological performance standards, monitoring requirements) may be addressed through conditions added to the NWP authorization, instead of components of a compensatory mitigation plan. (d) For losses of streams or other open waters that require pre-construction notification, the district engineer may require compensatory mitigation, such as stream rehabilitation, enhancement, or preservation, to ensure that the activity results in minimal adverse effects on the aquatic environment. (e) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of 1/2-acre, it cannot be used to authorize any project resulting in the loss of greater than 1/2-acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that a project already meeting the established acreage limits also satisfies the minimal impact requirement associated with the NWPs. (f) Compensatory mitigation plans for projects in or near streams or other open waters will normally include a requirement for the restoration or establishment, maintenance,

and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, riparian areas may be the only compensatory mitigation required. Riparian areas should consist of native species. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address documented water quality or habitat loss concerns. If it is not possible to establish a riparian area on both sides of a stream, or if the waterbody is a lake or coastal waters, then restoring or establishing a riparian area along a single bank or shoreline may be sufficient. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses. (g) Permittees may propose the use of mitigation banks, in-lieu fee programs, or separate permittee-responsible mitigation. For activities resulting in the loss of marine or estuarine resources, permittee-responsible compensatory mitigation may be environmentally preferable if there are no mitigation banks or in-lieu fee programs in the area that have marine or estuarine credits available for sale or transfer to the permittee. For permittee-responsible mitigation, the special conditions of the NWP verification must clearly indicate the party or parties responsible for the implementation and performance of the compensatory mitigation project, and, if required, its long-term management. (h) Where certain functions and services of waters of the United States are permanently adversely affected, such as the conversion of a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse effects of the project to the minimal level.

24. Safety of Impoundment Structures. To ensure that all impoundment structures are safely designed, the district engineer may require non-Federal applicants to demonstrate that the structures comply with established state dam safety criteria or have been designed by qualified persons. The district engineer may also require documentation that the design has been independently reviewed by similarly qualified persons, and appropriate modifications made to ensure safety.

25. Water Quality. Where States and authorized Tribes, or EPA where applicable, have not previously certified compliance of an NWP with CWA Section 401, individual 401 Water Quality Certification must be obtained or waived (see 33 CFR 330.4(c)). The district engineer or State or Tribe may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality.

26. Coastal Zone Management. In coastal states where an NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4(d)). The district engineer or a State may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.

27. Regional and Case-By-Case Conditions. The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.

28. Use of Multiple Nationwide Permits. The use of more than one NWP for a single and complete project is prohibited, except when the acreage loss of waters of the United States authorized by the NWPs does not exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3-acre.

29. Transfer of Nationwide Permit Verifications. If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature:

> "When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below."
>
> _____
> (Transferee)
>
> _____
> (Date)

30. Compliance Certification. Each permittee who receives an NWP verification letter from the Corps must provide a signed certification documenting completion of the authorized activity and any required compensatory mitigation. The success of any required permittee-responsible mitigation, including the achievement of ecological performance standards, will be addressed separately by the district engineer. The Corps will provide the permittee the certification document with the NWP verification letter. The certification document will include: (a) A statement that the authorized work was done in accordance with the NWP authorization, including any general, regional, or activity-specific conditions; (b) A statement that the implementation of any required compensatory mitigation was completed in accordance with the permit conditions. If credits from a mitigation bank or in-lieu fee program are used to satisfy the compensatory mitigation requirements, the certification must include the documentation required by 33 CFR 332.3(l)(3) to confirm that the permittee secured the appropriate number and resource type of credits; and (c) The signature of the permittee certifying the completion of the work and mitigation.

31. Pre-Construction Notification—(a) *Timing*. Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, if the PCN is determined to be incomplete, notify the prospective permittee within that 30 day period to request the additional information necessary to make the PCN complete. The request must specify the information needed to make the PCN complete. As a general rule, district engineers will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either: (1) He or she is notified in writing

Register of Historic Places, for non-Federal applicants the PCN must state which historic property may be affected by the proposed work or include a vicinity map indicating the location of the historic property. Federal applicants must provide documentation demonstrating compliance with Section 106 of the National Historic Preservation Act. (c) *Form of Pre-Construction Notification:* The standard individual permit application form (Form ENG 4345) may be used, but the completed application form must clearly indicate that it is a PCN and must include all of the information required in paragraphs (b)(1) through (7) of this general condition. A letter containing the required information may also be used. (d) *Agency Coordination:* (1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the project's adverse environmental effects to a minimal level. (2) For all NWP activities that require pre-construction notification and result in the loss of greater than 1/2-acre of waters of the United States, for NWP 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52 activities that require pre-construction notification and will result in the loss of greater than 300 linear feet of intermittent and ephemeral stream bed, and for all NWP 48 activities that require pre-construction notification, the district engineer will immediately provide (e.g., via email, facsimile transmission, overnight mail, or other expeditious manner) a copy of the complete PCN to the appropriate Federal or state offices (U.S. FWS, state natural resource or water quality agency, EPA, State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Office (THPO), and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will have 10 calendar days from the date the material is transmitted to telephone or fax the district engineer notice that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the adverse effects will be more than minimal. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the preconstruction notification. The district engineer will fully consider agency comments received within the specified time frame concerning the proposed activity's compliance with the terms and conditions of the NWPs, including the need for mitigation to ensure the net adverse environmental effects to the aquatic environment of the proposed activity are minimal. The district engineer will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5. (3) In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by Section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act. (4) Applicants are encouraged to provide the Corps with either electronic files or multiple copies of preconstruction notifications to expedite agency coordination.

San Francisco District Regional Conditions

A. General Regional Conditions that apply to all NWPs in the Sacramento, San Francisco, and Los Angeles Districts:

1. When pre-construction notification (PCN) is required, the permittee shall notify the U.S. Army Corps of Engineers, San Francisco District (Corps) in accordance with General Condition 31 using either the South Pacific Division Preconstruction Notification (PCN) Checklist or a signed application form (ENG Form 4345) with an attachment providing information on compliance with all of the General and Regional Conditions. In addition, the PCN shall include:

    a. A written statement describing how the activity has been designed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States;

    b. Drawings, including plan and cross-section views, clearly depicting the location, size and dimensions of the proposed activity, as well as the location of delineated waters of the U.S. on the site. The drawings shall contain a title block, legend and scale, amount (in cubic yards) and area (in acres) of fill in Corps jurisdiction, including both permanent and temporary fills/structures. The ordinary high water mark or, if tidal waters, the mean high water mark and high tide line, should be shown (in feet), based on National Geodetic Vertical Datum (NGVD) or other appropriate referenced elevation. All drawings for activities located within the boundaries of the Los Angeles District shall comply with the September 15, 2010 Special Public Notice: *Map and Drawing Standards for the Los Angeles District Regulatory Division*, (available on the Los Angeles District Regulatory Division website at: www.spl.usace.army.mil/regulatory/); and

    c. Numbered and dated pre-project color photographs showing a representative sample of waters proposed to be impacted on the site, and all waters of the U.S. proposed to be avoided on and immediately adjacent to the activities site. The compass angle and position of each photograph shall be identified on the plan-view drawing(s) required in subpart b of this Regional Condition.

2. The permittee shall submit a PCN, in accordance with General Condition 31, For all activities located in areas designated as Essential Fish Habitat (EFH) by the Pacific Fishery Management Council (i.e., all tidally influenced areas - Federal Register dated March 12, 2007, 72 C.F.R. 11,092, in which case the PCN shall include an EFH assessment and extent of proposed impacts to EFH. Examples of EFH habitat assessments can be found at: http://www.swr.noaa.gov/efh.htm.

3. For activities in which the Corps designates another Federal agency as the lead for compliance with Section 7 of the Endangered Species Act (ESA) of 1973 as amended, 16 U.S.C. §§ 1531-1544, Section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act (EFH), 16 U.S.C. § 1855(b)(4)(B) and/or Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended , 16 U.S.C. §§ 470-470h, the lead Federal agency shall provide all relevant documentation to the appropriate Corps demonstrating any previous consultation efforts, as it pertains to the Corps Regulatory permit area (for Section 7 and EFH compliance) and the Corps Regulatory area of potential effect (APE) (for Section 106 compliance). For activities requiring a PCN, this information shall be submitted with the PCN. If the Corps does not designate another Federal agency as the lead for ESA, EFH and/or NHPA, the Corps will initiate consultation for compliance, as appropriate.

4. For all activities in waters of the U.S. that are suitable habitat for Federally-listed fish species, the permittee shall design all road crossings to ensure that the passage and/or spawning of fish is not hindered. In these areas, the permittee shall employ bridge designs that span the stream or river, including pier- or pile-supported spans, or designs that use a bottomless arch culvert with a natural stream bed unless determined to be impracticable by the Corps.

5. The permittee shall complete the construction of any compensatory mitigation required by special condition(s) of the NWP verification before or concurrent with commencement of construction of the authorized activity, except when specifically determined to be impracticable by the Corps. When mitigation involves use of a mitigation bank or in-lieu fee program, the permittee shall submit proof of payment to the Corps prior to commencement of construction of the authorized activity.

6. Any requests to waive the 300 linear foot limitation for intermittent and ephemeral streams for NWPs 21, 29, 39, 40, 42, 43, 44, 50, 51 and 52, or to waive the 500 linear foot limitation along the bank for NWP 13, must include the following:

   a. A narrative description of the stream. This should include known information on: volume and duration of flow; the approximate length, width, and depth of the waterbody and characteristics observed associated with an Ordinary High Water Mark (e.g. bed and bank, wrack line or scour marks); a description of the adjacent vegetation community and a statement regarding the wetland status of the adjacent areas (i.e. wetland, non-wetland); surrounding land use; water quality; issues related to cumulative impacts in the watershed, and; any other relevant information;

   b. An analysis of the proposed impacts to the waterbody, in accordance with General Condition 31;

   c. Measures taken to avoid and minimize losses to waters of the U.S., including other methods of constructing the proposed activity(s); and

   d. A compensatory mitigation plan describing how the unavoidable losses are proposed to be offset, in accordance with 33 CFR 332.

B. General Regional Conditions that apply to all NWPs in the San Francisco District:

1. Notification to the Corps (in accordance with General Condition No. 31) is required for any activity permitted by NWP if it will take place in waters or wetlands of the U.S. that are within the **San Francisco Bay diked baylands** (see figure 1) (undeveloped areas currently behind levees that are within the historic margin of the Bay. Diked historic baylands are those areas on the Nichols and Wright map below the 5-foot contour line, National Geodetic Vertical Datum (NGVD) (see Nichols, D.R., and N. A. Wright. 1971. Preliminary map of historic margins of marshland, San Francisco Bay, California. U.S. Geological Survey Open File Map)). The notification shall explain how avoidance and minimization of losses of waters or wetlands are taken into consideration to the maximum extent practicable (see General Condition 23).

2. Notification to the Corps (in accordance with General Condition No. 31) is required for any activity permitted by NWP if it will take place in waters or wetlands of the U.S. that are within the **Santa Rosa Plain** (see figure 2). The notification will explain how avoidance and minimization of losses of waters or wetlands are taken into consideration to the maximum extent practicable in accordance with General Condition No. 23.

3. Notification to the Corps (in accordance with General Condition No. 31), including a compensatory mitigation plan, habitat assessment, and extent of proposed-project impacts

to Eelgrass Beds are required for any activity permitted by NWP if it will take place within or adjacent to **Eelgrass Beds**.

C. Regional Conditions that apply to specific NWPs in the San Francisco District:

3. MAINTENANCE:

1. To the extent practicable, excavation equipment shall work from an upland site (e.g., from the top of the bank, the road bed of the bridge, or culverted road crossing) to minimize adding fill into waters of the U.S. If it is not practicable to work from an upland site, or if working from the upland site would cause more environmental damage than working in the stream channel, the excavation equipment can be located within the stream channel but it must minimize disturbance to the channel (other than the removal of accumulated sediments or debris). As part of the notification to the Corps (in accordance with General Condition No. 31), an explanation as to the need to place excavation equipment in waters of the U.S. is required, as well as a statement of any additional necessary fill (e.g., cofferdams, access road, fill below the OHW mark for a staging area, etc.).

2. If the activity is proposed in a special aquatic site, the notification to the Corps (in accordance with General Condition No. 31) shall include an explanation of why the special aquatic site cannot be avoided, and the measures to be taken to minimize impacts to the special aquatic site.

11. TEMPORARY RECREATIONAL STRUCTURES:

1. Notification to the Corps (in accordance with General Condition No. 31) is required if any temporary structures are proposed in wetlands or vegetated shallow water areas (e.g. in eelgrass beds). The notification shall include the type of habitat and areal extent affected by the structures.

12. UTILITY LINE ACTIVITIES:

1. Excess material removed from a trench, associated with utility line construction, shall be disposed of at an upland site away from any wetlands or other waters of the U.S. so as to prevent this material from being washed into aquatic areas.

2. This NWP permit does not authorize the construction of substation facilities. Utility line substations can usually be constructed in uplands.

13. BANK STABILIZATION:

1. Notification to the Corps (in accordance with General Condition No. 31) is required for all activities stabilizing greater than 300 linear feet of channel. Where the removal of wetland vegetation (including riparian wetland trees, shrubs and other plants) or submerged, rooted, aquatic plants over a cumulative area greater than 1/10 acre or 300 linear feet is proposed, the Corps shall be notified (in accordance with General Condition No. 31). The notification shall include the type of vegetation and extent (e.g., areal dimension or number of trees) of the proposed removal. The notification shall also address the effect of the bank stabilization on the stability of the opposite side of the streambank (if it is not part of the stabilization activity), and on adjacent property upstream and downstream of the activity.

2. This permit allows excavating a toe trench in waters of the U.S., and, if necessary, to use the material for backfill behind the stabilizing structure. Excess material is to be disposed of in a manner that will have only minimal impacts to the aquatic environment. The notification to the Corps (in accordance with General Condition No. 31) shall include location of the disposal site.

3. For man-made banks, roads, or levees damaged by storms or high flows, the one cubic yard per running foot limit is counted only for that additional fill which encroaches (extends) beyond the pre-flood or pre-storm shoreline condition of the waterway. It is not counted for

the fill that would be placed to reconstruct the original dimensions of the eroded, man-made shoreline.

4. For natural berms and banks, the one cubic yard per running foot limit applies to any added armoring.

5. To the maximum extent practicable, any new or additional bank stabilization must incorporate structures or modifications beneficial to fish and wildlife (e.g., soil bioengineering or biotechnical design, root wads, large woody debris, etc.). Where these structures or modifications are not used, the applicant shall demonstrate why they were not considered practicable.

14. LINEAR TRANSPORATION PROJECTS:

1. Notification to the Corps (in accordance with General Condition No. 31) is required for all projects filling greater than 300 linear feet of channel. For projects involving greater than 300 linear feet of bank stabilization, the project proponent shall address the effect of the bank stabilization on the stability of the opposite side of the streambank (if it is not part of the stabilization activity), and on adjacent property upstream and downstream of the activity.

2. This permit does not authorize construction of new airport runways and taxiways.

3. If this NWP has been used to authorize previous project segments within the same linear transportation project, justification must be provided demonstrating that the cumulative impacts of the proposed and previously authorized project segments do not result in more than minimal impacts to the aquatic system.

4. To the maximum extent practicable, any new or additional bank stabilization required for the crossing must incorporate structures or modifications beneficial to fish and wildlife (e.g., soil bioengineering or biotechnical design, root wads, large woody debris, etc.). Where these structures or modifications are not used, the applicant shall demonstrate why they were not considered practicable. Bottomless and embedded culverts are encouraged over traditional culvert stream crossings.

23. APPROVED CATEGORICAL EXCLUSIONS:

1. Use of this NWP requires notification to the Corps (in accordance with General Condition No. 31). The notification shall include the following:

   a. A copy of the Federal Categorical Exclusion (Cat/Ex) document signed by the appropriate federal agency. If the Cat/Ex is signed by a state or local agency representative instead of by a federal agency representative, then copies of all documentation authorizing alternative agency signature shall be provided.

   b. Written description of Corps authority (e.g., Section 10 of the Rivers and Harbors Act and/or Section 404 of the Clean Water Act.);

   c. a list of conditions described in the Cat/Ex and/or attachments outlining measures that must be taken prior to, during, or after project construction to minimize impacts to the aquatic environment;

   d. a copy of the jurisdictional delineation performed by qualified specialists showing the project limits and the location (delineated boundaries) of Corps jurisdiction within the overall project limits;

   e. map(s) showing the locations of potentially permanent and temporary project impacts to areas within Corps jurisdiction;

f. a clear and concise description of all project impacts including, but not necessarily limited to:
   1. quantification and description of permanent project impacts to areas within Corps jurisdiction,
   2. quantification and description of temporary impacts to areas within Corps jurisdiction, and
   3. linear extent of Corps jurisdiction affected by the project;

g. a general description of activities covered by the Cat/Ex that do not require Corps authorization but are connected or related to the activities in Corps jurisdiction;

h. a complete description of any proposed mitigation and/or restoration including, but not necessarily limited to, locations of any proposed planting, short- and long-term maintenance, proposed monitoring, success criteria and contingency plans;

i. written justification of how the project complies with the Nationwide Permit Program including less than minimal impact to the aquatic environment and compliance with the General Conditions.

j. For Federal Highway Administration (FHWA) Cat/Ex projects, the notification should describe how activities described in the Cat/Ex meet the description of the Cat/Ex project published in the August 28,1987 Federal Register part 771.117 (a)(b)(c) and (d) (Volume 52, No. 167) or any updated version published in the Federal Register.

2. Only activities specifically described in the Cat/Ex project description will be covered by the NWP 23 authorization. If other activities not described in the Cat/Ex project description will be performed (e.g., dewatering, slope protection, etc.), these activities must receive separate NWP authorizations.

3. Notification to the Corps (in accordance with General Condition 31) must include a copy of the signed Cat/Ex document and final agency determinations regarding compliance with Section 7 of the Endangered Species Act (ESA), Essential Fish Habitat (EFH) under the Magnussen-Stevens Act, and Section 106 of the National Historic Preservation Act.

27. Aquatic Habitat Restoration, Establishment, and Enhancement Activities

1. Notification to the Corps (in accordance with General Condition 31) must include documentation of a review of project impacts to demonstrate that at the conclusion of the work that the project would result in a net increase in aquatic function. Additionally, the documentation must include a review of project impacts on adjacent properties or structures and must also discuss cumulative impacts associated with the project.

29. Residential Developments:

1. When discharge of fill results in the replacement of wetlands or waters of the U.S. with impervious surfaces, to ensure that the authorized activity does not result in more than minimal degradation of water quality (in accordance with General Condition 25), the residential development shall incorporate low impact development concepts (e.g. native landscaping, bioretention and infiltration techniques, and constructed green spaces) to the extent practicable. A description of the low impact development concepts proposed in the project shall be included with the permit application. More information including low impact development concepts and definitions is available at the following website: http://www.epa.gov/owow/NPS/lid/.

2. Use of this NWP is prohibited within the San Francisco Bay diked baylands (undeveloped areas currently behind levees that are within the historic margin of the Bay. Diked historic baylands are those areas on the Nichols and Wright map (see figure 1) below the 5-foot

contour line, National Geodetic Vertical Datum (NGVD) (see Nichols, D.R., and N. A. Wright. 1971. Preliminary map of historic margins of marshland, San Francisco Bay, California. U.S. Geological Survey Open File Map)).

33. TEMPORARY CONSTRUCTION, ACCESS, AND DEWATERING:

1. Access roads shall be designed to be the minimum width necessary and shall be designed to minimize changes to the hydraulic flow characteristics of the stream and degradation of water quality (in accordance with General Conditions 9 and 25). The following Best Management Practices (BMPs) shall be followed to the maximum extent practicable to ensure that flow and circulation patterns of waters are not impaired and adverse effects on the aquatic environment will be kept to a minimum:

   a. The road shall be properly stabilized and maintained during and following construction to prevent erosion.

   b. Construction of the road fill shall occur in a manner that minimizes the encroachment of trucks, tractors, bulldozers, or other heavy equipment within waters of the United States (including adjacent wetlands) that lie outside the lateral boundaries of the fill itself.

2. Vegetative disturbance in the waters of the U.S. shall be kept to a minimum.

3. Borrow material shall be taken from upland sources whenever feasible.

4. Stream channelization is not authorized by this NWP.

35. MAINTENANCE DREDGING OF EXISTING BASINS:

1. Use of this NWP will require notification to the Corps (in accordance with General Condition No. 31). The notification information should be provided on the Consolidated Dredging-Dredged Material Reuse/Disposal Application. This application and instructions for its completion can be found on our web site at: http://www.spn.usace.army.mil/conops/applications.html. The information must include the location of the proposed upland disposal site. A jurisdictional delineation of the proposed upland disposal site prepared in accordance with the current method required by the Corps may also be required.

2. The U.S. Coast Guard will be notified by the permittee at least 14 days before dredging commences if the activity occurs in navigable waters of the U.S. (Section 10 waters).

3. The permittee will be required to provide the following information to the Corps:

   a. Dredge Operation Plan: Submit, for approval by this office, no earlier than 60 calendar days and no later than 20 calendar days before the proposed commencement of dredging, a plan which includes the following: **Corps file number,** a copy of the dredging contract or description of the work under which the contractor will do the permitted work; name and telephone numbers of the dredging contractor's representative on site; proposed dredging start and completion dates; quantity of material to be removed; dredging design depth and typical cross section including overdepth; and date of last dredging episode and design depth. The Dredge Operational Plan shall also provide the following information: The controls being established to insure that dredging operations occur within the limits defined by the basin or channel dimensions and typical channel section.

   b. Pre-Dredge Survey: Submit no earlier than 60 calendar days and no later than 20 calendar days before commencement of dredging, a survey with accuracy to one-tenth foot that delineates and labels the following: areas to be dredged with overdepth allowances; existing depths; estimated quantities to be dredged to the design depth; and

estimated quantities for overdepth dredging. **All surveys shall be signed by the permittee to certify their accuracy. Please include the Corps file number.**

c. Solid Debris Management Plan: Submit no earlier than 60 calendar days and no later than 20 calendar days before commencement of work, a plan which describes measures to ensure that solid debris generated during any dredging operation is retained and properly disposed in areas not under Corps jurisdiction. **At a minimum, the plan shall include the following: source and expected type of debris; debris retrieval method; Corps file number; disposal method and site; schedule of disposal operations; and debris containment method to be used, if floatable debris is involved. (Please note that failure to provide all of the information requested in a, b, and c above may result in delays to your project. When your Dredge Operation Plan has been approved, you will receive a written authorization to commence with your project.)**

d. Post-Dredge Survey: Submit, **within 30 days of the last disposal activity** ("last" is defined as that activity after which no further activity occurs for 15 calendar days), a survey with accuracy to one-tenth foot that delineates and labels the areas dredged and provides the dredged depths. **Also, include the Corps file number, actual dates of dredging commencement and completion, actual quantities dredged for the project to the design depth, and actual quantities of overdepth.** The permittee shall substantiate the total quantity dredged by including calculations used to determine the volume difference (in cubic yards) between the Pre- and Post-Dredge Surveys and **explain any variation in quantities greater than 15% beyond estimated quantities or dredging deeper than is permitted (design plus overdepth allowance). All surveys shall be accomplished by a licensed surveyor and signed by the permittee to certify their accuracy.** A copy of the post dredge survey should be sent to the National Ocean Service for chart updating:

NOAA/National Ocean Service,
Nautical Data Branch
N/CS26, SSMC3, Room 7230
1315 East-West Highway
Silver Spring, Maryland 20910-3282.

e. **The permittee or dredge contractor shall inform this office when: 1) a dredge episode actually commences, 2) when dredging is suspended (suspension is when the dredge contractor leaves the dredge site for more than 48 hours for reasons other than equipment maintenance), 3) when dredging is restarted, and 4) when dredging is complete. Each notification should include the Corps file number.** Details for submitting these notifications will be provided in the verification letter (to whom and how).

39. Commercial and Institutional Developments:

1. When discharge of fill results in the replacement of wetlands or waters of the U.S. with impervious surfaces, to ensure that the authorized activity does not result in more than minimal degradation of water quality (in accordance with General Condition 25), the commercial and institutional development shall incorporate low impact development concepts (e.g. native landscaping, bioretention and infiltration techniques, and constructed green spaces) to the extent practicable. A description of the low impact development concepts proposed in the project shall be included with the permit application. More information including low impact development concepts and definitions is available at the following website: http://www.epa.gov/owow/NPS/lid/.

2. Use of this NWP is prohibited within the San Francisco Bay diked baylands (undeveloped areas currently behind levees that are within the historic margin of the Bay. Diked historic baylands are those areas on the Nichols and Wright map (see figure 1) below the 5-foot

contour line, National Geodetic Vertical Datum (NGVD) (see Nichols, D.R., and N. A. Wright. 1971. Preliminary map of historic margins of marshland, San Francisco Bay, California. U.S. Geological Survey Open File Map)).

40. AGRICULTURAL ACTIVITIES:

1. This NWP does not authorize discharge of fill into the channel of a perennial or intermittent watercourse that could impede high flows. This limitation does not apply to watercourses that flow only when there is an irregular, extraordinary flood event.

41. RESHAPING EXISTING DRAINAGE DITCHES:

1. Compensatory mitigation may be required if the Corps determines there will be a detrimental impact to aquatic habitat.

2. Notification to the Corps (in accordance with General Condition 31) is required if the applicant proposes to re-grade, discharge, install channel lining, or redeposit fill material.

3. The notification to the Corps (in accordance with General Condition 31) shall include an explanation of the project's benefit to water quality and a statement demonstrating the need for the project.

42. RECREATIONAL FACILITIES:

1. If buildings are proposed to be built in waters of the United States, including wetlands, the applicant must demonstrate that there is no on-site practicable alternative that is less environmentally damaging as defined by the Section 404(b)(1) guidelines.

Enclosure 5

Permittee: California Department of Transportation, District 1

File Number: 2015-00074N

Certification of Compliance
for
Nationwide Permit

"I hereby certify that the work authorized by the above referenced File Number and all required mitigation have been completed in accordance with the terms and conditions of the Nationwide Permit."

PERMITTEE

DATE

Return to:

Carol Heidsiek
U.S. Army Corps of Engineers
San Francisco District
Eureka Field Office, CESPN-R-N-EK
601 Startare Drive, Box 14
Eureka, California 95501

INFORMATION HANDOUT

For Contract No. 01-0B3104
At DN-199-8.7, 21.7

Identified by
Project ID 0112000115

PERMITS

PLAC – Department of the Army, San Francisco District, United States Army Corps of Engineers

Nationwide Permit (NWP)
File No. 2015-00074N, dated April 14, 2015

WATER QUALITY

PLAC - California Regional Water Quality Control Board, North Coast Region

Water Quality Certification
WDID No. 1B15012WNDN
Dated March April 7, 2015

AGREEMENTS

PLAC - California Department of Fish and Wildlife, Region 1 - Northern

Streambed Alteration Agreement
Notification No. 1600-2015-0032-R1
Dated April 28, 2015

MATERIALS INFORMATION

Revised Foundation Report for Patrick Creek Slip Out No. 1 ERS dated March 16, 2015

Geotechnical Design Report for Patrick Creek Slip Out No. 2 ERS dated February 2, 2015

Naturally Occurring Asbestos Summary Report State Route 199, Post Miles 8.71 (Patrick Creek) and 24.67 (Middle Fork), dated February 18, 2015

April 7, 2015

In the Matter of
Water Quality Certification

for the

California Department of Transportation
State Route 199 Patrick Creek Slipouts Project
WDID No. 1B15012WNDN, ECM PIN CW-813004
Caltrans EA No. 01-0B310

APPLICANT:	California Department of Transportation
RECEIVING WATERS:	Middle Fork Smith River
HYDROLOGIC AREA:	Hydrologic Planning Area 103.30, Middle Fork Smith River
COUNTY:	Del Norte
FILE NAME:	CDOT Patrick Creek Slipouts Highway 199

FINDINGS BY THE EXECUTIVE OFFICER:

1. On February 9, 2015, the North Coast Regional Water Quality Control Board (Regional Water Board) received an application from the California Department of Transportation (Caltrans) requesting Federal Clean Water Act (CWA) section 401, Water Quality Certification (certification) for activities related to the State Route 199 Patrick Creek Slipouts Project (Project).

2. **Hydrologic Unit**: The proposed Project would cause impacts to the Middle Fork Smith River (Basin Plan Hydrologic Planning Area 103.30, Middle Fork Smith River).

3. **Public Notice:** The Regional Water Board provided public notice of the application pursuant to title 23, California Code of Regulations, section 3858 on March 11, 2015, and posted information describing the Project on the Regional Water Board's website. No comments were received.

4. **Project Description:** The proposed Project involves stabilization of slipouts along State Route 199 (SR 199) at post-miles 8.7 and 21.7 along the Middle Fork Smith River in Del Norte County.

   Post-mile 8.7 is approximately 1.5 miles north of the Myrtle Creek Bridge, between the towns of Hiouchi and Gasquet. Specific activities proposed at this location include:
   - Construction of an approximately 181-foot long cantilever retaining wall on the east side of the roadway;
   - Addition of a 4-foot road shoulder; and
   - Metal beam guardrail reconstruction.

   Caltrans anticipates approximately 0.19 acres of soil disturbance at this location.

   Post-mile 21.7 is approximately 1.1 miles south of the SR 199 Patrick Creek Bridge. Specific activities proposed at post-mile 21.7 include:
   - Construct an approximately 50-foot long gabion retaining wall;
   - Road shoulder reconstruction; and
   - Metal beam guardrail reconstruction.

   Caltrans anticipates approximately 0.04 acres of soil disturbance at this location.

5. **Construction Timing:** The Project is expected to take 120 days to complete between July 2015 and October 2016.

6. **Permanent Impacts:** Project implementation would not result in permanent impacts.

7. **Temporary Impacts:** Caltrans has determined that the proposed Project would result in approximately 0.23 acres (420 linear feet) of temporary impacts to jurisdictional waters as a result of construction access.

8. **Mitigation for Project Impacts**: Temporarily disturbed areas shall be stabilized and planted with local native plant species upon Project completion.

9. **Post-Construction Stormwater Treatment:** Project implementation would result in approximately 0.023 acres of new impervious surface area. Post-construction storm water treatment is not required.

10. **Utility Relocations:** Utility relocations affecting jurisdictional waters are not proposed for this Project.

11. **Other Agency Actions:** Caltrans has applied for coverage under U.S. Army Corps of Engineers Nationwide Permit No. 14, pursuant to the Clean Water Act, section 404. Caltrans has also submitted a section 1600 Notification of Lake or Streambed Alteration to the California Department of Fish and Wildlife.

12. **CEQA Compliance:** The Regional Water Board, as lead California Environmental Quality Act (CEQA) agency, has determined that the Project qualifies for a Categorical Exemption, (section 15301, *Existing Facilities*), and has filed a Notice of Exemption with the State Clearinghouse concurrent with issuance of the certification, pursuant to CEQA guidelines.

13. **Wild and Scenic River:** The Smith River is designated as a California Wild and Scenic River under the California Wild and Scenic Rivers Act (CWSRA) (CA Public Resources Code Section 5093.5 et seq.). The Middle Fork Smith River at the Project location is designated as Recreational under the CWSRA. This certification does not certify any activities that would affect either the free-flowing character or recreational values of the Middle Fork Smith River.

14. **Antidegradation Policy:** The federal antidegradation policy requires that state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution No. 68-16. Resolution No. 68-16 incorporates the federal antidegradation policy where the federal policy applies under federal law. Resolution No. 68-16 requires that existing quality of waters be maintained unless degradation is justified based on specific findings. The Regional Water Board's Basin Plan implements, and incorporates by reference, both the State and federal antidegradation policies. This certification is consistent with applicable federal and State antidegradation policies, as it does not authorize the discharge of increased concentrations of pollutants or increased volumes of treated wastewater, and does not otherwise authorize degradation of the waters affected by this Project.

15. This discharge is also regulated under State Water Resources Control Board Order No. 2003-0017-DWQ, "General Waste Discharge Requirements for Dredge and Fill Discharges That Have Received State Water Quality Certification," which requires compliance with all conditions of this certification. A weblink to this Order is included at the end of this certification.

Receiving Water:	Middle Fork Smith River (Basin Plan Hydrologic Planning Area 103.30, Middle Fork Smith River	
Filled and/or Excavated Areas:	Permanent – jurisdictional waters	none
	Temporary – jurisdictional waters	0.23 acres (420 linear feet)
Dredge Volume:	none	
Latitude/Longitude:	41.8119, -124.0448; 41.8716, -123.8505	

Accordingly, based on its independent review of the record, the Regional Water Board certifies that the State Route 199 Patrick Creek Slipouts Project (WDID No. 1B15012WNDN), as described in the application will comply with sections 301, 302, 303, 306 and 307 of the Clean Water Act, and with applicable provisions of state law, provided that Caltrans complies with the following terms and conditions:

All conditions of this certification apply to Caltrans (and all its employees) and all contractors (and their employees), sub-contractors (and their employees), and any other entity or agency that performs activities or work on the project (including the off-site mitigation lands) as related to this Water Quality Certification.

Project-Specific Conditions Requiring Reports

1. The Regional Water Board shall be notified in writing (e-mail is acceptable) at least five working days prior to commencement of ground disturbing activities for each construction season.

Project-Specific Conditions

2. Removal of trees 10" diameter-breast-height or greater is prohibited.

3. Disturbed areas shall be seeded with local native plant species and weed-free mulch shall be applied, immediately upon construction completion.

4. Disturbed soil areas shall be fully stabilized or otherwise protected in advance of any rain event.

5. Work within the wetted portion of the channel and below ordinary high water is prohibited.

Standard Conditions

6. Herbicides and other pesticides shall not be used within the Project limits. If Caltrans has a compelling case as to why pesticides should be used, then a request for pesticide use and a BMP plan may be submitted to the Regional Water Board staff for review and acceptance.

Standard Conditions (continued)

7. All Project activities and BMPs shall be implemented according to the submitted application package and the findings and conditions of this certification. Subsequent changes to the Project that could significantly impact water quality shall first be submitted to Regional Water Board staff for prior review, consideration, and written concurrence. If the Regional Water Board is not notified of an alteration to the Project that results in an impact to water quality, it will be considered a violation of this Order, and Caltrans may be subject to Regional Water Board enforcement actions.

8. All conditions required by this Order shall be included in the Contract Documents prepared by Caltrans for the contractor. In addition, Caltrans shall require compliance with all conditions included in this Order in the bid contract for this Project.

9. Caltrans is prohibited from discharging waste to waters of the State, unless explicitly authorized by this certification. For example, no debris, soil, silt, sand, bark, slash, sawdust, rubbish, cement or concrete or concrete washings, welding slag, oil or petroleum products, or other organic or earthen material from any construction or associated activity of whatever nature, shall be allowed to enter into State waters.

10. Except for temporary stockpiling of waste generated during demolition operations ("temporary" in this instance means generated and removed during the same working day), waste materials shall not be placed in a manner where the materials may be transported into waters of the State. Waste materials shall not be placed within 100 linear feet of State waters. Exceptions to the 100-foot limit may be granted on a case-by-case basis provided Caltrans first submits a proposal in writing that is found acceptable by Regional Water Board staff.

11. Caltrans is liable and responsible for the proper disposal, reuse, and/or recycling of all Project-generated waste in compliance with applicable State and Federal laws and regulations, and as described in Caltrans 2010 Standard Specifications 13-4.03D, Waste Management. Additionally, when handling, transporting, disposing, reusing, and/or recycling Project-generated waste, Caltrans and their contractors shall:

    i) Provide the Regional Water Board with a copy of the Solid Waste Disposal and Recycling Report prepared for Caltrans by the contractor per Caltrans 2010 Standard Specification 14-10.02A(1), Submittals. These reports shall be provided not later than January 31 for each year work is performed during the previous calendar year. A copy of the final Solid Waste Disposal and Recycling Report shall be submitted to the Regional Water Board within 30 days after being received by Caltrans from the contractor.

    ii) For waste other than solid waste, obtain evidence that waste has been appropriately disposed, reused, and/or recycled. Evidence shall include type and quantity of waste and may include, but not be limited to, property owner

Standard Conditions (continued)

agreements, permits, licenses, and environmental clearances. Evidence shall be provided to the Regional Water Board upon request; and

iii) For waste other than solid waste, ensure the Resident Engineer has given written permission for disposal, reuse, and/or recycling, prior to the actual disposal, reuse, and/or recycling.

12. Asphalt-concrete grindings shall not be placed in any location where they may, at any time, be directly exposed to surface waters or seasonally high ground water, except asphalt-concrete grindings may be re-used and incorporated into hot mix asphalt products or encapsulated within the roadway structural section.

13. Caltrans and their contractors shall comply with the activity restrictions detailed in Caltrans 2010 Standard Specifications 13-4.03C(1). In addition, fueling, maintenance, storage and staging of vehicles and equipment shall be prohibited within waters of the State (e.g., gravel bars, seeps, ephemeral streams) and riparian areas.

14. Fueling, maintenance, and/or staging of individual equipment types within waters of the State or riparian areas may be authorized if Caltrans first prepares a plan for review and approval by Regional Water Board staff that:

    i) Identifies the specific piece of machinery that may require fueling, maintenance, and/or staging within waters of the State or riparian areas;

    ii) Provides justification for the need to refuel, maintain, or stage within State waters or riparian areas. The justification shall describe why conducting the activity outside of jurisdictional waters is infeasible; and

    iii) Includes a narrative of specific BMPs that shall be employed to prevent discharges to State waters and riparian areas;

15. Caltrans shall not use leaking vehicles or equipment within State waters or riparian areas.

16. Only 100-percent biodegradable erosion and sediment control products that will not entrap or harm wildlife shall be used. Photodegradable synthetic products are not considered biodegradable. If Caltrans finds that erosion control netting or products have entrapped or harmed wildlife, personnel shall remove the netting or product and replace it with wildlife-friendly biodegradable products. This condition does not prohibit the use of plastic sheeting used in water diversion or dewatering activities. Caltrans shall request approval from the Regional Water Board if an exception to this requirement is needed for a specific location.

Standard Conditions (continued)

17. Work in flowing or standing surface waters, unless otherwise proposed in the Project description and approved by the Regional Water Board, is prohibited.

18. Non-stormwater discharges are prohibited unless the discharge is first approved by the Regional Water Board and in compliance with the Basin Plan. If dewatering of groundwater is necessary, then Caltrans shall use a method of water disposal other than disposal to ground or surface waters, such as land disposal. Groundwater disposed of to land shall not enter State waters. Alternatively, Caltrans may apply for coverage under the Low Threat Discharge Permit or an individual National Pollutant Discharge Elimination System (NPDES) Permit. If Caltrans applies for coverage under either of these permits, then discharge is prohibited until Caltrans has received notification of coverage under the respective permit.

19. Gravel bags used within State waters shall:

    i) Comply with Caltrans 2010 Standard Specifications sections 13-5.02G and 88-1.02F;

    ii) Be immediately removed and replaced if the bags have developed or are developing holes or tears; and

    iii) Be filled only with clean washed gravel.

    Exceptions to these criteria are subject to the review and acceptance of Regional Water Board staff;

20. This Order does not authorize drafting of surface waters.

21. Caltrans shall provide access to the Project construction site upon request by Regional Water Board staff.

22. Initial water pollution control training described in Caltrans 2010 Standard Specifications 13-1.01D(2), Training, shall apply to all Caltrans employees, contractors, and sub-contractors. Initial water pollution control training topics shall include Regional Water Board 401 certification and construction general permit requirements, identification of state waters and riparian areas, and violation avoidance and discharge reporting procedures.

23. Caltrans shall maintain logs of all Caltrans staff, contractors, and sub-contractors trained pursuant to the Caltrans 2010 Standard Specifications 13-1.01D(2). The logs shall include the names of trainees, training dates, and summary of the scope of training. Caltrans shall provide evidence of this documentation upon the request of the Regional Water Board.

Standard Conditions (continued)

24. If an unauthorized discharge to surface waters (including wetlands, rivers or streams) occurs, or any other threat to water quality arises as a result of Project implementation, the associated Project activities shall cease immediately until the threat to water quality is otherwise abated. If there is a discharge to State waters, the Regional Water Board shall be notified no more than 24 hours after the discharge occurs.

25. Uncured concrete shall not be exposed to State waters or surface waters that may discharge to State waters. Concrete sealants may be applied to the concrete surface where difficulty in excluding flow for a long period may occur. If concrete sealant is used, water shall be excluded from the site until the sealant is cured. If groundwater comes into contact with fresh concrete, it shall be prevented from flowing towards surface water.

26. Ground and surface water that has come into contact with fresh concrete, and all other wastewater, shall not be discharged to State waters or to a location where it may discharge to State waters; the wastewater shall be collected and re-used or disposed of in a manner approved by the Regional Water Board.

27. All imported fill material shall be clean and free of pollutants. All fill material shall be imported from a source that has the appropriate environmental clearances and permits. The reuse of low-level contaminated solids as fill on-site shall be performed in accordance with all State and Federal policies and established guidelines and must be submitted to the Regional Water Board for review and consideration of acceptance.

28. Caltrans shall provide a copy of this certification and State Water Resources Control Board (SWRCB) Order No. 2003-0017-DWQ (web link referenced below) to the contractor and all subcontractors conducting the work, and require that copies remain in their possession at the work site. Caltrans shall be responsible for work conducted by its contractor and subcontractors.

29. The validity of this certification is conditioned upon total payment of any fee required under title 23, California Code of Regulations, section 3833. The total Application fee is $2,700. The Regional Water Board received $6,770 from Caltrans on February 9, 2015.

30. This certification will be subject to annual billing during the construction phase ("Annual Active Discharge Fee") and during the monitoring phase of the Project ("Annual Post Discharge Monitoring Fee"), per the current fee schedule, which can be found on our website: http://www.swrcb.ca.gov/northcoast/water_issues/programs/water_quality_certification.shtml. These fees will be automatically invoiced to Caltrans.

Standard Conditions (continued)

31. Caltrans shall notify the Regional Water Board upon Project construction completion to request termination of the Annual Active Discharge Fee and to receive a "Notice of Completion of Discharges Letter." If the Project is subject to the Annual Post Discharge Monitoring Fee, then Caltrans shall also notify the Regional Water Board at the end of the monitoring period to request termination of the fee and receive a "Notice of Project Complete Letter." Caltrans may be required to submit completion reports at the end of each of these phases. Regional Water Board staff may request site visits at the end of each Project phase to confirm Project status and compliance with this Order.

32. This certification action is not intended and shall not be construed to apply to any discharge from any activity involving a hydroelectric facility requiring a Federal Energy Regulatory Commission (FERC) license or an amendment to a FERC license unless the pertinent certification application was filed pursuant to title 23, California Code of Regulations, section 3855, subdivision (b) and the application specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought.

33. In the event of any violation or threatened violation of the conditions of this certification, the violation or threatened violation shall be subject to any remedies, penalties, process or sanctions as provided for under applicable state or federal law. For the purposes of section 401(d) of the Clean Water Act, the applicability of any state law authorizing remedies, penalties, process or sanctions for the violation or threatened violation constitutes a limitation necessary to assure compliance with the water quality standards and other pertinent requirements incorporated into this certification. In response to a suspected violation of any condition of this certification, the State Water Board may require the holder of any federal permit or license subject to this certification to furnish, under penalty of perjury, any technical or monitoring reports the State Water Board deems appropriate, provided that the burden, including costs, of the reports shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports. In response to any violation of the conditions of this certification, the Regional Water Board may add to or modify the conditions of this certification as appropriate to ensure compliance.

34. This certification action is subject to modification or revocation upon administrative or judicial review, including review and amendment pursuant to Water Code section 13330 and title 23, California Code of Regulations, section 3867.

35. This certification is not transferable. In the event of any change in control of ownership of land presently owned or controlled by Caltrans, Caltrans shall notify the successor-in-interest of the existence of this certification by letter and shall forward a copy of the letter to the Regional Water Board. The successor-in-interest must send to the Regional Water Board Executive Officer a written request for transfer of this

Standard Conditions (continued)

certification to discharge dredged or fill material under this Order. The request must contain the following:

i) Requesting entity's full legal name;

ii) The state of incorporation, if a corporation;

iii) The address and phone number of contact person; and

iv) A description of any changes to the project or confirmation that the successor-in-interest intends to implement the project as described in this Order.

36. Except as may be modified by any preceding conditions, all certification actions are contingent on:

    i) The discharge being limited, and all proposed revegetation, avoidance, minimization, and mitigation measures being completed, in strict compliance with Caltrans's project description and CEQA documentation, as approved herein;

    ii) Caltrans shall construct the project in accordance with the project described in the application and the findings above; and

    iii) Compliance with all applicable water quality requirements and water quality control plans including the requirements of the Water Quality Control Plan for the North Coast Region (Basin Plan), and amendments thereto.

    Any change in the design or implementation of the project that would have a significant or material effect on the findings, conclusions, or conditions of this Order must be submitted to the Executive Officer of the Regional Water Board for prior review, consideration, and written concurrence. If the Regional Water Board is not notified of a significant alteration to the project, it will be considered a violation of this Order, and Caltrans may be subject to Regional Water Board enforcement actions.

37. The authorization of this certification for any dredge and fill activities expires five years from the date of this Order. Conditions and monitoring requirements outlined in this Order are not subject to the expiration date outlined above, and remain in full effect and are enforceable.

Condition 1 includes a reporting requirement. Any requirement for a report made as a condition to this certification is a formal requirement pursuant to California Water Code section 13267, and failure or refusal to provide, or falsification of such required report is subject to civil liability as described in California Water Code, Section 13268.

The Regional Water Board may add to or modify the conditions of this Order, as appropriate, to implement any new or revised water quality standards and implementation plans adopted or approved pursuant to the Porter-Cologne Water Quality Control Act or section 303 of the Clean Water Act.

Please contact our staff Environmental Scientist, Brendan Thompson at (707) 576-2699, or via e-mail, at Brendan.Thompson@waterboards.ca.gov, if you have any questions.

_____

Matthias St. John
Executive Officer

150407_BJT_dp_CDOT_DN199_PatrickCreekSlipouts_401

Web link: State Water Resources Control Board Order No. 2003-0017 -DWQ, General Waste Discharge Requirements for Dredge and Fill Discharges That Have Received State Water Quality Certification can be found at: http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2003/wqo/wqo2003-0017.pdf

Original to: Mr. Kevin Church, Caltrans, District 1, 1656 Union Street, Eureka, CA 95501
Kevin.Church@dot.ca.gov

cc: Robert Meade, Caltrans robert.meade@dot.ca.gov
Holly Costa, U.S. Army Corps of Engineers holly.n.costa@usace.army.mil
JoAnn Dunn, California Department of Fish and Wildlife JoAnn.Dunn@wildlife.ca.gov
State Water Resources Control Board stateboard401@waterboards.ca.gov
Environmental Protection Agency, Region 9 R9-WTR8-Mailbox@epa.gov
Gail Popham, Caltrans Gail.Popham@dot.ca.gov

STATE WATER RESOURCES CONTROL BOARD

WATER QUALITY ORDER NO. 2003 - 0017 - DWQ

STATEWIDE GENERAL WASTE DISCHARGE REQUIREMENTS FOR DREDGED OR FILL DISCHARGES THAT HAVE RECEIVED STATE WATER QUALITY CERTIFICATION (GENERAL WDRs)

The State Water Resources Control Board (SWRCB) finds that:

1. Discharges eligible for coverage under these General WDRs are discharges of dredged or fill material that have received State Water Quality Certification (Certification) pursuant to federal Clean Water Act (CWA) section 401.

2. Discharges of dredged or fill material are commonly associated with port development, stream channelization, utility crossing land development, transportation water resource, and flood control projects. Other activities, such as land clearing, may also involve discharges of dredged or fill materials (e.g., soil) into waters of the United States.

3. CWA section 404 establishes a permit program under which the U.S. Army Corps of Engineers (ACOE) regulates the discharge of dredged or fill material into waters of the United States.

4. CWA section 401 requires every applicant for a federal permit or license for an activity that may result in a discharge of pollutants to a water of the United States (including permits under section 404) to obtain Certification that the proposed activity will comply with State water quality standards. In California, Certifications are issued by the Regional Water Quality Control Boards (RWQCB) or for multi-Region discharges, the SWRCB, in accordance with the requirements of California Code of Regulations (CCR) section 3830 et seq. The SWRCB's water quality regulations do not authorize the SWRCB or RWQCBs to waive certification, and therefore, these General WDRs do not apply to any discharge authorized by federal license or permit that was issued based on a determination by the issuing agency that certification has been waived. Certifications are issued by the RWQCB or SWRCB before the ACOE may issue CWA section 404 permits. Any conditions set forth in a Certification become conditions of the federal permit or license if and when it is ultimately issued.

5. Article 4, of Chapter 4 of Division 7 of the California Water Code (CWC), commencing with section 13260(a), requires that any person discharging or proposing to discharge waste, other than to a community sewer system, that could affect the quality of the waters of the State,[1] file a report of waste discharge (ROWD). Pursuant to Article 4, the RWQCBs are required to prescribe waste discharge requirements (WDRs) for any proposed or existing discharge unless WDRs are waived pursuant to CWC section 13269. These General WDRs fulfill the requirements of Article 4 for proposed dredge or fill discharges to waters of the United States that are regulated under the State's CWA section 401 authority.

[1] "Waters of the State" as defined in CWC Section 13050(e)

6. These General WDRs require compliance with all conditions of Certification orders to ensure that water quality standards are met.

7. The U.S. Supreme Court decision of *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers*, 531 U.S. 159 (2001) (the *SWANCC* decision) called into question the extent to which certain "isolated" waters are subject to federal jurisdiction. The SWRCB believes that a Certification is a valid and enforceable order of the SWRCB or RWQCBs irrespective of whether the water body in question is subsequently determined not to be federally jurisdictional. Nonetheless, it is the intent of the SWRCB that all Certification conditions be incorporated into these General WDRs and enforceable hereunder even if the federal permit is subsequently deemed invalid because the water is not deemed subject to federal jurisdiction.

8. The beneficial uses for the waters of the State include, but are not limited to, domestic and municipal supply, agricultural and industrial supply, power generation, recreation, aesthetic enjoyment, navigation, and preservation and enhancement of fish, wildlife, and other aquatic resources.

9. Projects covered by these General WDRs shall be assessed a fee pursuant to Title 23, CCR section 3833.

10. These General WDRs are exempt from the California Environmental Quality Act (CEQA) because (a) they are not a "project" within the meaning of CEQA, since a "project" results in a direct or indirect physical change in the environment (Title 14, CCR section 15378); and (b) the term "project" does not mean each separate governmental approval (Title 14, CCR section 15378(c)). These WDRs do not authorize any specific project. They recognize that dredge and fill discharges that need a federal license or permit must be regulated under CWA section 401 Certification, pursuant to CWA section 401 and Title 23, CCR section 3855, et seq. Certification and issuance of waste discharge requirements are overlapping regulatory processes, which are both administered by the SWRCB and RWQCBs. Each project subject to Certification requires independent compliance with CEQA and is regulated through the Certification process in the context of its specific characteristics. Any effects on the environment will therefore be as a result of the certification process, not from these General WDRs. (Title 14, CCR section 15061(b)(3)).

11. Potential dischargers and other known interested parties have been notified of the intent to adopt these General WDRs by public hearing notice.

12. All comments pertaining to the proposed discharges have been heard and considered at the November 4, 2003 SWRCB Workshop Session.

13. The RWQCBs retain discretion to impose individual or General WDRs or waivers of WDRs in lieu of these General WDRs whenever they deem it appropriate. Furthermore, these General WDRs are not intended to supersede any existing WDRs or waivers of WDRs issued by a RWQCB.

IT IS HEREBY ORDERED that WDRs are issued to all persons proposing to discharge dredged or fill material to waters of the United States where such discharge is also subject to the water quality certification requirements of CWA section 401 of the federal Clean Water Act (Title 33 United States Code section 1341), and such certification has been issued by the applicable RWQCB or the SWRCB, unless the applicable RWQCB notifies the applicant that its discharge will be regulated through WDRs or waivers of WDRs issued by the RWQCB. In order to meet the provisions contained in Division 7 of CWC and regulations adopted thereunder, dischargers shall comply with the following:

1. Dischargers shall implement all the terms and conditions of the applicable CWA section 401 Certification issued for the discharge. This provision shall apply irrespective of whether the federal license or permit for which the Certification was obtained is subsequently deemed invalid because the water body subject to the discharge has been deemed outside of federal jurisdiction.

2. Dischargers are prohibited from discharging dredged of fill material to waters of the United States without first obtaining Certification from the applicable RWQCB or SWRCB.

CERTIFICATION

The undersigned, Clerk to the Board, does hereby certify that the foregoing is a full, true, and correct copy of an order duly and regularly adopted at a meeting of the State Water Resources Control Board held on November 19, 2003.

AYE: Arthur G. Baggett, Jr.
Peter S. Silva
Richard Katz
Gary M. Carlton
Nancy H. Sutley

NO: None.

ABSENT: None.

ABSTAIN: None.

Debbie Irvin
Clerk to the Board

INFORMATION HANDOUT

For Contract No. 01-0B3104
At DN-199-8.7, 21.7

Identified by
Project ID 0112000115

PERMITS

PLAC – Department of the Army, San Francisco District, United States Army Corps of Engineers

Nationwide Permit (NWP)
File No. 2015-00074N, dated April 14, 2015

WATER QUALITY

PLAC - California Regional Water Quality Control Board, North Coast Region

Water Quality Certification
WDID No. 1B15012WNDN
Dated March April 7, 2015

AGREEMENTS

PLAC - California Department of Fish and Wildlife, Region 1 - Northern

Streambed Alteration Agreement
Notification No. 1600-2015-0032-R1
Dated April 28, 2015

MATERIALS INFORMATION

Revised Foundation Report for Patrick Creek Slip Out No. 1 ERS dated March 16, 2015

Geotechnical Design Report for Patrick Creek Slip Out No. 2 ERS dated February 2, 2015

Naturally Occurring Asbestos Summary Report State Route 199, Post Miles 8.71 (Patrick Creek) and 24.67 (Middle Fork), dated February 18, 2015

State of California
Department of Fish and Wildlife

Memorandum

Date: April 2, 2015

To: Mr. Kevin Church
Project Manager
California Department of Transportation
1656 Union Street
Eureka, California 95501
kevin.church@dot.ca.gov

From: Mr. Gordon Leppig
Senior Environmental Scientist (Supervisor)
California Department of Fish and Wildlife
619 Second Street
Eureka, California 95501

Subject: Lake or Streambed Alteration Notification No. 1600-2015-0032-R1, Patrick Creek Slipouts, U.S. 199 Post Miles 8.7 and 21.7, Del Norte County

Enclosed are the conditions of the Department of Fish and Wildlife (CDFW) regarding your project on U.S. Route 199 proposed in Notification No. 1600-2015-0032-R1. The conditions are in agreement form, naming the California Department of Transportation and you, jointly, as the project Permittee. Please be sure to carefully read the conditions in the document. If the conditions are acceptable to you, please sign two copies of the agreement and return them to the Northern Region of CDFW at the following address:

Streambed Alterations
California Department of Fish and Wildlife
619 Second Street
Eureka, California 95501

If the conditions are not acceptable to you, please contact my office within 30 calendar days by telephoning Senior Environmental Scientist (Specialist) JoAnn Dunn at (707) 441-2076 to further refine these measures, or by immediately writing to me at 619 Second Street, Eureka, California 95501.

Once received by CDFW, the draft agreement will be reviewed for California Environmental Quality Act compliance. When compliance has been determined, the agreement will be signed by the Habitat Conservation Program Manager or his representative. A signed original copy of the agreement will be returned to you by mail.

If you have any questions regarding this memorandum or the related agreement, please contact Ms. Dunn at the above phone number or address.

Attachment

Ec (w Attachment): gail.popham@dot.ca.gov

CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE
REGION 1 - NORTHERN
619 SECOND STREET
EUREKA, CALIFORNIA, 95501

STREAMBED ALTERATION AGREEMENT
NOTIFICATION NO. 1600-2015-0032-R1
SMITH RIVER AND MIDDLE FORK SMITH RIVER

CALIFORNIA DEPARTMENT OF TRANSPORTATION
PATRICK CREEK SLIPOUTS
EA 01-0B310; U.S. 199 PMS 8.7 AND 21.7, DEL NORTE COUNTY

This Streambed Alteration Agreement (Agreement) is entered into between the California Department of Fish and Wildlife (CDFW) and the California Department of Transportation (Caltrans) (Permittee) as represented by Mr. Kevin Church.

RECITALS

WHEREAS, pursuant to Fish and Game Code (FGC) Section 1602, Permittee notified CDFW on February 6, 2015, that Permittee intends to complete the project described herein.

WHEREAS, pursuant to FGC Section 1603, CDFW has determined that the project could substantially adversely affect existing fish or wildlife resources and has included measures in the Agreement necessary to protect those resources.

WHEREAS, Permittee has reviewed the Agreement and accepts its terms and conditions, including the measures to protect fish and wildlife resources.

NOW THEREFORE, Permittee agrees to complete the project in accordance with the Agreement.

PROJECT LOCATION

The project is situated on Middle Fork Smith River, tributary to Smith River, and Smith River, tributary to Pacific Ocean. The project is located in the County of Del Norte; State of California; Section 3, Township 16 North, Range 3 East; and Section 16, Township 17 North, Range 3 East, Humboldt Base and Meridian; Hiouchi and Shelly Creek Ridge U.S. Geological Survey 7.5-minute quadrangles.

PROJECT DESCRIPTION

Caltrans is proposing to stabilize stream banks in two geologically-unstable locations on U.S. Route 199 along the Smith River and the Middle Fork of the Smith River. Along the Smith River at Post Mile (PM) 8.7, Caltrans proposes to increase the shoulder width to 4 feet and construct an approximate 181-foot-long soldier pile retaining wall with a

metal beam guard rail (MBGR). Along the Middle Fork Smith River at PM 21.7, Caltrans proposes to construct an approximate 50-foot-long rock gabion retaining structure and reconstruct sections of the road shoulder and install a MBGR.

PROJECT IMPACTS

Existing fish or wildlife resources the project could substantially adversely affect include: **Chinook salmon (*Oncorhynchus tshawytscha*), coho salmon (*O. kisutch*), steelhead (*O. mykiss*), coastal cutthroat trout (*O. clarki clarki*)**, other non-game and game fishes, amphibians, reptiles, aquatic invertebrates, mammals, nesting resident and migratory birds, and other aquatic and riparian species.

The adverse effects the project could have on the fish or wildlife resources identified above include:

- direct and/or indirect mortality of fish, amphibians and other aquatic species;
- injury to downstream fish and benthic invertebrates and spawning and/or rearing habitats through sediment transport and deposition and/or spills of deleterious materials;
- changes in channel form and contour of bed, bank, or channel;
- temporary increase of sediment and turbidity;
- temporary loss of riparian habitat;
- potential mortality of nesting birds, eggs or young through vegetation removal and construction disturbance; and
- colonization by non-native and/or invasive plants.

MEASURES TO PROTECT FISH AND WILDLIFE RESOURCES

1. Administrative Measures

Permittee shall meet each administrative requirement described below.

1.1 Documentation at Project Site. Permittee shall make the Agreement, any extensions and amendments to the Agreement, and all related notification materials, readily available at the project site at all times and shall be presented to CDFW personnel, or personnel from another state, federal, or local agency upon request.

1.2 Providing Agreement to Persons at Project Site. Permittee shall provide copies of the Agreement and any extensions and amendments to the Agreement to all persons in responsible positions who will be working on the project at the project site on behalf of Permittee, including but not limited to contractors, subcontractors, inspectors, and monitors.

1.3 Notification of Conflicting Provisions. Permittee shall notify CDFW if Permittee determines or learns that a provision in the Agreement might conflict with a provision imposed on the project by another local, state, or federal agency. In that event, CDFW shall contact Permittee to resolve any conflict.

1.4 Project Site Entry. Permittee agrees that CDFW personnel may enter the project site at any time to verify compliance with the Agreement.

1.5 Permittee shall notify CDFW within the 7-day period preceding the beginning of work permitted by this Agreement. Information to be disclosed shall include Agreement number, and the anticipated start date. Subsequently, the Permittee shall notify CDFW no later than 7 days after the project is fully completed. Notification shall be faxed to CDFW at (707) 441-2021, Attn: JoAnn Dunn, Senior Environmental Scientist (Specialist), or via e-mail at joann.dunn@wildlife.ca.gov.

2. Avoidance and Minimization Measures

To avoid or minimize adverse impacts to fish and other aquatic species, Permittee shall implement each measure listed below.

2.1 Except where otherwise stipulated in this Agreement, all work shall be in accordance with Permittee's notification, including all maps, plans, photographs, drawings, and all other supporting documents submitted as part of the notification and received as of February 6, 2015. The Permittee shall use the mitigative features described in the notification and supporting documents, unless such features are modified by the provisions of this Agreement, in which case the activities shall be conducted as described in this Agreement.

2.2 All work within the bed, bank or channel shall be confined to the period June 1 to October 15 of any year in which this Agreement is valid, unless consultation with CDFW provides for a site-specific seasonal work period variance. Any variance approved shall also require the Permittee comply with Measures 2.4a) – 2.4d).

2.3 As feasible, vegetation removal from the work area shall take place between September 15 and February 28 to avoid impacts to nesting birds. If vegetation must be removed during the nesting season (March 1 to September 14) nest surveys shall be conducted prior to vegetation clearing.

2.4 Fall and winter vegetation removal during the non-nesting season, and any other work proposed outside of a June 1 – October 15 work window, shall adhere to all measures in this Agreement and a) – d) below.

a) Prior to any work at a site outside June 1 – October 15, the Permittee shall stock-pile erosion control materials at the site. Erosion control materials shall be applied in sufficient quantity immediately upon completion of work and prior to the onset of precipitation capable of generating runoff with re-application as

needed to avoid any visible increase in surface erosion or turbidity in any receiving streams.

b) Vegetation limbing and felling shall minimize soil disturbance using effective Best Management Practices (BMPs) such as hand-cutting. Ground-disturbing work shall only be performed when soils are sufficiently dry so that sediment is not discharged into streams.

c) The Permittee shall install erosion control measures within 24 hours of CDFW directing the Permittee to do so.

d) When a 7-day National Weather Service forecast of rain for Hiouchi at http://www.weather.gov includes a minimum of 5 consecutive days with any chance of precipitation, 3 consecutive days with a 30% or greater chance of precipitation, or 2 consecutive days of 50% or greater chance of precipitation, the Permittee shall refrain from undertaking further vegetation removal work prior to the rain event. Permittee shall not resume vegetation removal work until the soil surface is dry, defined as a surface which is no wetter than that found during normal dust abatement watering treatments, and treatment of vegetation does not cause deformation of the soil surface.

2.5 Removal of existing vegetation shall not exceed the minimum necessary to complete operations. Once vegetation is trimmed or removed, repeated hand-cutting of re-growth during the nesting season is permitted as needed to avoid re-growth that may attract nesting birds.

2.6 The Permittee shall protect migratory birds, their occupied nests, and their eggs as specified by the Federal Migratory Bird Treaty Act (16 U.S.C. 703 et seq.), Title 50 Code of Federal Regulations part 10, and California Fish and Game Code (FGC) sections 3503 and 3513. Nesting or attempted nesting by migratory birds within the project area is anticipated to occur between, but not limited to, March 1 and August 15.

2.7 If project work is proposed between March 1 and September 1, the Permittee shall conduct a database and ground-based nest search for new osprey nests to check the status of viable historic and active osprey nests within 0.5 miles of U.S. 199 PM markers 8.7 and 21.7 prior to operations each year. If osprey are found nesting in or within 0.5 miles of the project area at the time of construction, the Permittee shall consult with CDFW to determine if additional avoidance or minimization measures may be needed.

2.8 If sightings or den sites of ring-tailed cat (*Bassariscus astutus*), Pacific fisher (*Martes pennanti*), or marten (*Martes americana*) are encountered in the course of activities at project sites, the Permittee shall immediately notify and consult with CDFW to identify any measures that may be needed to avoid take or minimize adverse impacts to these species.

2.9 No fill material shall be placed within a stream except as specified in this Agreement. No work shall be conducted below the ordinary high water (OHW) mark or the wetted channel of the Smith River or the Middle Fork Smith River.

2.10 Adequate and effective erosion and siltation control measures shall be used at all times to prevent sediment or turbid or silt-laden water from entering streams. Where needed, the Permittee shall use native vegetation or other treatments including native slash, jute netting, straw wattles, and geotextiles to protect and stabilize soils. Geotextiles, fiber rolls, and other erosion control treatments shall not contain plastic mesh netting that can entrap or harm wildlife. Photodegradable synthetic products are not considered biodegradable.

2.11 All bare mineral soil exposed in conjunction with construction, deconstruction, maintenance or repair shall be treated for effective erosion prior to the onset of precipitation capable of generating run-off or the end of the yearly work period, whichever comes first. Erosion control measures shall include the proper installation and maintenance of approved BMPs and may include applications of seed, weed-free straw, compost, fiber, commercial fertilizer, stabilizing emulsion and mulch, or combinations thereof. Non-vegetative methods such as jute mat, coir mat, wood chip mat, straw mat or wattle, straw mulch, native duff (leaves, needles, fine twigs, etc.), or lopped native slash may be used as erosion control to protect and stabilize soils. Straw mulching shall utilize at least 2 to 4 inches of clean straw (such as rice, barley, wheat) or weed-free straw. Seeding shall use regional native seed or non-native seed that is known not to persist or spread [e.g., barley (*Hordeum vulgare*), or wheat (*Triticum aestivum*)]. No known invasive grass seed such as annual or perennial ryegrass (*Lolium multiflorum or L. perenne*, which are now referred to as *Festuca perennis*), shall be used in erosion control or revegetation seed mixes.

2.12 Encroachments and associated structures, fills, and other exposed soils shall be armored as needed to protect fill, abutments, and the stream channel and banks from erosion.

2.13 The Permittee shall provide site maintenance during the life of the Agreement and the life of the structure, including, but not limited to, re-applying erosion control to minimize surface erosion and ensuring stream banks remain sufficiently functional, armored and/or stable. Modifications, repairs, and improvements to erosion control measures shall be made as needed following storm events to prevent sediment from entering the Smith River or Middle Fork of the Smith River.

2.14 All construction-related materials and equipment shall be stored in designated staging areas outside of the floodplain.

2.15 Refueling of machinery or heavy equipment, or adding or draining oil, lubricants, coolants, or hydraulic fluids shall not take place within stream bed, channel, and bank. All such fluids and containers shall be disposed of properly off-site. Heavy

equipment used or stored within stream bed, channel, and bank shall use drip pans or other devices (i.e., absorbent blankets, sheet barriers or other materials) as needed to prevent soil and water contamination.

2.16 Any equipment or vehicles driven and/or operated adjacent to the stream channel shall be checked and maintained daily to prevent leaks of materials that could be deleterious to aquatic and terrestrial life or riparian habitat.

2.17 Stationary equipment such as motors, pumps, generators, and welders that contain deleterious materials and are located adjacent to the stream channel shall be positioned over drip pans.

2.18 The Permittee shall install the necessary containment structures to control the placement of wet concrete and to prevent it from entering into the channel outside of those structures. Water that has been in contact with uncured concrete shall be contained in a concrete washout facility, Baker tank, or other impervious container and shall not be discharged to surface or ground waters.

2.19 At all times when the Permittee is pouring or working with wet concrete there shall be a designated monitor to inspect the containment structures and ensure that no concrete or other debris enters into the Smith River or Middle Fork of the Smith River outside of those structures.

2.20 To prevent the release of materials that may be toxic to fish and other aquatic species, poured concrete shall be isolated from surface water and from subsurface water to the maximum extent feasible, and allowed to dry/cure for a minimum of 30 days. As an alternative, the Responsible Party shall monitor the pH of water that has come into contact with the poured concrete. If this water has a pH of 9.0 or greater, the water shall be pumped to tanker truck or to a lined off-channel basin and allowed to evaporate or be transported to an appropriate facility for disposal. During the pH monitoring period, all water that has come in contact with poured concrete shall be isolated and not allowed to flow downslope or otherwise come in contact with fish and other aquatic resources. The water shall be retested until pH values become less than 9.0. Once this has been determined, the area no longer needs to be isolated and water may be allowed to flow downstream. Results of pH monitoring shall be made available to CDFW upon request.

2.21 All construction activities performed in or near the stream shall have absorbent materials designated for spill containment and clean-up activities on-site for use in an accidental spill. In the event of a discharge, the Permittee shall immediately notify the California Emergency Management Agency State Warning Center at 1-800-852-7550 and immediately initiate clean-up activities. CDFW shall be notified by the Permittee within 24 hours and consulted regarding clean-up procedures.

2.22 Except as otherwise stipulated in this Agreement, no debris, soil, silt, sand, bark, slash, sawdust, rubbish, cement or concrete or washings thereof, asphalt, paint or

other coating material, oil or petroleum products or other organic or earthen material from any construction, or associated activity of whatever nature shall be allowed to enter into, or placed where it may be washed by rainfall or runoff into, waters of the State. When operations are completed, any excess materials or debris shall be removed from the work area. No rubbish shall be deposited within 150 feet of the high water mark of any stream or lake.

CONTACT INFORMATION

Written communication that Permittee or CDFW submits to the other shall be delivered to the address below unless Permittee or CDFW specifies otherwise:

To Permittee:

Mr. Kevin Church
Caltrans
1656 Union St.
Eureka, CA 95501
Email: kevin.church@dot.ca.gov

To CDFW:

California Department of Fish and Wildlife
Northern Region
619 Second Street
Eureka, California 95501
Attn: Lake or Streambed Alteration Program
Notification #1600-2015-0032-R1
Fax: (707) 441-2021

LIABILITY

Permittee shall be solely liable for any violations of the Agreement, whether committed by Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents or contractors and subcontractors, to complete the project or any activity related to it that the Agreement authorizes.

This Agreement does not constitute CDFW's endorsement of, or require Permittee to proceed with the project. The decision to proceed with the project is Permittee's alone.

SUSPENSION AND REVOCATION

CDFW may suspend or revoke in its entirety the Agreement if it determines that Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, is not in compliance with the Agreement.

Before CDFW suspends or revokes the Agreement, it shall provide Permittee written notice by certified or registered mail that it intends to suspend or revoke. The notice shall state the reason(s) for the proposed suspension or revocation, provide Permittee an opportunity to correct any deficiency before CDFW suspends or revokes the Agreement, and include instructions to Permittee, if necessary, including but not limited to a directive to immediately cease the specific activity or activities that caused CDFW to issue the notice.

ENFORCEMENT

Nothing in the Agreement precludes CDFW from pursuing an enforcement action against Permittee instead of, or in addition to, suspending or revoking the Agreement.

Nothing in the Agreement limits or otherwise affects CDFW's enforcement authority or that of its enforcement personnel.

OTHER LEGAL OBLIGATIONS

This Agreement does not relieve Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, from obtaining any other permits or authorizations that might be required under other federal, state, or local laws or regulations before beginning the project or an activity related to it.

This Agreement does not relieve Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, from complying with other applicable statutes in the FGC including, but not limited to, FGC sections 2050 *et seq.* (threatened and endangered species), 3503 (bird nests and eggs), 3503.5 (birds of prey), 5650 (water pollution), 5652 (refuse disposal into water), 5901 (fish passage), 5937 (sufficient water for fish), and 5948 (obstruction of stream).

Nothing in the Agreement authorizes Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, to trespass.

AMENDMENT

CDFW may amend the Agreement at any time during its term if CDFW determines the amendment is necessary to protect an existing fish or wildlife resource.

Permittee may amend the Agreement at any time during its term, provided the amendment is mutually agreed to in writing by CDFW and Permittee. To request an amendment, Permittee shall submit to CDFW a completed CDFW "Request to Amend Lake or Streambed Alteration" form and include with the completed form payment of the

corresponding amendment fee identified in CDFW's current fee schedule (see Calif. Code Regs., Title 14, Section 699.5).

TRANSFER AND ASSIGNMENT

This Agreement may not be transferred or assigned to another entity, and any purported transfer or assignment of the Agreement to another entity shall not be valid or effective, unless the transfer or assignment is requested by Permittee in writing, as specified below, and thereafter CDFW approves the transfer or assignment in writing.

The transfer or assignment of the Agreement to another entity shall constitute a minor amendment, and therefore to request a transfer or assignment, Permittee shall submit to CDFW a completed CDFW "Request to Amend Lake or Streambed Alteration" form and include with the completed form payment of the minor amendment fee identified in CDFW's current fee schedule (see Calif. Code Regs., Title 14, Section 699.5).

EXTENSIONS

In accordance with FGC Section 1605(b), Permittee may request one extension of the Agreement, provided the request is made prior to the expiration of the Agreement's term. To request an extension, Permittee shall submit to CDFW a completed CDFW "Request to Extend Lake or Streambed Alteration" form and include with the completed form payment of the extension fee identified in CDFW's current fee schedule (see Calif. Code Regs., Title 14, Section 699.5). CDFW shall process the extension request in accordance with FGC Section 1605(b) through (e).

If Permittee fails to submit a request to extend the Agreement prior to its expiration, Permittee must submit a new notification and notification fee before beginning or continuing the project the Agreement covers (FGC Section 1605(f)).

EFFECTIVE DATE

The Agreement becomes effective on the date of CDFW's signature, which shall be: 1) after Permittee's signature; 2) after CDFW complies with all applicable requirements under the California Environmental Quality Act (CEQA); and 3) after payment of the applicable FGC Section 711.4 filing fee listed at http://www.dfg.ca.gov/habcon/ceqa/ceqa_changes.html.

TERM

This Agreement shall expire **three years** from the effective date, unless it is terminated or extended before then. All provisions in the Agreement shall remain in force throughout its term. Permittee shall remain responsible for implementing any provisions specified herein to protect fish and wildlife resources after the Agreement expires or is terminated, as FGC Section 1605(a)(2) requires.

AUTHORITY

If the person signing the Agreement (signatory) is doing so as a representative of Permittee, the signatory hereby acknowledges that he or she is doing so on Permittee's behalf and represents and warrants that he or she has the authority to legally bind Permittee to the provisions herein.

AUTHORIZATION

This Agreement authorizes only the project described herein. If Permittee begins or completes a project different from the project the Agreement authorizes, Permittee may be subject to civil or criminal prosecution for failing to notify CDFW in accordance with FGC Section 1602.

CONCURRENCE

The undersigned accepts and agrees to comply with all provisions contained herein.

FOR CALIFORNIA DEPT. OF TRANSPORTATION

Kevin Church — April 20, 2015
Kevin Church — Date
Project Manager

FOR CALIFORNIA DEPT. OF FISH AND WILDLIFE

4/28/15
Gordon Leppig — Date
Senior Environmental Scientist (Supervisor)

Prepared by: JoAnn Dunn, Senior Environmental Scientist (Specialist), April 2, 2015

INFORMATION HANDOUT

For Contract No. 01-0B3104
At DN-199-8.7, 21.7

Identified by
Project ID 0112000115

PERMITS

PLAC – Department of the Army, San Francisco District, United States Army Corps of Engineers

Nationwide Permit (NWP)
File No. 2015-00074N, dated April 14, 2015

WATER QUALITY

PLAC - California Regional Water Quality Control Board, North Coast Region

Water Quality Certification
WDID No. 1B15012WNDN
Dated March April 7, 2015

AGREEMENTS

PLAC - California Department of Fish and Wildlife, Region 1 - Northern

Streambed Alteration Agreement
Notification No. 1600-2015-0032-R1
Dated April 28, 2015

MATERIALS INFORMATION

Revised Foundation Report for Patrick Creek Slip Out No. 1 ERS dated March 16, 2015

Geotechnical Design Report for Patrick Creek Slip Out No. 2 ERS dated February 2, 2015

Naturally Occurring Asbestos Summary Report State Route 199, Post Miles 8.71 (Patrick Creek) and 24.67 (Middle Fork), dated February 18, 2015

M e m o r a n d u m

Serious Drought!
Help Save Water!

To: JEFF SIMS
CHIEF
Design Branch 1
Office of Bridge Design North & Central
Division of Engineering Services

Date: March 16, 2015

File: 01-DN-199- PM 8.71/8.74
Patrick Creek Slip Out #1 ERS
Storm Damage Repair
EA# 01-0B3101
EFIS 0112000115

Attn: Kevin Harper
Project Engineer

From: **DEPARTMENT OF TRANSPORTATION**
DIVISION OF ENGINEERING SERVICES
Geotechnical Services – MS 5
Office of Geotechnical Design – North

Subject: Revised Foundation Report for Patrick Creek Slip Out No. 1 ERS

INTRODUCTION

Per the request of the Office of Bridge Design North and Central (OBDNC), the Office of Geotechnical Design-North (OGDN) has prepared this Foundation Report (FR) for an Earth Retaining System (ERS) proposed to be constructed between approximately PM 8.71 and 8.74 on Route 199, in northern Del Norte County, California (see vicinity map, Plate No. 1). The ERS is being proposed to stabilize the roadway where two existing "brow logs" that support roadway shoulder are noted to be failing or significantly undermined; a ERS repair was scoped in the Damage Assessment Form (DAF) No. CEP-CT101-007-0. This report supersedes the FR for Patrick Creek Slip Out No. 1 ERS dated September 4, 2014.

PROJECT DESCRIPTION/SCOPE OF WORK

According to the "Planning Study" sheet (Reference No. 32) provided by OBDNC on March 25, 2014, the proposed ERS was originally to be located 22 feet right (easterly) from the Route 199 centerline. A revised wall "Elevation" provided by OBDNC on July 9, 2014 (see Plate No. 4) reduced the 22 feet wall offset to 18 feet (see wall layout line, "RW LOL", Plate No. 2). The ERS is to extend approximately 176 feet and have a retained height (height of lagging) generally around 10 feet and stepping down on the ends, with the exception of a approximately 25 feet long portion of the ERS, which will extend to a maximum height of roughly 14 feet. The ERS is proposed to be composed of steel (I-beam) soldier piles placed in 2.5 feet diameter holes (filled with concrete) spaced at roughly 8.0 feet centers. The ERS facing will consist of timber lagging overlain with a concrete facing. A single row of ground anchors is proposed on the top portion of the wall and the anchors will be installed sloped downwards at 20 degrees from the horizontal. A "Type 80 (Mod)" concrete barrier and a 7.25 feet wide concrete slab is proposed atop the ERS.

The scope of our work included performing a literature and historical review in an effort to obtain geotechnical and geological data pertaining to the subject site that could provide insight into the design and construction of the proposed retaining wall. The historical review included searching the Caltrans intranet As Built records from the Document Retrieval System (DRS); it should be noted that the As Built plans utilized to complete this report were absent of a vertical datum in reference to specified elevations. Historical geotechnical data was obtained from the Digital Archive of Geotechnical Data (GeoDOG) database. OGDN has evaluated the site conditions and geology based on a review of the obtained As-Built Plans, geologic literature and mapping, aerial photographs, multiple site visits and a subsurface investigation program performed during August 2013. The subsurface investigation program (see below) was composed of the drilling of exploratory borings to characterize the subsurface conditions and collect samples. The subsurface exploration program also included a seismic survey of subsurface conditions performed by the Geophysics and Geology Branch (GGB) of the Office of Geotechnical Support, Geotechnical Services. Laboratory testing of selected samples obtained from the site investigation program was performed, followed by engineering analysis and preparation of this report summarizing our findings, conclusions and recommendations. The foundation recommendations elevations provided in this report are based on the NAVD88 (vertical datum) and the horizontal coordinates are based on the NAD83 (horizontal datum).

EXISTING SITE CONDITIONS AND BACKGROUND

According to as built plans, the existing roadway facility was originally constructed around 1925. As-built plans dated 1925 (Reference No. 1) indicate the project site was constructed on a cut (excavated) section of the roadway, and up to roughly 15 feet of vertical cut was performed at the site on the roadway centerline. “Brow logs” (log-shaped members placed on the brow, or crest, of a stable slope) appear to have been added to support shallow fill to gain shoulder width (see Site Plan, Plate No. 2). Below the roadway and brow logs, the ground surface slopes at roughly 1H:1V, but is as steep as roughly 0.7:1V at some locations. The slope below the roadway extends down to the Middle Fork Smith River at a vertical distance of approximately 60 feet below the roadway level. The slope below the roadway supports vegetation consisting of trees and brush, except where soils have eroded or bedrock out-crops exist. Within the proposed wall limits, two brow logs exist. The first brow log (No. 1) spans between two out-crops (see “Site Plan”, Plate No. 2 and Photo Nos. 5 thru 8, Appendix A) and has been undermined by soil erosion. The second brow log (No. 2) appears to have shifted and sank, allowing fill supporting the shoulder to erode and distress cracking in the asphalt concrete (AC) to form and encroach upon the right edge-of-travel-way (see Photo Nos. 1 thru 4). Caltrans Maintenance personnel reported that brow log No. 2 became dislodge when an errant vehicle was being towed up the slope. Northwesterly of the brow logs, on the opposite (uphill) side of the roadway, cut slopes are present and appear to be sloped as steep as roughly ½H:1V to near vertical, and extend as high as roughly 20 feet (see Photo Nos. 5 and 9). The cut slopes are composed of hard formational rock sparsely covered with volunteer vegetation; the cut slopes did not exhibit evidence of significant slope instability. During the August 2013 site exploration, groundwater was observed seeping from the rock fractures on the cut slopes at several locations. Surface drainage upslope of the proposed wall location is carried across the road by a culvert to the

northeast at PM 8.76. The embankment on the downhill side at the culvert was noted to be exhibiting a stress crack on the ground surface (see Plate No. 2, Photo Nos. 10 and 11) suggesting the fill prism encompassing the culvert is likely moving as a result of saturation of the materials.

2011 DAF

A Damage Assessment Form (DAF No. CEP-CT101-007-0, attached in Appendix B) associated with the March 2011 storm event (Disaster No. CA11-3) was developed for the site and approval was obtained for a Permanent Restoration Federal Emergency Relief project. The DAF identified the proposed repair to consist of constructing a 60 feet long (1,800 square feet) gravity wall and two "bio-engineered" (vegetated RSP) buttresses. The DAF diagramed the gravity wall to be located at brow log No. 2, and a RSP buttress near brow log No. 1 and at the scarp around the culvert at PM 8.76. Cracking of AC pavement can be seen to extend into the travel way in photos included in the DAF.

Brow Log Failure History on DN 199

Historically on Route 199 in Del Norte County, soldier pile/rock dowel walls have been utilized to repair failing brow logs. In 1991, a H-pile/rock anchor wall system was utilized to repair a brow log failure at DN 199 PM 22.4 (see Reference Nos. 4 thru 6). In 2000, a brow log failure occurred on DN 199 at PM 27.3. The Office of Roadway Geotechnical Engineering – North concluded that gravity walls (such as MSE and Type 1 retaining walls) were not the suitable repair strategy due to the narrow highway and relatively steep sloping ground at the toe, and a soldier pile/dead-man anchor wall was proposed (Reference No. 8). Subsequently (in 2008), two micropile/rock anchor walls were constructed at the PM 27.3 site (Wall No. 01-E0003, Location 2, Walls 2A and 2B, Reference Nos. 10, 11 and 14).

ERS Type Revised

In August of 2013 the subsurface exploration program was completed. On October 17, 2013, OGDN emailed Project Development Team (PDT) members with a proposal to change the proposed wall type from a gravity wall to a soldier pile/rock dowel wall. The depth of materials competent to support a gravity structure suggested that adequate global stability could not be achieved. By January of 2014, OBDNC was assigned to the project, and by March 15, 2014, District 3 Design E-3 requested that the wall be lengthen to the south to include the brow log No. 1 slope area. Later on March 25, 2014 OBDNC provided a "Typical Section" for the project ERS depicting steel H-beam soldier piles restrained with ground anchors (Reference No. 32).

FIELD INVESTIGATION AND TESTING PROGRAM

The OGDN subsurface exploration program was performed on August 7 and 8, 2013 utilizing two Christensen CS 2000, truck-mounted drilling rigs. Two borings were performed at the locations shown on Plate No. 2. The borings were accomplished utilizing mud rotary drilling advanced with a self-casing wire-line drill system. Samples of materials were collected at various depths by advancing a "Standard Penetration Test" ("SPT") sampler. The respective

drill rig Hammer Energy Ratio (ERi) for SPT sampling were obtained from the Caltrans Office of Geotechnical Support, Foundation Testing Branch (Reference No. 29). Samples were also obtained by core drilling. Core samples were stored in core boxes and returned to the Transportation Laboratory for reference and testing. A summary of information regarding the borings drilled during the subsurface investigation program is included in Table No. 1.

The subsurface exploration program also included a seismic survey (Reference No. 30) of subsurface conditions performed by the GGB on August 8, 2013; the results of the seismic survey were provided in a report attached as Appendix C. The survey included employment of a downhole-to-surface tomographic seismic survey at one of the two boreholes (see Plate No. 2). A tomographic seismic survey was attempted on the second borehole, however, GGB reported that the slope surface conditions did not accommodate adequate connectivity for data acquisition.

Table No. 1- Summary of the 2013 Subsurface Investigation for the proposed Patrick Creek Slip Out No. 1 ERS

Boring No.	Completion Date	Drill Rig Type	Hammer Type	Hammer Efficiency (%)	Ground Surface Elevation (ft)	Boring Depth (ft)
RC-10-001	8/7/13	CS 2000 (#6831)	Auto	85	243.8	44.5
RC-10-002	8/7/13	CS 2000 (#6832)	Auto	92	244.9	35.0

LABORATORY TESTING PROGRAM

Laboratory testing was performed on selected samples of the subsurface materials obtained from the 2013 subsurface investigation. Tests were performed to determine the corrosion and engineering properties of the subsurface materials. Testing of soils included particle-size analysis (ASTM D422) and corrosion testing (CAL Test Methods 417, 422 and 643). The corrosion test results for the soil samples are in the “Corrosion Evaluation” section of this report. Strength testing on selected rock samples consisted of unconfined compressive strength tests (ASTM D 7012) and point load index tests (ASTM D 5731). The results of the laboratory testing included as Appendix D. The locations of samples which were laboratory tested can be found on the Log of Test Borings (LOTBs).

It should be noted that upon reviewing the photo associated with unconfined compressive strength (Qu) testing, it appears that the sample possibly failed along healed fractures, indicating the reported Qu could be lower than the true intact rock Qu. Point Load strength indices were converted to Uniaxial Compressive Strengths (UCS) utilizing correlations offered in ASTM D5731-08. A majority of the point load tests were noted to have been performed parallel to a “plane of weakness”; thus, with the rock specimens exhibiting anisotropic strength, the actual intact rock UCS of tested specimens should be considered to be significantly greater in value.

SITE GEOLOGY AND SUBSURFACE CONDITIONS

Regional Geologic Setting

The project is located within the northern section of the Klamath Mountains geomorphic province. Within the province there are a number of major terranes, several of which are subdivided into two or more subterranes. The terranes were accreted in a westward succession, are generally younger from east to west, and are penetratively deformed and bordered by major faults. The project site is located in the Smith River subterrane of the Western Klamath terrane. The Western Klamath terrane is the youngest in the Klamath Mountains and became attached to North America approximately 150 million years ago during the Mesozoic Era. USGS MIS Map I-2148 (scale = 1:500,000 Reference No. 7) indicates the project site to be underlain by gabbro (Jjgb) of the Jurassic Josephine Ophiolite.

Site Geology

The "Geologic Map of the Weed Quadrangle, California" (scale = 1:250,000, Reference No. 3), indicates the site to be underlain by gabbro, diorite and related rocks (Jgd). The "Geologic Map of the Smith River area, northwestern California" (approximate scale = 1:125,000, see Plate No. 3a) describes the Josephine Ophiolite materials at the site as "gabbro, including some ultramafic rock, commonly layered". The map also depicts "igneous layering" near the site striking north westerly to westerly and dipping 54 and 60 degrees. Due to vegetation covering the nearby cut slopes, the strike and dip of the local layering could not be determined. Nevertheless, the relatively good performance of the local cut slopes suggest that the dip and direction of layering and/or fracturing is favorable to the south easterly-facing slope at the project site.

Naturally Occurring Asbestos (NOA)

The project site is located in the Western Klamath terrane (see "Regional Geologic Setting) where the primary source of NOA is the ultramafic rocks of the Josephine Ophiolite formation which contain serpentine and serpentinized peridotite. A review of Caltrans and CGS/USGS published NOA maps (Reference Nos. 12 and 23, respectively), revealed that the project site is not located in an area designated "likely" to contain NOA. The Caltrans NOA database indicates the closest section of NOA materials in Del Norte County to be on Route 199 between PM 11.56 and 11.77 (see Table No. 2, below). However, United States Forest Service (USFS) NOA mapping does depict the project location in an area "more likely to contain" NOA (see Reference No. 15). Serpentinized fracture surfaces were noted on the peridotite (ultramafic) rock cores retrieved during our subsurface exploration at the site.

Table No. 2- Summary of Locations of NOA on Caltrans Roadways in Del Norte County (from the Caltrans NOA database)

County	Route	Length	Postmile	NOA I.D.	Geologic Formation*
DN	197	0.6	R0.1 /R0.7	WEE-112-R	Jum
DN	199	0.2	11.56 / 11.77	WEE-120-R	Qls
DN	199	0.1	12.36 / 12.46	WEE-124-R	Jum
DN	199	0.5	12.96 / 13.468	WEE-123-R	Qls
DN	199	0.3	21.44 / 21.74	WEE-112-R	Jum
DN	199	0.6	6.26 / 6.86	WEE-112-R	Jum
DN	199	6.5	T14.76 / 19.84	WEE-112-R	Jum

Subsurface Conditions

During the 2013 subsurface investigation, two borings (RC-13-001 and RC-13-002) were drilled in the existing northbound lane of Route 199.

Borings RC-13-001 and RC-13-002 were placed through the Route 199 pavement structural section encountered as approximately 11 to 15 inches of asphalt concrete overlying approximately 5 to 7.5 inches of aggregate base material. The pavement section is underlain by 11 to 17 feet of fill materials composed of medium dense to very dense silty gravel with sand, clayey gravel with sand and poorly graded gravel with clay, sand and cobbles. The fill materials overlie formational metamorphic rock consisting of metagraywacke and peridotite. The formational rock was generally encountered as slightly weathered to fresh with some decomposed layers, moderately hard to very hard with some soft and very soft zones, and intensely fractured and moderately fractured. Fracture surfaces within the peridotite were noted to be serpentinized. Zones of the rock included very hard and hard quartz veins and calcite veins. The metamorphic rock was encountered to the maximum depth explored of 44.5 feet below the ground surface (elevation199.3 feet).

More detailed descriptions of the subsurface conditions encountered are presented on the Log of Test Borings (LOTBs) provided on the project plans.

Groundwater

During the 2013 subsurface investigation, drill mud was utilized during drilling of the borings at the site; therefore, groundwater measurements in the boreholes could be influenced by the presence of the drill fluids. The boreholes of RC-13-001 and RC-13-002 were left open for a period of roughly 20 hours prior to measuring water in the hole (just prior to the GGB Seismic survey). Groundwater was measured in the open borehole of RC-13-001 at a depth of 20.3 feet (approximate elevation of 223.5), and in the open borehole of RC-13-002 at a depth of 22.6 (approximate elevation of 222.3). The boreholes were observed to be fully collapsed following detonation of the energy sources within the boreholes associated with the GGB Seismic Refraction Survey, and therefore, subsequent water measurements could not be made.

Seeps were observed flowing from cut slopes and water was measured in the boreholes during the driest period of the year. Groundwater surface elevations are subject to seasonal fluctuations and may occur at higher or lower elevations depending on rainfall patterns and water levels in the river.

CORROSION EVALUATION

Soil samples were collected from Boring RC-13-002 drilled during the 2013 subsurface investigations. The Office of Testing and Technology Service, Corrosion Technology Branch tested the composite samples for corrosive potential. The Corrosion Technology Branch considers a site to be corrosive if one or more of the following conditions exist for the representative soil samples: chloride concentration is 550 ppm or greater, sulfate concentration is 2000 ppm or greater, or the pH is 5.5 or less. The minimum resistivity serves as an indicator for the possible presence of soluble salts and is not used to define a site as being corrosive. It is the practice of the Corrosion Technology Branch that if the minimum resistivity of the sample is greater than 1000 ohm-cm, the sample is considered to be non-corrosive and testing to determine the sulfate and chloride content is not performed.

The results of the laboratory tests determined that the composite samples were considered to be non-corrosive. Refer to Table No. 3 for a summary of the corrosion test results included in Appendix D.

Table No. 3 - Corrosion Test Summary of the Composite Samples for the Patrick Creek Slip Out #1 Earth Retaining System

SIC Corrosion Number	Boring Number	Sample Depth (ft)	pH	Minimum Resistivity (ohm-cm)	Chloride Content (ppm)	Sulfate Content (ppm)
C701662	RC-13-002	10-16.5	7.4	11020	N/A	N/A

FAULTING/GEOLOGIC HAZARDS

According to Memo To Designers 20-10, fault rupture analyses will be performed for structures where any portion of the structure falls within an Alquist-Priolo Earthquake Fault Zone (EFZ) or where any portion of a structure falls within 1,000 ft of an “unzoned” fault (not in an EFZ) that is Holocene or younger in age (ruptured in last 11,700 years). A review of the available EFZ maps (Reference No. 20), indicates that the proposed structure location is not in an EFZ. Fault data provide on the “2010 Fault Activity Map of California” (Reference No. 17), and the USGS Google Earth KML files/Fault Database indicates the closest “active” (late-Quaternary in age/movement in the past 700,000 years) fault is the Late Quaternary Bald Mountain-Big Lagoon fault zone (USGS Fault No. 787) located 16.4 miles southwesterly. Therefore, a fault rupture analyses does not appear necessary. The fault mapping indicates numerous inactive and pre-Quaternary (older than 1.6 million years) faults nearby the project site. Local fault locations

(within the Smith River subterrane of the Western Klamath terrane) can be seen on the "Geology Map" of Plate No. 3a. An inactive fault appears to come within 1,000 feet of the site, but the surface trace terminates on the opposite (easterly) side of the Middle Fork of the Smith River.

Based on the conditions encountered in the site subsurface exploration, the potential for soil liquefaction does not exist for the subsurface materials anticipated to support the proposed ERS.

SEISMIC RECOMMENDATIONS

Based on the 2013 subsurface investigation, a V_{S30} (the weighted average shear wave velocity for the top 100 feet of foundation materials) of 2,500 feet per second is considered to be applicable for the site seismic evaluation.

According to the Caltrans ARS Online Tool (Version 2.3.06), the nearest active fault for the site (and the controlling deterministic fault) is the "Big Lagoon-Bald Mountain" fault (Caltrans Fault I.D.: 9) with a rupture plane distance of approximately 12.5 miles southwesterly, and a MMax of 7.5.

Based on the "Methodology for Developing Design Response Spectrum for Use in Seismic Design Recommendations, November 2012", (Reference No. 25) the design ground motion is the highest spectral acceleration as obtained by any of, or a combination of, the following three methods for the Patrick Creek Slip Out No. 1 ERS.

1) Statewide minimum deterministic spectrum requirements with MMax of 6.5, vertical strike-slip event with a rupture distance of 7.5 miles.
2) The nearest active controlling fault as shown on the ARS Online Tool (Version 2.3.06).
3) The USGS 5% Probability of Exceedance in 50 years (975 years return period).

Utilizing the assigned V_{S30}, the governing ARS for the project site is based on method "3" above. Accordingly, the ARS Online tool generated a design ARS with a spectral acceleration of 0.35g at a period (T) of 0 seconds. This value corresponds to the peak horizontal ground acceleration (PHGA) to be utilized for design.

FOUNDATION RECOMMENDATIONS

Recommendations are being provided for the non-gravity cantilever soldier pile ERS. The passive resistance recommendations below are based on data collected at locations that are significantly offset to the RW LOL. Therefore, OGDN recommends utilizing anchors (either ground anchors or rock anchors) to provide an added benefit by applying a secondary restraining element against top of pile rotation where passive pressure in front of the wall proves to be deficient. Geotechnical engineering parameters are being provided for active and passive lateral earth pressure application in accordance with Memo To Designers (MTD) 5-12 "Earth Retaining Structures Using Ground Anchors", the 2012 AASHTO LRFD Bridge Design Specifications (BDS), and the Caltrans BDS Section 5 "Retaining Walls (Reference Nos. 28, 24 and 9, respectively).

Lateral Loading

For determining the lateral earth pressures acting behind the wall, the geotechnical engineering parameters presented on Plate No. 4 may be utilized in the partitioned zones as shown. At the wall layout line it is anticipated that formational rock (similar to the rock exposed on the steep cut slopes opposite the road) will be present within and below the Material No. 1 zone. According to Figure 3.11.5.6-2 of the 2012 AASHTO LRFD BDS (see also Figure 5.5.5.6-2 of the Caltrans BDS Section 5), the application of the active earth pressure within rock materials can be omitted. Therefore, it is acceptable to omit the active earth pressure within and below the Material No. 1 zone.

Lateral Resistance

OBDNC has requested engineering parameters to derive the passive lateral earth pressure for lateral resistance based on equivalent Mohr-Coulomb strength parameters. OBDNC has taken the responsibility of deriving the design passive lateral earth pressure coefficient (Kp) which is highly influenced by the presence of the downward sloping ground in front of the wall below the design grade, and the downward slope of the top of stronger formational rock materials (Vs > 1,500 m/s) as depicted on Plate No. 2 of the GGB seismic survey (Appendix C); both of these conditions can have an effect on the appropriate slope of β to be utilized in design. It should be noted that significant variations in β can be derived base on individual interpretation of the ground surface topography and formational rock surface below the design grade, and care should be taken when applying the provided parameters.

Based on the provided plans, a berm (or horizontal bench) a least 5 feet wide will be maintained at least 2 feet above the ERS design grade (i.e. bottom of lagging). Below the design grade, passive lateral resistance may be applied for the effective width of the pile based on the generalized parameters provided on Plate No. 4, attached. Due to the locality of the Middle Fork Smith River, the buoyant unit weight may be appropriate for design for conditions of design high water in the river. In an effort to capture the strength of the formational rock materials beneath the site, at the “RW LOL”, the materials in and below the Material No. 1 zone can be treated as “cohesive soils”. Utilizing the provided cohesive strength requires an embedment of the pile of at least 10 feet below the elevations presented at the top of Material No. 1. The minimum embedment serves to provide effective development of the passive resistance within rock formation materials.

Ground Anchors/Rock Anchors

Ground anchors installed at an angle of 20 degrees from the horizontal and between 4 and 8 feet below the top of the wall should have the minimum un-bonded lengths provided in Table No. 4 below. The minimum embedment length for rock anchors can be provided upon request.

Table No. 4 – Recommended Minimum Un-bonded Lengths

Station ("A1" Line)	102+04 to 102+64	102+64 to 103+80
Un-bonded Length (feet)	20	30

ERS Backfill/Drainage

The parameters provided above are based on the assumption that an adequate drainage system will be provided to prevent the development of hydrostatic pressure behind the wall.

CONSTRUCTION CONSIDERATIONS

1. Based on the findings in the "Naturally Occurring Asbestos (NOA)" section above, OGDN concludes that the project site has a potential for the presence of serpentinized ultramafic rocks, and therefore, there is a potential for the presence of NOA. In consideration for the potential presence of NOA materials, the North Region Hazardous Material Officer should be contacted as the project likely has the need for Airborne Toxic Control Measures (ATCMs) during construction.

2. The contractor may encounter difficulties during drilling for anchors and piles due to the presence of zones of fresh, hard and very hard rock encountered in subsurface exploration. The zones of hard and very hard rock will likely necessitate the use of specialty equipment (down-hole hammers, core barrels, etc.) to drill to the required pile depths and anchor lengths.

3. The self-casing wire-line drill system drilling techniques utilized during the subsurface investigations make it difficult to directly assess borehole stability and the potential for sidewall collapse. Caving conditions are likely to occur in the soil and fill materials overlying formational rock at the site that contain gravel, cobbles and likely boulders. In addition, the fractured formational rock is conducive to rock wedge failures into unsupported holes excavated for anchor and pile installations; hence, casing would likely be needed to keep the holes open prior to placing grout and concrete.

4. Seeps were observed flowing from cut slopes and water was measured in the boreholes during the driest period of the year. During construction, it can be expected that significant groundwater at the site could be encountered either perched atop rock materials, or flowing through rock fractures. In some cases, confined (under pressure) groundwater aquifers could be encountered while drilling even during the driest periods. Hence, the pile and anchor installations may require dewatering or the placement of concrete and grout in wet conditions. If the contractor opts to place the concrete and grout in wet conditions, the specifications should require the displacement of water via a closed system using a concrete pump or a tremie tube to place concrete and grout at the bottom of the hole. In cases where drilling encounters confined aquifers, the contractor should expect water seepage out of the hole at the surface for a significant period of time.

5. Due to the fractured nature of the underlying rock materials, the potential for excess loss of concrete and grout in voids and fractures should be expected. Controlling measures, such as the use of a "grout sock", could potentially reduce grout loss.

6. The contractor should be prepared to maintain the stability of the existing slopes during the removal of the existing brow logs.

SUPPLEMENTAL PROJECT INFORMATION

Section 2-1.06B "Supplemental Project Information" of the 2010 Standard Specifications addresses supplemental information ("as specified in the special provisions") made available to Bidders by Caltrans. The following items are being provided for insertion into the table in Section 2-1.06B of the project special provisions.

Included in the Information Handout:

- Foundation Report for Patrick Creek Slip Out ERS dated September 4, 2014.

Included with the project plans:

- Log of Test Borings (Patrick Creek Slipout Wall).

Available for inspection at the Transportation Laboratory:

- Core Samples.

CLOSURE

The recommendations included in this Foundation Report are based on project information that has been provided by the Office of Bridge Design North, Design Branch 1. Any questions regarding the above recommendations should be directed to the attention of Jacqueline A Martin (916) 227-1051 or Mark Hagy (916) 227-1077, Geotechnical Services, Office of Geotechnical Design-North.

PROFESSIONAL GEOLOGIST
JACQUELINE A. MARTIN
No. 8705
STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER
MARK C. HAGY
No. GE 2838
GEOTECHNICAL
STATE OF CALIFORNIA

JACQUELINE A MARTIN, P.G.
Engineering Geologist
Office of Geotechnical Design-North

MARK HAGY, P.E., G.E.
Transportation Engineer
Office of Geotechnical Design-North

cc: OGDN
DPM – Kevin Church
John Huang

Attachments:

REFERENCES

PLATES

Plate No. 1	Vicinity Map
Plate No. 2	Site Plan
Plate No. 3a and 3b	Geology Map
Plate No. 4	ERS Design Parameters

APPENDICES

Appendix A	Photographs
Appendix B	2011 DAF
Appendix C	Seismic Refraction Survey
Appendix D	Laboratory Tests Results

REFERENCES

1. Caltrans (1925) Untitled As Built Plans, sheets 20 and 21 of 35 sheets, approved date November 2, 1925, Division 1; Del Norte County, Route 1, Section C, Federal Aid Project No. 156-A.

2. GSA (1984) "Figure 3. Geologic Map of the Smith River area, northwestern California", from "The Josephine Ophiolite, Northwestern California", Gregory D. Harper, Geologic Society of America Bulletin v.95,, p.1009-1026, September 1984.

3. CDMG (1987) "Geologic Map of California the Weed Quadrangle, California",: California Division of Mines and Geology (California Geological Survey), Regional Geologic Map Series, Map No. 4A, complied by Wagner, D.L. and Saucedo, G. L, Scale 1:250,000.

4. Caltrans (1990) "Foundation Recommendations", Failing Brow Log, 01-DN-199-22.4, EA 01-228401, Caltrans D3 District Materials Engineer memo dated February 2, 1990.

5. Caltrans (1990) "Foundation Investigation", Solder Beam Wall 01-SBWL, 01-DN-199-PM 22.4, EA 01-228401, Caltrans Office of Transportation Materials and Research, memo dated July 12, 1990.

6. Caltrans (1991) "Project Plans for Construction on State Highway in Del Norte County near Gasquet at 0.3 mile north of Patrick Creek Bridge", 01-DN-199 PM 22.4, Contract No. 01-228404, As Built Plans date completed 1991, 12 sheets,

7. USGS (1994) "Geologic map of the Klamath Mountains, California and Oregon:", U.S. Geological Survey Miscellaneous Investigations Series Map I-2148, compiled by Irwin, W.P., scale 1:500,000.

8. Caltrans (2000) "Brow Log Reconnaissance", 01-DN-199-PM 27.3, EA 01-378303, Caltrans Division of Structure Foundations, memo dated December 18, 2000.

9. Caltrans (2004) "Section 5 – Retaining Walls", Bridge Design Specifications, dated August 2004.

10. Caltrans (2005) "Foundation Report", Retaining Wall Location 2A, 01-DN-199-KP43.4/44.3 (PM 27.3), EA 01-409601, Caltrans Geotechnical Services, memo dated July 18, 2005.

11. Caltrans (2005) "Foundation Report", Retaining Wall Location 2B, 01-DN-199-KP43.4/44.3 (PM 27.3), EA 01-409601, Caltrans Geotechnical Services, memo dated August 22, 2005.

12. Caltrans, (2005), "Areas Likely to contain Naturally Occurring Asbestos – Caltrans District 1", mapping prepared by the Division of Maintenance GIS in coordination with the Division of Environmental Analysis, 2005.

13. NCHRP (2006) "Rock-Socketed Shafts for Highway Structure Foundations", National Cooperative Highway Research Program, Transportation Research Board, Synthesis 360, Washington, D.C.

14. Caltrans (2008) Project Plans for Construction on State Highway in Del Norte County near Patrick Creek", As Built Plans for "Retaining Wall Loc 2", Retaining Walls 2A and 2B, 01-DN-199-KP43.4/44.3 (PM 27.3), EA 01-409604, Bridge No. 01E0003, Caltrans Structure Design Branch 5, As Built C.C.A. date December 24, 2008.

15. USFS (2008) "Areas More Likely to contain Naturally Occurring Asbestos, Six Rivers National Forest", prepared by the United States Forests Service, Department of Agriculture, compiled after 10-7-08.

16. Caltrans (2009) "Development of the Caltrans Deterministic PGA Map and Caltrans ARS Online", M. Merriam, Geotechnical Services, and T. Shantz, Division of Research & Innovation, Caltrans.

17. CGS (2010) "Fault Activity Map of California, 2010"; Scale: 1:750,000, California Department of Conservation, California Geological Survey Geologic Data Map No. 6; Compilation and Interpretation by: Charles W. Jennings and William A. Bryant.

18. CGS (2010) "An Explanatory Text to Accompany the Fault Activity Map of California"; Scale: 1:750,000, California Geological Survey, California Department of Conservation; Compilation and Interpretation by: Charles W. Jennings and William A. Bryant.

19. FHWA (2010) "Drilled Shafts: Construction Procedures and LRFD Design Methods", Volumes I and II, Federal Highway Administration, Pub. No. FHWA NHI-10-016, FHWA GEC 010, May 2010.

20. CGS (2011) " Alquist-Priolo Earthquake Fault Zone Maps", obtained from California Geologic Survey at http://www.quake.ca.gov/gmaps/ap/ap_maps.htm.

21. Caltrans (2011) "Damage Assessment Form (DAF)", DN-199-pm begin 8.6/end 8.8, DAF No. CEP-CT01-007-0, Permanent Restoration EA Contract 01-0B320, Disaster No. CA11-3, 4 sheets, incident date March 26, 2011.

22. Caltrans (2011) "Design of Earth Retaining Systems", Memorandum prepared by Caltrans Structure Policy and Innovation, dated July 22, 2011 (and Attachment).

23. CGS (2011) "Reported Historic Asbestos Mines, Historic Asbestos Prospects, and Other Natural Occurrences of Asbestos in California", California Geological Survey Map Sheet

59, U.S. Geologic Survey Open-File Report 2011-1188, by J.P Clinkenbeard (CGS) and B.S. Van Gosen (USGS), dated 2011.

24. AASHTO (2012) "AASHTO LRFD Bridge Design Specifications", 6th Edition.

25. Caltrans (2012) "Methodology for Developing Design Response Spectrum for Use in Seismic Design Recommendations", Caltrans Geotechnical Services, dated November 2012.

26. Caltrans (2012) "Corrosion Guidelines", Corrosion and Structure Concrete Field Investigation Branch, Materials Engineering and Testing Services, Caltrans, Version 2.0, November 2012.

27. Caltrans (2012) "Review of Shop Drawings for Ground Anchors", Caltrans Memo To Designers 5-14, dated June 2012.

28. Caltrans (2012) "Earth Retaining Systems Using Ground Anchors", Caltrans Memo To Designers 5-12, dated July 2012.

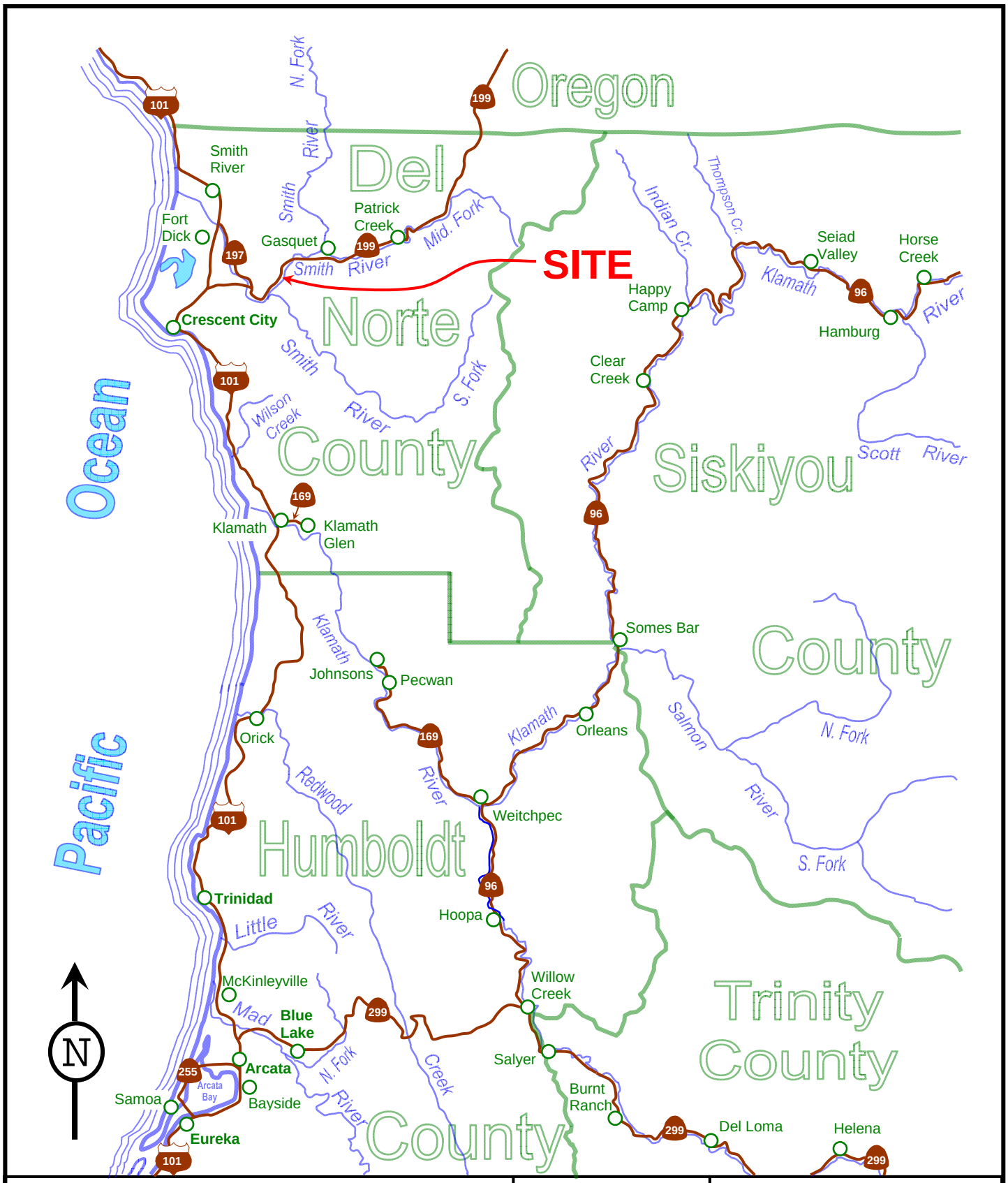
29. Caltrans (2013) "Standard Penetration Test (SPT) Hammer Efficiencies For Caltrans Drill Rigs", Foundation Testing Branch, Caltrans Geotechnical Services, dated April 2013.

30. Caltrans (2013) "Seismic Refraction Survey, 01-DN-199-8.7. Patrick Creek Slip Out", Project 0112000115, prepared by the Geophysics and Geology Branch of the Office of Geotechnical Support, Geotechnical Services, dated October 11, 2013.

31. Caltrans (2014) "Request for Final Foundation Recommendations", Caltrans Memorandum prepared by the Office of Bridge Design North and Central, Caltrans Structure Design, 01-DN-199 PM 8.7, EA 01-0B3101, dated March 25, 2014 (attachment: "Planning Study", dated February 4, 2014).

32. Caltrans (2014) "Planning Study", Patrick Creek Slipout Wall, 01-DN-199-PM 8.7, 01-0B3101, Caltrans Division of Engineering Services, Structure Design, Office of Bridge Design North & Central, Bridge Design Branch 1, dated February 4, 2014.

33. Caltrans (2014) "Elevation", Patrick Creek Slipout Wall, 01-DN-199-PM 8.7, 01-0B3101, Caltrans Division of Engineering Services, Structure Design, Office of Bridge Design North & Central, Bridge Design Branch 1, dated July 9, 2014.



CALTRANS
Division of Engineering Services
Geotechnical Services
Office of Geotechnical Design - North

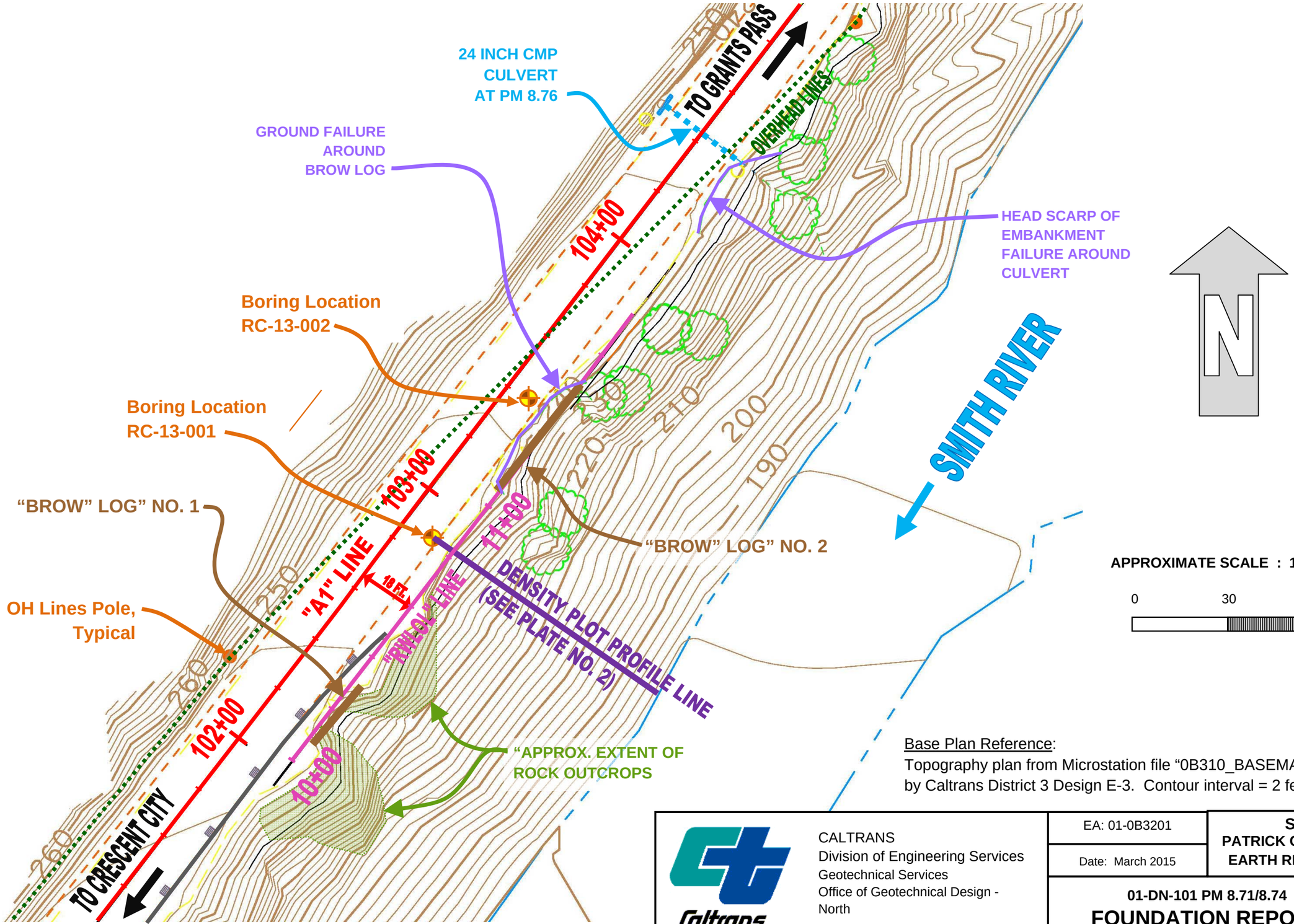
EA: 01-0B3101

Date: March 2015

VICINITY MAP

01-DN-199 PM 8.71/8.74
PATRICK CREEK SLIP OUT #1 ERS
FOUNDATION REPORT

Plate No. 1

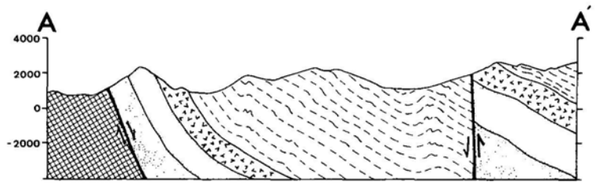


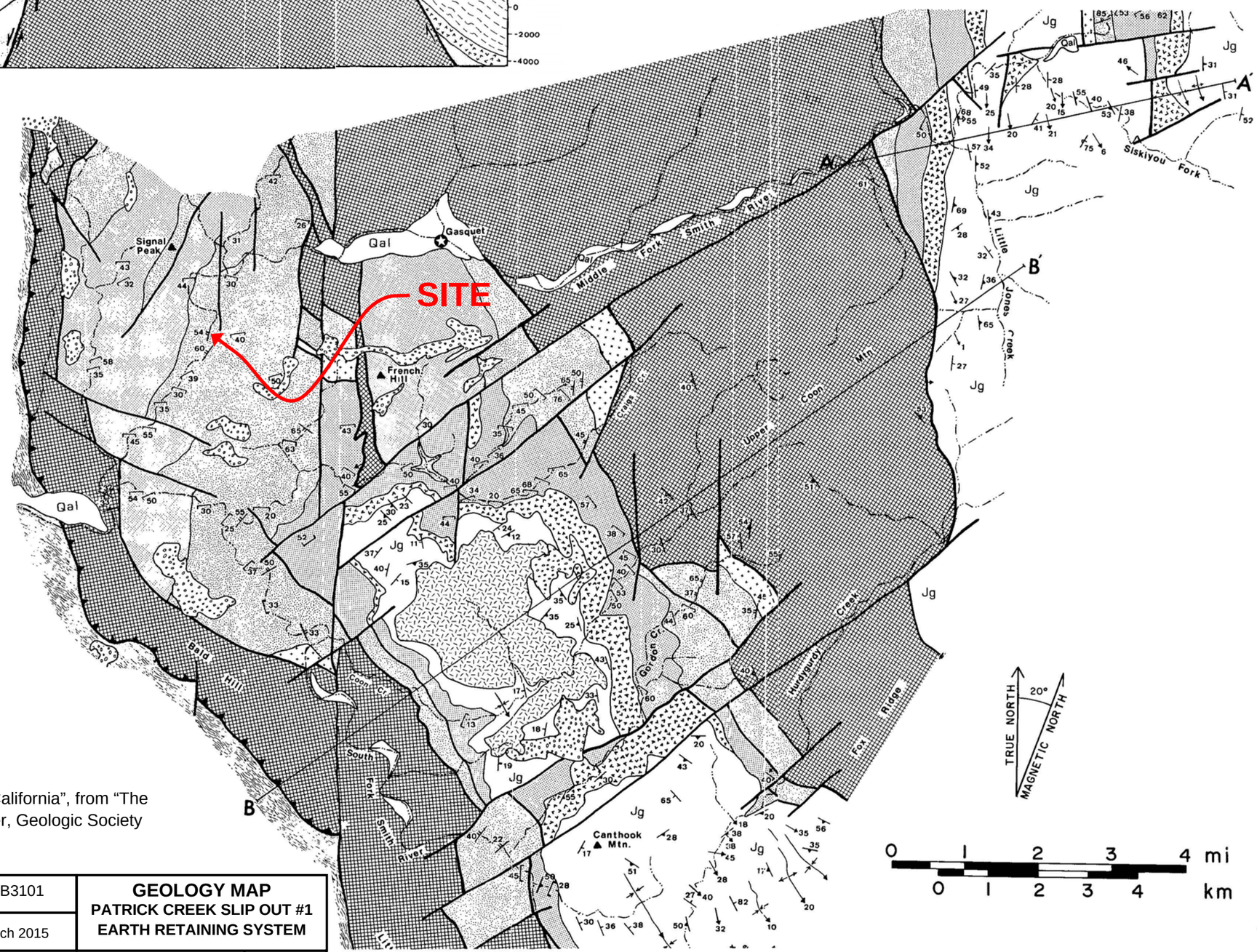
APPROXIMATE SCALE : 1" = 30 feet

0 30 60 feet

Base Plan Reference:
Topography plan from Microstation file "0B310_BASEMAP.DGN" provided by Caltrans District 3 Design E-3. Contour interval = 2 feet.

Caltrans	CALTRANS Division of Engineering Services Geotechnical Services Office of Geotechnical Design - North	EA: 01-0B3201 Date: March 2015	SITE PLAN PATRICK CREEK SLIP OUT #1 EARTH RETAINING SYSTEM
		01-DN-101 PM 8.71/8.74 FOUNDATION REPORT	Plate No. 2





SEE PLATE NO. 3b FOR EXPLANATION

Map Reference:
"Figure 3. Geologic Map of the Smith River area, northwestern California", from "The Josephine Ophiolite, Northwestern California", Gregory D. Harper, Geologic Society of America Bulletin v.95,, p.1009-1026, September 1984.

CALTRANS Division of Engineering Services Geotechnical Services Office of Geotechnical Design - North	EA: 01-0B3101 Date: March 2015	**GEOLOGY MAP** **PATRICK CREEK SLIP OUT #1** **EARTH RETAINING SYSTEM**
	01-DN-101 PM 8.71/8.74 **FOUNDATION REPORT**	Plate No. 3a

SYMBOLS

Strike and dip

bedding | slaty cleavage | dikes | igneous layering | layering in harzburgite

Trend and plunge of mineral lineation

Trend and plunge of first-generation fold hinge

Trend and plunge of second-generation fold hinge

Trace of axial surface of second-generation synform and antiform

Contact

Fault with arrow showing direction of dip

Thrust fault, barbs on upper plate

EXPLANATION

Quaternary — Qal — Alluvium

Miocene — Stream (?) sand and gravel in east, grading westward into a shallow marine facies, consisting chiefly of silt and clay.

Upper Jurassic or Cretaceous — Well-foliated slate and metagraywackes of the Franciscan (?) complex.

142 m.y. Late Jurassic — Lower Coon Mountain Pluton: Mostly olivine clinopyroxenite, minor dunite and wehrlite. Intruded along margins by gabbro, diorite, and rare granitic rocks.

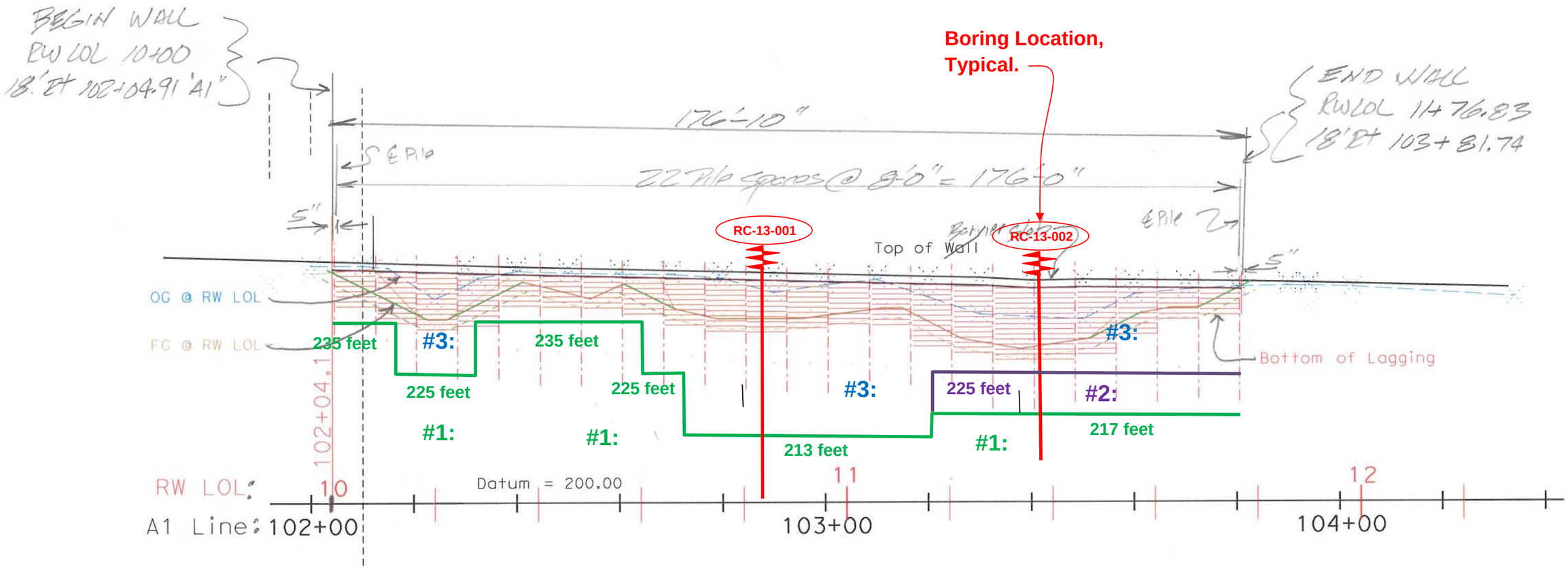
Late Jurassic Oxfordian–Kimmeridgian — Jg — Galice Formation: Slate, metagraywacke and rare conglomerate. Also includes up to 35 meters of chert and slaty argillite at base. Conformably overlies Josephine ophiolite.

JOSEPHINE OPHIOLITE

157 m.y. Late Jurassic

- Pillow basalt and pillow breccia.
- Sheeted dike complex. Includes some pillow basalt screens.
- Gabbro, including some ultramafic rock; commonly layered.
- Ultramafic cumulates: mostly wehrlite and clinopyroxenite with lesser gabbro, dunite and lherzolite.
- Mostly harzburgite with lesser dunite (Josephine Peridotite). Sheared and serpentinized near faults.

CALTRANS Division of Engineering Services Geotechnical Services Office of Geotechnical Design - North	EA: 01-0B3101 Date: March 2015	**GEOLOGY MAP LEGEND**
	01-DN-199 PM 8.70/8.74 PATRICK CREEK SLIP OUT #1 ERS FOUNDATION REPORT	Plate No. 3b



Material #1:	Material #2:	Material #3:
$\gamma = 145$ pcf	$\gamma = 125$ pcf	$\gamma = 120$ pcf
$\varphi = 35^o$	$\varphi = 42^o$	$\varphi = 38^o$
c = 5,000 psf	c = 0 psf	c = 0 psf

ELEVATION
1" = 20'

APPROXIMATE SCALE : 1" = 20 feet

0 20 40 feet

PATRICK CREEK SLIPOUT WALL

K. Harper 7-9-14

CALTRANS Division of Engineering Services Geotechnical Services Office of Geotechnical Design - North	EA: 01-0B3101 Date: March 2015	ERS DESIGN PARAMETERS PATRICK CREEK SLIP OUT #1 EARTH RETAINING SYSTEM
	01-DN-101 PM 8.71/8.74 FOUNDATION REPORT	Plate No. 4

Appendix A

Photographs

Photo No. 1. Pavement cracking and soil erosion above brow log No. 2 viewing southwesterly from right of approx. STA “A1” 103+40 (photo date 10-2-12).

Photo No. 2. Soil erosion above brow log No. 2 viewing northeasterly from right of approx. STA “A1” 103+20 (photo date 10-2-12).

Photo No. 3. Slope below Brow Log No. 2 viewing northeast from right of approx. STA “A1” 103+20 (photo date 10-2-12).

CALTRANS Division of Engineering Services Geotechnical Services Office of Geotechnical Design - North	EA: 01-0B3101 Date: March 2015	**PHOTOGRAPHS**
	01-DN-101 PM 8.71/8.74 PATRICK CREEK SLIP OUT #1 ERS FOUNDATION REPORT	Plate No. A-1

Photo No. 4. Slope below Brow Log No. 2 viewing northwesterly from right of approx. STA "A1" 103+40 (photo date 10-2-12).

Photo No. 5. Roadway above Brow Log No. 1 viewing northeasterly from right of approx. STA "A1" 102+00 (photo date 10-2-12).

Photo No. 6. Slope below Brow Log No. 1 viewing southwesterly from right of approx. STA "A1" 102+50 (photo date 10-2-12).

CALTRANS Division of Engineering Services Geotechnical Services Office of Geotechnical Design - North	EA: 01-0B3101 Date: March 2015	**PHOTOGRAPHS**
	01-DN-101 PM 8.71/8.74 PATRICK CREEK SLIP OUT #1 ERS FOUNDATION REPORT	Plate No. A-2

Photo No. 7. Viewing from atop Brow Log No. 1; viewing downslope (southeasterly) from right of approx. STA “A1” 102+25 (photo date 10-2-12).

Photo No. 8. Looking up from below Brow Log No. 1; viewing northwesterly from right of approx. STA “A1” 102+25 (photo date 10-2-12).

Photo No. 9. Looking at roadway viewing southwesterly from right of approx. STA "A1" 104+70 (photo date 10-2-12).

Photo No. 10. Looking at tension crack (marked with white paint) around culvert paddle marker at PM 8.76; viewing southwesterly from right of approx. STA "A1" 104+45 (photo date 8-7-13).

Photo No. 11. Looking at tension crack (marked with white paint) around culvert paddle marker at PM 8.76; viewing northerly from right of approx. STA "A1" 104+20 (photo date 8-7-13).

Appendix B

2011 DAF

"Damage Assessment Form (DAF)", DN-199-pm 8.6-8.8, DAF No. CEP-CT01-007-0, Disaster No. CA11-3, 4 sheets, incident date March 26, 2011.

U.S. Department of Transportation Federal Highway Administration- California Division- Title 23 Damage Assessment Form (DAF)	DAF No. CEP - CT01 - 0 0 7 - 0 Sheet # 1 of 4 Federal Project # EO ER - ( ) Disaster No. CA 1 1 - 3 PR ER - ( )

Applicant	County	Incident Date (mm/dd/yyyy)	Inspection
CALTRANS	DEL NORTE	03/26/2011	

Location of Damage: Per Site [✓] or [ ] Per Mile

Name of Road/Bridge: Route 199

PM Begin: 8.6 PM Length: 1,000.00 (in feet)

PM End: 8.8

Road/Bridge Data: Bridge No n/a Type:

Traveled Way: Width 2-12' lanes Type: PCC [ ] AC [✓] Gravel [ ]

Shoulder: Width var 1-4' Type: PCC [ ] AC [✓] Gravel [ ]

Federal-aid Highway?

Y for yes, if no, ineligible for ER funds [Y]

Map No 1A

Functional Classification Type: Principal Arterial

Route # 199

Forest Hwy? Y/N [ ] Interstate? Y/N [Y]

Existing ADT: 4,000

Description of Damage: Slipout and Embankment Failures

COST ESTIMATE

	Type of Repair	Description of Work	Cost Summary	
Emergency Opening (EO)	EO- AGENCY FORCES CT Work Order #(s): EA(s):		PE	
			CE	
			Construction	
	EO- CONTRACT EO EA(s):		PE	
			CE	
			Construction	
	NOTE: Environmental documentation for EO is required. It is generally started after work has begun.		R/W	
		Subtotal Emergency Opening		
Permanent Restoration (PR)	PR- CONSTRUCTION FA requires an approved PIF [✓] Contract [ ] FA PR EAs	Work includes reconstruct roadway, construct two bio-engineered buttresses and construct gravity wall.	PE	
			CE	
			Construction	
	NOTE:PRIOR AUTHORIZATION (APPROVED E-76) IS REQUIRED TO PROCEED WITH PERMANENT RESTORATION R/W & CONSTRUCTION		R/W	
	NOTE: Environmental clearance for permanent restoration is conducted through normal Federal-aid procedures	Subtotal Permanent Restoration		

Eligible		Signature	Date		
[ ] Yes	[ ] No	Local Agency (if applicable):		PE Total	
[ ] Yes	[ ] No	Caltrans:		CE Total	
[ ] Yes	[ ] No	FHWA*:		R/W Total	
				Construction Total	
			TOTAL ESTIMATE		

Agency sig. Name (print): FHWA Sig. Name (print):

CT signature Name (print): DAF Prepared by (print):

Original: Caltrans District **Copies:** FHWA, Division of Local Assistance(local roads), Federal Resources (state hwy), HQ Major Damage Engineer (state hwy)

*Write "N/A" in FHWA signature block if the project has no Federal ER funding or Federal ER funding delegated to the State.

FHWA Signature: REQUIRED for all Federal Funded State projects. REQUIRED for any Local Agency projects with 1) any BETTERMENT, 2) more than 2 ROW takes or 3) when paving is more than 50% of the Total Estimated Cost. **Reminder: This DAF must be accompanied by photos of the damage.**

U.S. Department of Transportation Federal Highway Administration- California Division- Title 23 Damage Assessment Form (DAF)	DAF # CEP - CT01 - 0 0 7 - 0 Sheet # 2 of 4 Applicant CALTRANS Agency EO Calc ☐ EO contract ☐ PR Calc ☑

Quantity*	Unit*	Labor, Materials, and Equipment	Unit Price	Cost

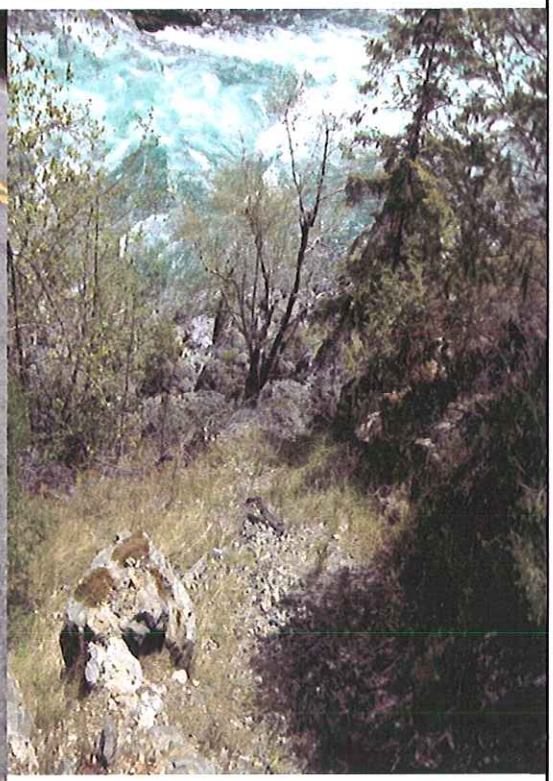
*Lump Sum will generally only be accepted for non biddable items, such as Mobilization.

Justifications/comments: Non-typical Scope, PE/CE Cost, Engineering estimates etc.

U.S. Department of Transportation
Federal Highway Administration
California Division – Title 23
Damage Assessment Form (DAF)

DAF # CEP - CT01 - 007 - 0
Sheet # 3 of 4
Applicant
CALTRANS

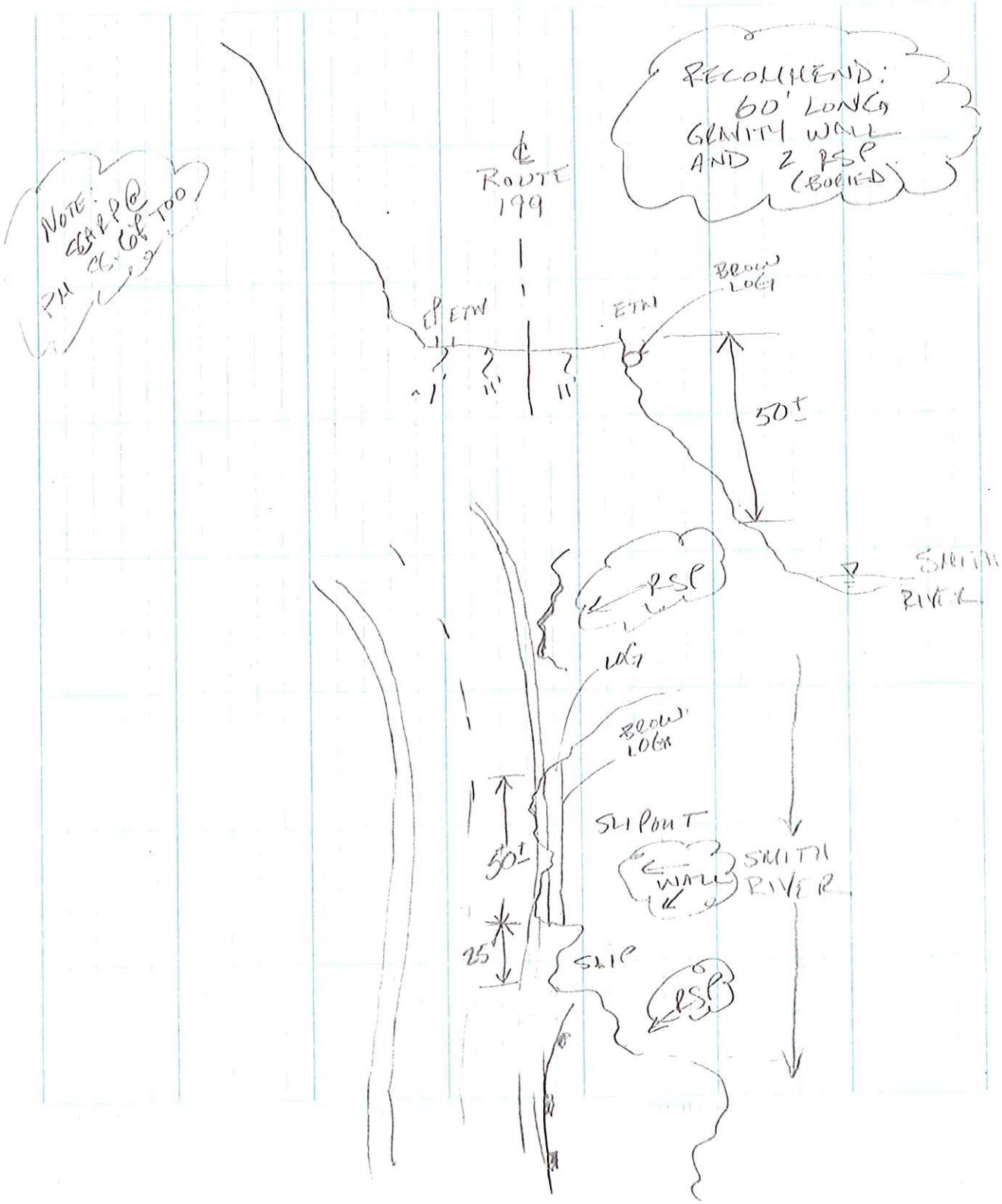
Photos, Sketches and/or Narrative



Slipout from Roadway to Smith River

U.S. Department of Transportation Federal Highway Administration California Division – Title 23 Damage Assessment Form (DAF)	DAF # CEP - CT01 - 007 - 0 Sheet # 4 of 4 Applicant CALTRANS

Photos, Sketches and/or Narrative



Appendix C

Seismic Refraction Survey

Caltrans (2013) "Seismic Refraction Survey, 01-DN-199-8.7. Patrick Creek Slip Out", Project 0112000115, prepared by the Geophysics and Geology Branch of the Office of Geotechnical Support, Geotechnical Services, dated October 11, 2013.

M e m o r a n d u m

Flex your power!
Be energy efficient!

To: **Reza Mahallati**
Geotechnical Design North
Division of Engineering Services

Date: October 11, 2013,

File: 01-DN-199-8.7
Project 0112000115

Attention: Mark Hagy

From: **DEPARTMENT OF TRANSPORTATION**
DIVISION OF ENGINEERING SERVICES
GEOTECHNICAL SERVICES-MS#5

Subject: Seismic Refraction Survey, 01-DN-199-8.7. Patrick Creek Slip Out

Introduction

This memo documents the results of a tomographic seismic survey to assist in the design of roadway improvements and repairs to the north bound lane of Highway 199 at PM 8.7 in Del Norte County. The north bound lane at that location has been failing and erosion has exposed brow logs used in the past for lateral stability. The intent is to construct a retaining wall and remove the brow logs. Our task was to aid in design of the retaining structure by investigating the possible presence and distribution of rock in the subsurface. Plate 1 shows the location of the site.

Results and Discussion

Our results are shown on Plate 2. Plate 2 is a velocity model showing the distribution of seismic velocity in the subsurface. A test boring (RC-13-001) was incorporated in the survey and its location is also shown. Total depth of the boring was 44.5 feet.

Correlation of the velocity model with the test boring is noted. At about 8.0 m (26.2 feet) below ground surface (bgs) the seismic velocity increases from roughly 1000 m/s (3281 ft/s) to 2000 m/s (6562 ft/s). The field log for RC-13-001 indicates harder rock at that depth. At about 12 m bgs (39.3 feet) seismic velocity increases to 3100 m/s (10,170ft/s). The LOTB indicates hard drilling beginning at a depth of about 32 feet bgs (9.8 m).

The velocity model imaged deeper than the maximum depth of the test boring and indicates faster rock exists at about 15 m bgs (49.2feet). The lateral extent of this unit appears to be about 8.0 m (26.2 feet) toward the river.

Plate 3 is the pseudo ray-path model for Plate 2. The pseudo ray-path model shows the number of seismic rays crossing each pixel and approximates the minimum travel paths of the compressional (P) wavefronts derived from the velocity model. More evenly distributed hits (ray crossings) and higher hits per cell are positively correlated with improved accuracy in the model.

Areas of no data (the stippled regions in the plot) indicate zones of uncertainty in the velocity model.

Data Acquisition and Processing

Data were acquired using a Geometrics Strataview 24 channel seismograph with 14 Hz land geophones.. Geophone spacing for the profile was 1.0 meter (3.28 feet). The configuration used was a string of 24 geophones one meter apart beginning at the boring (or as near to the boring where a geophone could be placed) and continuing down the existing slope for 24 meters (78.7 feet). Into that spread we used a hammer and striker plate to do surface shot points every 2.0 meters (6.56 feet). In addition to the surface striker plate shots we also placed blasting caps at several intervals in the bore hole and detonated them as energy sources into the array of surface geophones. .. During data acquisition, profile geometry (shot and phone locations) was recorded and stored in seismograph memory. Refraction data from each shot were also stored in the seismograph's memory. Both profile geometry and refraction data were backed-up to paper or computer storage media after each shot or upon completion of the survey. The refraction data were processed to determine first arrival times and prepared for input to SeisOpt Pro. Profile geometry (shot point and geophone locations), first P-wave arrival times and ground surface elevations were assigned for each geophone. The velocity model and pseudo raypath plot are presented in this report.. The velocity models differ from traditional refraction profiles in that velocities are presented by pixel rather than by layer. The hit count plot is a pseudo ray-trace model showing the number of seismic rays crossing each pixel. More evenly distributed hits (ray crossings) and higher hits per cell are positively correlated with improved accuracy in the model.

Interpretation of the downhole tomographic survey results used SeisOpt Pro (Optim LLC, 2003). The program utilizes a quasi-tomographic, controlled Monte-Carlo inversion to develop a globally optimized velocity model of the subsurface (Pullammanappallil and Louie, 1994). The methodology uses only first arrival time data and profile geometry as input. No initial assumptions of velocity structure or layering are required. As such, the method is well suited for investigation of areas dominated by complex shallow structure, significant velocity gradients and variable topography. In general, seismic tomographic inversion techniques develop “best-fit” velocity models by iteratively comparing observed arrival data to calculated arrival times derived from generated velocity structures. A final model is produced when the calculated times match observed data within a specified error limit. An advantage of tomography is that the minimum-curve envelope in the inversion (the boundary defined by those ray paths traversing the maximum shot-receiver distances in the shortest time) defines a maximum depth of investigation (no information is available below the envelope), whereas only estimates of investigation depth are possible using traditional layer analysis. In cases where insufficient data exist, the inversion process may generate false models. Therefore, as with any refraction interpretation technique, multiple shotpoints along a survey profile provide greater data coverage for analysis and aid in generating a more accurate model.

Thank you for the opportunity to work on this project. If you have any questions or need additional assistance, please contact me at (916) 227-1307 or Mr. Bill Owen at (916) 227-0227.

References

Palmer, D., 1980, The generalized reciprocal method of seismic refraction interpretation, Society of Exploration Geophysicists, Tulsa, Oklahoma, 104 p.

Pullammanappallil and Louie, 1994. Published in Bulletin of the Seismological Society of America, Vol. 84, No. 5, pp. 1397-1409, October 1994

Owen, W.P., 2006, Examples of subsurface velocity imaging via combined downhole and surface source and receiver arrays, *2006 Highway Geophysics—NDE Conference Proceedings*, St. Louis, Missouri, p. 253-268

Report By

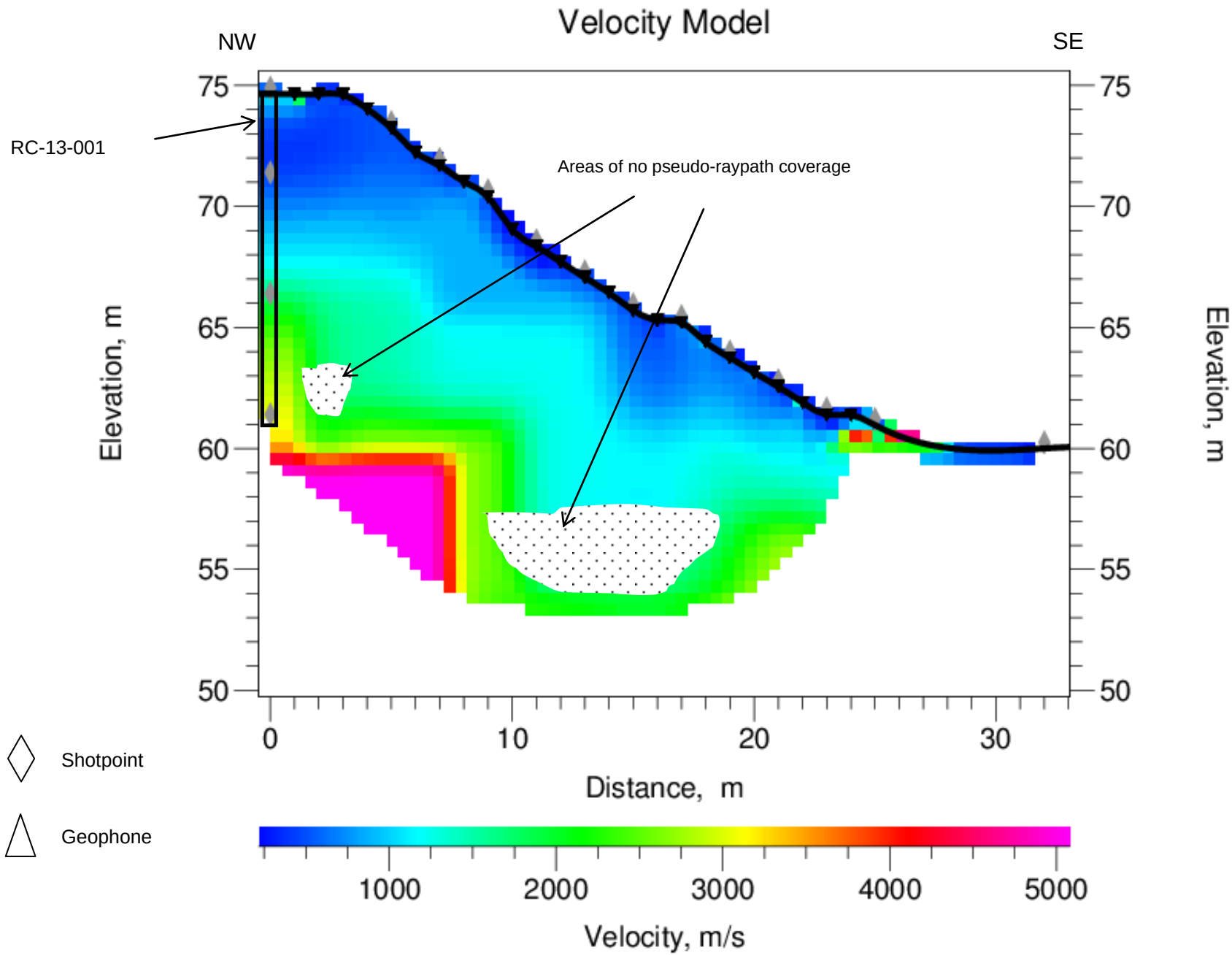
Dennison Leeds
Engineering Geologist
Geophysics and Geology Branch

Reviewed By

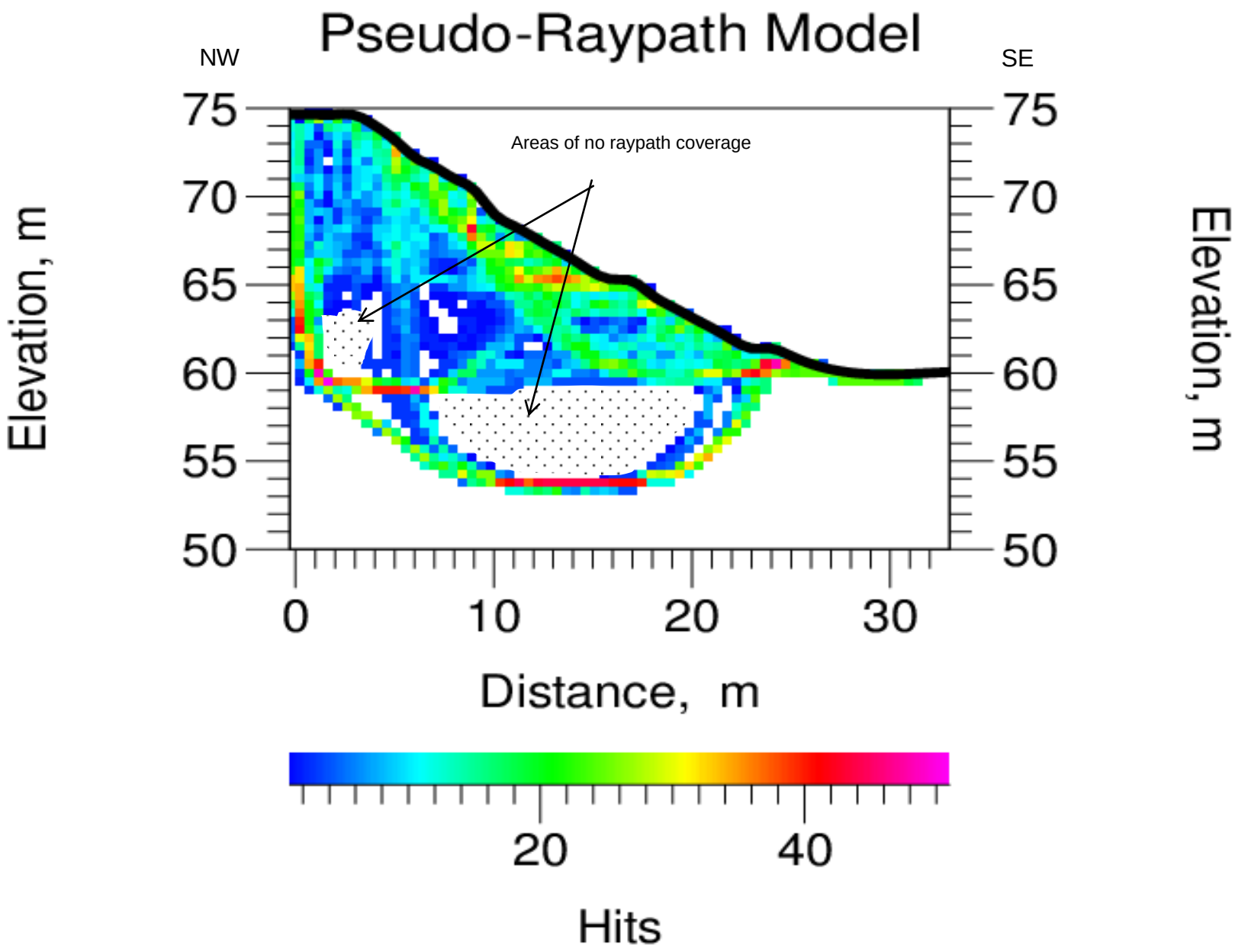
William Owen, PGP 1031
Chief, Geophysics and Geology Branch

DL/WO
Project File: 01_DN_199_8.7_2013_SEI

Caltrans	Division of Engineering Services Office of Geotechnical Support Geophysics and Geology Branch	EA 0B310	Location Map	Plate No.1
		ID 0112000115	01-DN-199-8.7	



Caltrans	Division of Engineering Services Office of Geotechnical Support Geophysics and Geology Branch	EA 0B310	Velocity Plot	Plate No.2
		ID 0112000115	01-DN-199-8.7	



Caltrans	Division of Engineering Services Office of Geotechnical Support Geophysics and Geology Branch	EA 0B310	Pseudo-Raypath Plot	Plate No.3
		ID 0112000115	01-DN-199-8.7	

Appendix D

Laboratory Tests Results

Results sent to: MARK HAGY

Division of Engineering Services
Materials Engineering and Testing Services
Corrosion and Structural Concrete Field Investigation Branch

Report Date: 8/29/2014
Reported by Michael Mifkovic

CORROSION TEST SUMMARY REPORT - SOIL

EFIS: **0112000116**

Dist/Co/Rte/PM **01 / DN /199/ / 8.1 PM**

CORROSION LAB #	TL101 #	BORE #	DEPTH (FT) START	DEPTH (FT) END	MINIMUM RESISTIVITY[1] (ohm-cm)	pH[1]	CHLORIDE CONTENT[2] (ppm)	SULFATE CONTENT[3] (ppm)	IS SAMPLE CORROSIVE?
SOIL SAMPLE FROM: PATRICK CREEK									
CR20140235	**C701662**	RC-13-002	10	16.5	11020	7.4			NO

This site is not corrosive to foundation elements (see note below).

Note: For Structural Elements, the Department considers a site corrosive if one or more of the following conditions exist: pH is 5.5 or less, chloride concentration is 500 ppm or greater, sulfate concentration is 2000 ppm or greater. Resistivity is not considered for Structural Elements. MSE backfill shall conform to the requirements of section 47-2.02C Structure Backfill in the 2010 Standard Specifications.

[1]CT 643, [2]CT 422, [3]CT 417

CALIFORNIA DEPARTMENT OF TRANSPORTATION
GEOTECHNICAL LABORATORY

GL TRACKING NO : 14-043
Dist - EA: 01-0B3201
Report Date: September 11, 2014
Page: 1/1

CLASSIFICATION TEST SUMMARY

SAMPLE ID	% FINER THAN																	ATTERBERG LIMITS		AS RECEIVED		Gs
	3"	2 1/2"	2"	1 1/2"	1"	3/4"	1/2"	3/8"	No. 4	No. 8	No. 16	No. 30	No. 50	No. 100	No. 200	5μ	1μ	LL	PI	γ_d (pcf)	%m	
RC-13-001_12					100	98	93	89	78	70	62	53	44	34	27	11	5				12.0	
RC-13-001_16																						
RC-13-001_17																						
RC-13-002_14																						
RC-13-002_15																						
RC-13-002_8-10																						

Point Load Strength Index of Rock; ASTM D 5731 - 08

Dist-EA: 01-0B3101 **Dist-Co-Rte-PM: DN-199 PM 8.71/8.74** **GL Tracking Nos.: 14-043**

Report Date: September 4, 2014

Boring I.D.	Depth (feet)		Test Type	Initial Distance Between Contact Points, D (mm)	Final Distance Between Contact Points, D' (mm)	Equivalent Diameter, D_e (mm) per Section 10.1 of ASTM D 5731-08	Width, W (mm)	Length, L (mm)	Failure Load (lbs)	Uncorrected Point Load Strength Index, I_s; per EQ. #1 of ASTM D 5731-08		Size Correction Factor, F; per EQ. #4 of ASTM D 5731-08	Size Corrected Point Load Strength Index, $I_{s(50)}$; per EQ. #3 of ASTM D 5731-08		Generalized Index to Strength Conversion Factor, K, per Table 1 of ASTM D 5731-08 (approximated where appropriate)	Estimated Uniaxial Comp. Strength, s_c per EQ. #6 of ASTM D 5731-08		Remarks
	top	bottom								(MPa)	(PSI)		(MPa)	(PSI)		(MPa)	(PSI)	
RC-13-001_17	40	40.8	D-L	60.0	56	57.97		46.03	915.2	1.21	175.73	1.07	1.29	188	24.5	30	4,305	
RC-13-002_14	29	29.5	A-L	47.5	44	58.65	61		1,596.32	2.06	299.40	1.07	2.22	322	24.5	51	7,335	
RC-13-002_15	33	33.5	D-L	60	56	57.72		34.5	228.8	0.31	44.3	1.07	0.33	47	24.5	7	1,085	

NOTES:
Test Type Abbreviations: D - Diametral, A -Axial, B - Block, I - Irregular Lump.
Orientation of Load (if anisotropic): P - Perpendicular to plane of weakness, L - Parallel to plane of weakness

RC-13-001_17

RC-13-002_14

RC-13-002_15

CALTRANS
Division of Engineering Services
Geotechnical Services
Office of Geotechnical Design - North

EA: 01-0B3101
Date: March 2015

POINT LOAD STRENGTH INDEX OF ROCK TEST RESULTS

01-DN-199; PM 8.71/8.74; PATRICK CREEK SLIP OUT #1 ERS
FOUNDATION REPORT

Plate No. D-1

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
OFFICE OF GEOTECHNICAL SUPPORT
GEOTECHNICAL LABORATORY

UNCONFINED COMPRESSION TEST RESULTS (ASTM D7012 Method C)

JOB LOCATION **01-DN-199** **PM 8.71-8.74** GL No. **14-043** DATE **9/5/2014**

TEST BY **AZM**

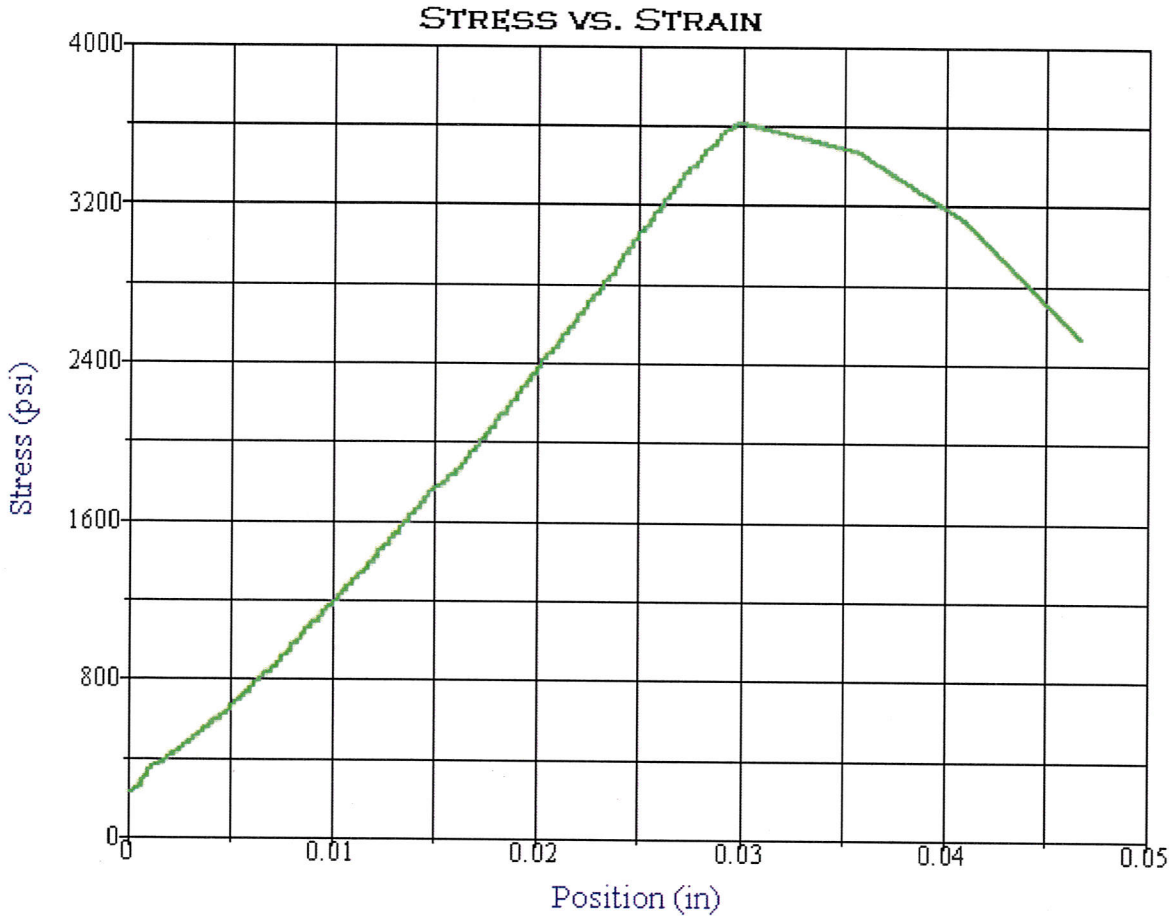
JOB NUMBER **01-0B3201** **Patrick Creek Slip Out #1 ERS** Bridge No. _____ CHECKED BY **LP 9/10/14**

SAMPLE NO.	DEPTH FT.	DIA. IN.	LENGTH IN.	L/D RATIO	WEIGHT LBS.	LOAD LBS.	DENSITY PCF	STRENGTH PSI	REMARKS
RC-13-001-16	36-36.5	2.40	5.11	2.13	2.4	16335	183	3611	

Note: No moistures recorded

* Sample fell apart while preparing for testing -- Not suitable for testing

** The test specimen length/diameter ratio was not in compliance with the test method

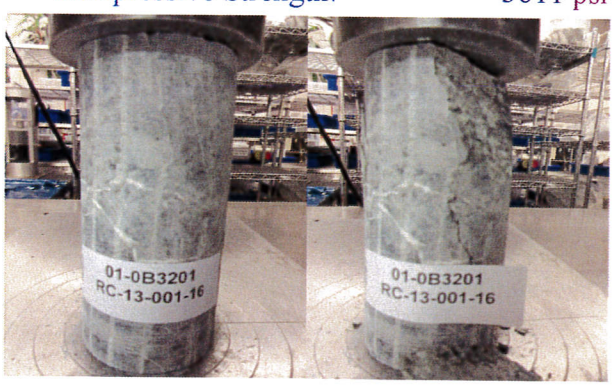


Test Summary

Counter:	2499
Elapsed Time:	00:01:35
Operator:	AZM
Sample:	RC-13-001-16
Ticket:	GL# 14-043
E.A. NUMBER:	01-0B3201
Procedure Name:	ASTM D7012 Method C
Start Date:	9/8/2014
Start Time:	8:39:21 AM
End Date:	9/8/2014
End Time:	8:40:56 AM
Workstation:	D1K00YB1
Tested By:	AZM
Lab:	O14-273

Test Results

Specimen Gage Length:	5.1100 in
Diameter:	2.4000 in
Area:	4.5239 in²
Maximum Load:	16335 lbf
Compressive Strength:	3611 psi



LITHOLOGIC DESCRIPTION: PERIDOTITE; FRACTURES, DIPPING -70 DEGRESS, TOTALLY HEALED FRACTURES RANDOMLY ORIENTED.

INFORMATION HANDOUT

For Contract No. 01-0B3104
At DN-199-8.7, 21.7

Identified by
Project ID 0112000115

PERMITS

PLAC – Department of the Army, San Francisco District, United States Army Corps of Engineers

Nationwide Permit (NWP)
File No. 2015-00074N, dated April 14, 2015

WATER QUALITY

PLAC - California Regional Water Quality Control Board, North Coast Region

Water Quality Certification
WDID No. 1B15012WNDN
Dated March April 7, 2015

AGREEMENTS

PLAC - California Department of Fish and Wildlife, Region 1 - Northern

Streambed Alteration Agreement
Notification No. 1600-2015-0032-R1
Dated April 28, 2015

MATERIALS INFORMATION

Revised Foundation Report for Patrick Creek Slip Out No. 1 ERS dated March 16, 2015

Geotechnical Design Report for Patrick Creek Slip Out No. 2 ERS dated February 2, 2015

Naturally Occurring Asbestos Summary Report State Route 199, Post Miles 8.71 (Patrick Creek) and 24.67 (Middle Fork), dated February 18, 2015

State of California
DEPARTMENT OF TRANSPORTATION

California State Transportation Agency

M e m o r a n d u m

Serious Drought!
Help Save Water!

To: LENA ASHLEY
CHIEF
Design Branch E-3
Office of Design North - Eureka

Date: February 2, 2015

File: 01-DN-199- PM 21.65/21.67
Patrick Creek Slip Out #2
Storm Damage Repair
EA# 01-0B3101
EFIS 0112000115

Attn: Tom Phillips
Project Engineer

From: **DEPARTMENT OF TRANSPORTATION**
DIVISION OF ENGINEERING SERVICES
Geotechnical Services – MS 5
Office of Geotechnical Design – North

Subject: Geotechnical Design Report for Patrick Creek Slip Out No. 2 ERS

INTRODUCTION

Per the request of the North Region Design Branch E-3 (NR Design E-3), the Office of Geotechnical Design-North (OGDN) has prepared this Geotechnical Design Report (GDR) for an Earth Retaining System (ERS) proposed to be constructed between approximately PM 21.65 and 21.67 on Route 199, in northern Del Norte County, California (see vicinity map, Plate No. 1). The ERS is being proposed to support the roadway where a slipout occurred on embankment materials supporting the roadway shoulder. A repair has been scoped in the Damage Assessment Form (DAF) No. CEP-CT101-008-0 associated with the March 2011 storm event (Disaster No. CA11-3).

PROJECT BACKGROUND/DESCRIPTION/SCOPE OF WORK

A DAF for the subject site (attached in Appendix C) has an "incident date" of March 26, 2011 and in summary states the following:

- "Location of Damage" is "begin PM" of 21.67 and "PM length" of 100 feet on Route 199, Del Norte County.
- "Work includes reconstruct shoulder and construct reinforce embankment or gravity wall".
- Estimate itemizes 300 cubic yard "bio-engineered vegetated buttress".
- "Slipout" is diagramed as 30 feet in width, and extending on a slope of 45 feet in height.
- Recommendations include "bio-engineered stabilize" with "lateral limits to be determined" and "no tree removal".

It is assumed that the term "bio-engineered vegetated buttress" in the 2011 DAF is referring to "soil filled rock slope protection (RSP)", a nonstandard design treatment presented on the Caltrans Landscape Architecture Program Erosion Control Toolbox website (Reference No. 24).

A November 2013 memo (Reference No. 26) from Caltrans North Region Hydraulics identified the Ordinary High Water Elevation (OHWE) to be at 777.9 feet, approximately 30 feet below roadway grade (see Plate No. 4a). The Caltrans North Region Design Branch E-3 (NR Design E-3) reported that the project scope limits proposed work to areas above the OHWE.

The "California Bank and Shore Rock Slope Protection Design" report (Reference No. 8) states:

> *"A guideline for the maximum outside slope face angle of the RSP with the horizontal is 33.69 degrees, that is, 1.0 vertical to 1.5 horizontal (1V:1.5H)."*

Due to the aforementioned design limitations, the bio-engineered vegetated buttress alternative of the 2011 DAF is not considered feasible for the designated project scope because the existing slopes at the site generally vary between 1.5H:1V and 1.2H:1V, and are steeper in areas. The soil filled RSP slope would catch in the adjacent river area and would need to be properly imbedded into the riverbed to resist scour. Based on discussions with NR Design E-3, alternatives for a roadway retreat away from the river and/or armoring of the embankment against scour were specifically omitted from the project scope. In an effort to coincide with the intensions of the DAF (which cites: "…construct reinforce embankment or gravity wall"), a gabion wall is being proposed to stabilize the roadway shoulder area. NR Design E-3 has indicated that a minimum shoulder width of 4 feet is applicable to the project and a guard rail is not required at the site. Based on a preliminary elevation view provided by NR Design E-3, the proposed wall is to extend approximately 66 feet with a maximum height around the center area of approximately 7.5 feet.

The scope of our work included performing a literature and historical review in an effort to obtain geotechnical and geological data pertaining to the subject site that could provide insight into the design and construction of the proposed retaining wall. The historical review included searching the Caltrans intranet As Built records from the Document Retrieval System (DRS). Historical geotechnical data was obtained from the Digital Archive of Geotechnical Data (GeoDOG) database. OGDN has evaluated the site conditions and geology based on a review of the obtained geologic literature and mapping, aerial photographs, multiple site visits and a subsurface investigation program performed during August 2013. As built plans for the subject location could not be found in DRS. The subsurface investigation program (see below) was composed of the drilling of exploratory borings to characterize the subsurface conditions and collect samples. Laboratory testing of selected samples obtained from the site investigation program was performed, followed by engineering analysis and preparation of this report summarizing our findings, conclusions and recommendations. The elevations provided in this report are based on the NAVD88 (vertical datum) and the horizontal coordinates are based on the NAD83 (horizontal datum).

EXISTING SITE CONDITIONS

The subject embankment failure (shown as "primary" location on Plate No 2 attached) is located on an east/west aligned section of Route 199 adjacent to the Middle Fork of the Smith River to the south. The roadway section appears to be constructed of cut to the north and fill to the south. Below the roadway the embankment slopes at roughly 1.2H:1V down to the river which is at approximately 45 feet below the roadway grade. The head scarp of the primary failure stretches roughly 30 feet wide, and extends as close as 5 feet to the right white stripe (or edge of traveled way, ETW). At the head scarp, the thickness of the asphalt concrete (AC) was noted to be as much a 12 inches and greater (see Photo No. 4, Appendix A). Several large trees and a large tree stump encompass the flanks of the slipout failure (see Photo Nos. 2, 3 and 4). Smaller trees and brush are present within the lower portion of the slipout (see Photo No. 2). A "second" location of failure on the embankment slope was noted roughly 50 feet to the east of the primary failure (see Site Plan). The head scarp of the second failure was noted as extending as close as 9.5 feet to the right ETW.

A large cut slope extends laterally for several hundred feet on the northerly side of the roadway. The cut appears to extend as high as roughly 55 feet, is sloped at 1H:1V, and is comprised of serpentinized peridotite rock materials. Opposite of the subject failure area, the height of the cut slope was noted to range between roughly 25 to 45 feet.

FIELD INVESTIGATION AND TESTING PROGRAM

The OGDN subsurface exploration program was performed on August 8, 2013 utilizing two Christensen CS 2000, truck-mounted drilling rigs. Two borings were performed at the locations shown on Plate No. 2. The borings were accomplished utilizing mud rotary drilling advanced with a self-casing wire-line drill system. Samples of materials were collected at various depths by advancing a "Standard Penetration Test" ("SPT") sampler. The respective drill rig Hammer Energy Ratio (ERi) for SPT sampling were obtained from the Caltrans Office of Geotechnical Support, Foundation Testing Branch (Reference No. 25). Samples were also obtained by core drilling. Core samples were stored in core boxes and returned to the Transportation Laboratory for reference and testing. A summary of information regarding the borings drilled during the subsurface investigation program is included in Table No. 1.

Table No. 1- Summary of the 2013 Subsurface Investigation for the proposed Patrick Creek Slip Out No. 2 ERS

Boring No.	Completion Date	Drill Rig Type	Hammer Type	Hammer Efficiency (%)	Ground Surface Elevation (ft)	Boring Depth (ft)
RC-13-001	8/8/13	CS 2000 (#6832)	Auto	92	808.73	35.0
RC-13-002	8/8/13	CS 2000 (#6831)	Auto	85	807.95	43.0

LABORATORY TESTING PROGRAM

Laboratory testing was performed on selected samples of the subsurface materials obtained from the 2013 subsurface investigation. Tests were performed to determine the corrosion properties of the subsurface materials. The results of the corrosion testing are attached as Appendix D. Table No. 2 provides a summary of the corrosion test results.

Table No. 2 - Corrosion Test Summary of the Composite Samples for the Patrick Creek Slip Out #1 Earth Retaining System

SIC Corrosion Number	Boring Number	Sample Depth (ft)	pH	Minimum Resistivity (ohm-cm)	Chloride Content (ppm)	Sulfate Content (ppm)
CR20140254	RC-13-001 RC-13-002	0 to11.5 6.5 to 16.5	7.7	6699	N/A	N/A

SITE GEOLOGY AND SUBSURFACE CONDITIONS

Regional Geologic Setting

The project is located within the northern section of the Klamath Mountains geomorphic province. Within the province there are a number of major terranes, several of which are subdivided into two or more subterranes. The terranes were accreted in a westward succession, are generally younger from east to west, and are penetratively deformed and bordered by major faults. The project site is located in the Smith River subterrane of the Western Klamath terrane. The Western Klamath terrane is the youngest in the Klamath Mountains and became attached to North America approximately 150 million years ago during the Mesozoic Era. USGS MIS Map I-2148 (scale = 1:500,000 Reference No. 5) indicates the project site to be underlain by Jurassic ultramafic rocks (Jjum).

Site Geology

The “Geologic Map of the Weed Quadrangle, California” (scale = 1:250,000, Reference No. 3), indicates the site to be underlain by ultramafic rocks, partially to completely serpentinized (Jum). More detailed published mapping (USGS Bulletin 995-C, Scale 1:50,000, Reference No. 2) describes the site to be underlain by “completely serpentinized peridotite” (“sp”, see Plate Nos. 3a and 3b).

Naturally Occurring Asbestos (NOA)

The project site is located in the Western Klamath terrane (see “Regional Geologic Setting) where the primary source of NOA is the ultramafic rocks of the Josephine Ophiolite formation which contain serpentine and serpentinized peridotite. A review of Caltrans and CGS/USGS published NOA maps (Reference Nos. 12 and 20, respectively), revealed that the project site is

located in an area designated "likely" to contain NOA. The Caltrans NOA database indicates the site is within a section of NOA materials in Del Norte County to be on Route 199 between PM 21.44 and 21.74 (see Table No. 3, below). Asbestos-like fibrous material was noted on the serpentinized peridotite (ultramafic) rock cores retrieved at a depth around 20 feet in boring RC-13-001 during our subsurface exploration at the site.

Table No. 3- Summary of Locations of NOA on Caltrans Roadways in Del Norte County (from the Caltrans NOA database)

County	Route	Length	Postmile	NOA I.D.	Geologic Formation*
DN	197	0.6	R0.1 /R0.7	WEE-112-R	Jum
DN	199	0.2	11.56 / 11.77	WEE-120-R	Qls
DN	199	0.1	12.36 / 12.46	WEE-124-R	Jum
DN	199	0.5	12.96 / 13.468	WEE-123-R	Qls
DN	199	0.3	21.44 / 21.74	WEE-112-R	Jum
DN	199	0.6	6.26 / 6.86	WEE-112-R	Jum
DN	199	6.5	T14.76 / 19.84	WEE-112-R	Jum

Subsurface Conditions

During the 2013 subsurface investigation, two borings (RC-13-001 and RC-13-002) were drilled in the existing northbound shoulder of Route 199. Borings RC-13-001 and RC-13-002 were placed atop the Route 199 pavement and encountered a structural section of approximately 14.5 inches of asphalt concrete overlying approximately 5 to 15 inches of aggregate base material. The pavement section is underlain by 11 to 35 feet of fill materials composed of loose and dense silty and clayey gravel with sand. The fill materials overlie formational metamorphic rock consisting of serpentinized peridotite. The formational rock was generally encountered as ranging from moderately weathered to fresh, from moderately soft to hard, and from very intensely fractured to moderately fractured. The metamorphic rock was encountered to the maximum depth explored of 43 feet below the ground surface. More detailed descriptions of the subsurface conditions encountered are presented on the Boring Records (attached in Appendix B).

Groundwater

During the 2013 subsurface investigation, drill mud was utilized during drilling of the borings at the site; therefore, groundwater measurements in the boreholes could be influenced by the presence of the drill fluids. Groundwater was measured in the open borehole of RC-13-001 at a depth of 23 feet (approximate elevation of 785.7), and in the open borehole of RC-13-002 at a depth of 33 feet (approximate elevation of 775.0). Groundwater surface elevations are subject to seasonal fluctuations and may occur at higher or lower elevations depending on rainfall patterns and water levels in the river.

FAULTING/GEOLOGIC HAZARDS

According to Memo To Designers (MTD) 20-10, fault rupture analyses will be performed for structures where any portion of the structure falls within an Alquist-Priolo Earthquake Fault Zone (EFZ) or where any portion of a structure falls within 1,000 ft of an "unzoned" fault (not in an EFZ) that is Holocene or younger in age (ruptured in last 11,700 years). A review of the available EFZ maps (Reference No. 17), indicates that the proposed structure location is not in an EFZ. Fault data provide on the "2010 Fault Activity Map of California" (Reference No. 15), and the USGS Google Earth KML files/Fault Database indicates the closest "active" (late-Quaternary in age/movement in the past 700,000 years) fault is the Late Quaternary Bald Mountain-Big Lagoon fault zone (USGS Fault No. 787) with a surface trace located approximately 26.5 miles southwesterly. Therefore, per MTD 20-10, a fault rupture analyses does not appear necessary. The fault mapping indicates numerous inactive and pre-Quaternary (older than 1.6 million years) faults nearby the project site. Local fault locations (within the Smith River subterrane of the Western Klamath terrane) can be seen on the "Geology Map" of Plate No. 3a. An inactive fault appears to come within 1,000 feet of the site.

Based on the conditions encountered in the site subsurface exploration, the potential for soil liquefaction does not exist for the subsurface materials anticipated to support the proposed ERS.

SEISMIC RECOMMENDATIONS

Based on the 2013 subsurface investigation, a V_{S30} (the weighted average shear wave velocity for the top 100 feet of foundation materials) of 3,500 feet per second is considered to be applicable for the site seismic evaluation.

According to the Caltrans ARS Online Tool (Version 2.3.06), the nearest active fault for the site is the "Big Lagoon-Bald Mountain" fault (Caltrans Fault I.D.: 9) with a rupture plane distance of approximately 21.2 miles southwesterly, and a MMax of 7.5. The ARS Online tool indicates the controlling deterministic fault to be the "Cascadian Subduction Zone" fault (Caltrans Fault I.D.: 5) with a rupture plane distance of approximately 35.8 miles westerly, and a MMax of 8.3.

Based on the "Methodology for Developing Design Response Spectrum for Use in Seismic Design Recommendations, November 2012", (Reference No. 22) the design ground motion is the highest spectral acceleration as obtained by any of, or a combination of, the following three methods for the Patrick Creek Slip Out No. 2.

1) Statewide minimum deterministic spectrum requirements with MMax of 6.5, vertical strike-slip event with a rupture distance of 7.5 miles.
2) The nearest active controlling fault as shown on the ARS Online Tool (Version 2.3.06).
3) The USGS 5% Probability of Exceedance in 50 years (975 years return period).

Utilizing the assigned V_{S30}, the governing ARS for the project site is based on method "3" above. Accordingly, the ARS Online tool generated a design ARS with a spectral acceleration of 0.29g at a period (T) of 0 seconds. Therefore, a k_h, of 0.10g was utilized for seismic design for overall

stability (see Table No. 4, below). The effects of earthquake induced ground motions on the proposed retaining wall external stability (excluding overall stability) was not considered in design as the proposed wall does not support an installation for which there is a "low tolerance" for failure (per BDS Article 5.5.4).

ANALYSIS

The minimum live load surcharge for "vehicular loading" of 0.240 ksf (per Caltrans BDS Article 5.5.5.10.5) was applied in the traveled way for all analyses performed. Caltrans Standard Specifications 2010, Article 72-16.02G indicates that rock-filled gabions must have a unit weight of at least 110 pcf. For a typical gabion fill porosity of 30%, this roughly corresponds to a gabion stone unit weight of 157 pcf. Initially, a slope stability limit equilibrium method (LEM) of analysis (per SlopeW software, Reference No. 27) was performed on the existing site conditions utilizing approximated, generalized strength parameters; the analysis yielded a minimum factor of safety (FS) of 1.32 (see Plate No. 4a). Subsequently, a LEM analysis was performed for the highest proposed wall configuration and yielded a minimum FS of 1.33 for overall stability (see Plate No. 4c). In accordance with Article 5.10.2 of Caltrans BDS Section 5, the proposed gabion wall configuration was analyzed to determine if the criteria is met for external stability of prefabricated modular walls. The gabion wall software "GawacWin 2003" provided by Maccaferri, Inc. (Reference No. 10) was utilized to check the external stability criteria, the results of which are presented as Appendix E, attached. Based on an applied normal force of 4,762 lbs per foot of wall and an eccentricity of 0.10 feet (from GawacWin output), the equivalent uniform bearing pressure applied by the wall is 820 psf. The resulting FS against bearing failure was found to be 3.1. A summary of the wall stability analyses results are presented in Table No. 4, below.

Table No. 4. Stability Analysis Results

Failure Mode	**Analysis Source**	**BDS 5 Article**	**BDS 5 Stability Criteria**	**FS Results**
Existing Slope				
Overall Stability (Static Loads)	SlopeW	NA	NA	FS = 1.32 (see Plate No. 4a)
Gabion Wall				
Overall Stability (Static Loads)	SlopeW	5.2.2.3	FS $\geq$ 1.3	FS = 1.33 (see Plate No. 4c)
Overall Stability (Seismic Load k_h, = 0.10g)			FS $\geq$ 1.0	FS = 1.13
Sliding	GawacWin 2003 (see Appendix E)	5.10.2	$FS_{SL} \geq 1.5$	$FS_{SL} = 5.31$
Overturning			$FS_{OT} \geq 2.0$	$FS_{OT} = 12.67$
Maximum Eccentricity			$e_{max} \leq B/6$	$e_{max} = 0.10' < 1'$
Bearing Capacity	Caltrans BDS		FS $\geq$ 3.0	FS = 3.1

CONCLUSIONS & RECOMMENDATIONS

Based on the findings of the proposed wall analysis, the proposed gabion wall appears acceptable, particularly because the loading of the wall does not appear to be decreasing the overall stability of the existing slope (i.e. overall stability FS remains unchanged, see Table No. 4). In cases where a row of gabions is composed of a single 3 feet by 3 feet gabion basket, 1.5 feet wide gabions (Letter Code D, E and/or F Standard Gabion Size per Plan No. D100A) can be placed sideways behind the gabion (as diagramed in Figure A of Plate No. 5, attached) to increase the row rigidity to minimize the potential for lateral deflection of the row. To accomplish row heights of 1.5 feet height and less, Letter Code D through I baskets can be utilized (see Plate No. 5). The front face of the gabion wall should be battered at 1H:6V.

Although the proposed gabion wall does not meet the minimum embedment depth and minimum berm width requirements for prefabricated modular walls (BDS Article 5.10.1), the integrity of the proposed wall would likely not be compromised due to the relatively small proposed wall height and inherent flexibility of gabion structures. This flexible attribute is noted in the FHWA "Retaining Wall Design Guide" (Reference No. 6):

> *"Of all of the flexible gravity structures, gabion walls typically require the least amount of foundation preparation, and they can sustain the greatest amount of differential settlement without serious distress."*

Boring RC-13-002 encountered loose soils in the upper portion of the materials encountered in the boring. Due to the lack of boring data on the slope face, the potential exists for loose near-surface materials encountered beneath the base of the proposed gabion wall. Therefore, OGDN recommends the sub-excavation of materials below the base of the wall to a depth of at least 18 inches as diagramed in Figure A of Plate No. 5 attached. The sub-excavated materials should be replaced with Caltrans Class 2 Aggregate Base. To provide added stability, OGDN proposes to integrate a gabion mesh reinforcement panel attached to the rear of the wall and extending into the wall backfill as diagrammed in Figure A. An example detail of the basket and reinforcement panel is shown as Figure B of Plate No. 5. Class 10 Rock Slope Protection Fabric should be placed between the gabion baskets where in contact with the soil, but not between the soil and the base of the wall.

Corrosion

Based on the results of the corrosion testing, the site is considered "non-corrosive" to foundation elements per the 2012 Caltrans Corrosion Guidelines. However, these guidelines indicate that the "Gabion Mesh Corrosion" document (Reference No. 9) should be referred to for assistance regarding the corrosion evaluation and mitigation measures for gabions. In accordance with this document, OGDN has determined that the proposed site does not meet any of the indicators for "corrosive and severe exposures", and anticipates that the proposed facility generally meets the "well-drained soil and/or dry soil conditions" criteria for "Category 2" exposure. Therefore, PVC coating in not anticipated to be required as the 0.80 oz/square foot zinc coating (per the 2010 Caltrans Standard Specifications Article 72-16.02B) should be adequate to achieve the intended service life. Per the 2012 Caltrans Corrosion Guidelines, if deicing salts are anticipated to be

applied on the roadway, then enhanced corrosion protection of the gabion baskets should be considered.

CONSTRUCTION CONSIDERATIONS

Based on the findings in the "Naturally Occurring Asbestos (NOA)" section above, OGDN concludes that the project site has a potential for the presence of serpentinized ultramafic rocks, and therefore, there is a potential for the presence of NOA. In consideration for the potential presence of NOA materials, the North Region Hazardous Material Officer should be contacted as the project likely has the need for Airborne Toxic Control Measures (ATCMs) during construction.

SUPPLEMENTAL PROJECT INFORMATION

Section 2-1.06B "Supplemental Project Information" of the 2010 Standard Specifications addresses supplemental information ("as specified in the special provisions") made available to Bidders by Caltrans. The following items are being provided for insertion into the table in Section 2-1.06B of the project special provisions.

Included in the Information Handout:

- Geotechnical Design Report for Patrick Creek Slip Out #2 dated February 2, 2015.

Available for inspection at the Transportation Laboratory:

- Core Samples.

CLOSURE

The recommendations included in this Geotechnical Design Report are based on project information that has been provided by the North Region Design Branch E-3. Any questions regarding the above recommendations should be directed to the attention of Jacqueline A Martin (916) 227-1051 or Mark Hagy (916) 227-1077, Geotechnical Services, Office of Geotechnical Design-North.

PROFESSIONAL GEOLOGIST
JACQUELINE A. MARTIN
No. 8705
STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER
MARK C. HAGY
No. GE 2838
GEOTECHNICAL
STATE OF CALIFORNIA

JACQUELINE A MARTIN, P.G.
Engineering Geologist
Office of Geotechnical Design-North

MARK HAGY, P.E., G.E.
Transportation Engineer
Office of Geotechnical Design-North

cc: OGDN
DPM – Kevin Church
Reza Mahallati

Attachments:

REFERENCES

PLATES

Plate No. 1	Vicinity Map
Plate No. 2	Site Plan
Plate No. 3a and 3b	Geology Map
Plate No. 4a	Existing Conditions Stability Results
Plate No. 4b	Gabion Wall Overall Stability Model
Plate No. 4c	Gabion Wall Overall Stability Results
Plate No. 5c	Gabion Wall Details

APPENDICES

Appendix A	Photographs
Appendix B	Boring Records
Appendix C	2011 DAF
Appendix D	Laboratory Tests Results
Appendix E	GawacWin 2003 Results

REFERENCES

1. Caltrans (1925) Untitled As Built Plans, 35 sheets, approved date November 2, 1925, Division 1; Del Norte County, Route 1, Section C, Federal Aid Project No. 156-A.

2. (1953) USGS "Geology Map and the Structure Sections of the Gasquet Quadrangle, California", Plate 11, Scale 1:50,000, from Cater, F.W., Jr. and Wells, F.G. (1953) "Geology and Mineral Resources of the Gasquet Quadrangle, California-Oregon"; United States Geologic Survey Bulletin 995-C.

3. CDMG (1987) "Geologic Map of California the Weed Quadrangle, California",: California Division of Mines and Geology (California Geological Survey), Regional Geologic Map Series, Map No. 4A, complied by Wagner, D.L. and Saucedo, G. L, Scale 1:250,000.

4. Caltrans (1991) "Project Plans for Construction on State Highway in Del Norte County near Gasquet at 0.3 mile north of Patrick Creek Bridge", 01-DN-199 PM 22.4, Contract No. 01-228404, As Built Plans date completed 1991, 12 sheets,

5. USGS (1994) "Geologic map of the Klamath Mountains, California and Oregon:", U.S. Geological Survey Miscellaneous Investigations Series Map I-2148, compiled by Irwin, W.P., scale 1:500,000.

6. FHWA (1994) "Retaining Wall Design Guide", FHWA Technical Report No. FHWA-FLP-94-006, dated September 1994.

7. USDA (1998) "Application of Methods for Estimating the Bearing capacity of Spread Footings in Bridge Approach Fills", Engineering Technical Note No. 1, U.S. Dept. of Agriculture, Natural Resources Conservation Service, dated November 1998.

8. Caltrans (2000) "California Bank and Shore Rock Slope Protection Design, Practitioner's Guide and Field Evaluation of Riprap Methods", Final Report No. FHWA-CA-TL-95-10 (Caltrans Study No. F90TL03), prepared by Office of Structure Foundations, Engineering Service Center, Caltrans, Third Edition – Internet, October 2000.

9. Caltrans (2001) "Gabion Mesh Corrosion – Field Study of Test Panels and Full-Scale Facilities", Report No. FHWA-CA-TL-99-23, Study No. F93TL02 S, 2nd Edition, dated November 2001

10. Maccaferri, Inc. (2003) GawacWin 2003 software, licensed to Caltrans, supplied by Maccaferri, INC. (USA), Copyright 1997/2003, Persio L. A. Barros, GCP Engenharia, Brasil, obtained at http://www.maccaferri-canada.com/Software.aspx.

11. Caltrans (2004) "Section 5 – Retaining Walls", Bridge Design Specifications, dated August 2004.

12. Caltrans, (2005), "Areas Likely to contain Naturally Occurring Asbestos – Caltrans District 1", mapping prepared by the Division of Maintenance GIS in coordination with the Division of Environmental Analysis, 2005.

13. USFS (2008) "Areas More Likely to contain Naturally Occurring Asbestos, Six Rivers National Forest", prepared by the United States Forests Service, Department of Agriculture, compiled after 10-7-08.

14. Caltrans (2009) "Development of the Caltrans Deterministic PGA Map and Caltrans ARS Online", M. Merriam, Geotechnical Services, and T. Shantz, Division of Research & Innovation, Caltrans.

15. CGS (2010) "Fault Activity Map of California, 2010"; Scale: 1:750,000, California Department of Conservation, California Geological Survey Geologic Data Map No. 6; Compilation and Interpretation by: Charles W. Jennings and William A. Bryant.

16. CGS (2010) "An Explanatory Text to Accompany the Fault Activity Map of California"; Scale: 1:750,000, California Geological Survey, California Department of Conservation; Compilation and Interpretation by: Charles W. Jennings and William A. Bryant.

17. CGS (2011) " Alquist-Priolo Earthquake Fault Zone Maps", obtained from California Geologic Survey at http://www.quake.ca.gov/gmaps/ap/ap_maps.htm.

18. Caltrans (2011) "Damage Assessment Form (DAF)", DN-199-pm begin 21.67, DAF No. CEP-CT01-008-0, Disaster No. CA11-3, 4 sheets, incident date March 26, 2011.

19. Caltrans (2011) "Design of Earth Retaining Systems", Memorandum prepared by Caltrans Structure Policy and Innovation, dated July 22, 2011 (and Attachment).

20. CGS (2011) "Reported Historic Asbestos Mines, Historic Asbestos Prospects, and Other Natural Occurrences of Asbestos in California", California Geological Survey Map Sheet 59, U.S. Geologic Survey Open-File Report 2011-1188, by J.P Clinkenbeard (CGS) and B.S. Van Gosen (USGS), dated 2011.

21. AASHTO (2012) "AASHTO LRFD Bridge Design Specifications", 6th Edition.

22. Caltrans (2012) "Methodology for Developing Design Response Spectrum for Use in Seismic Design Recommendations", Caltrans Geotechnical Services, dated November 2012.

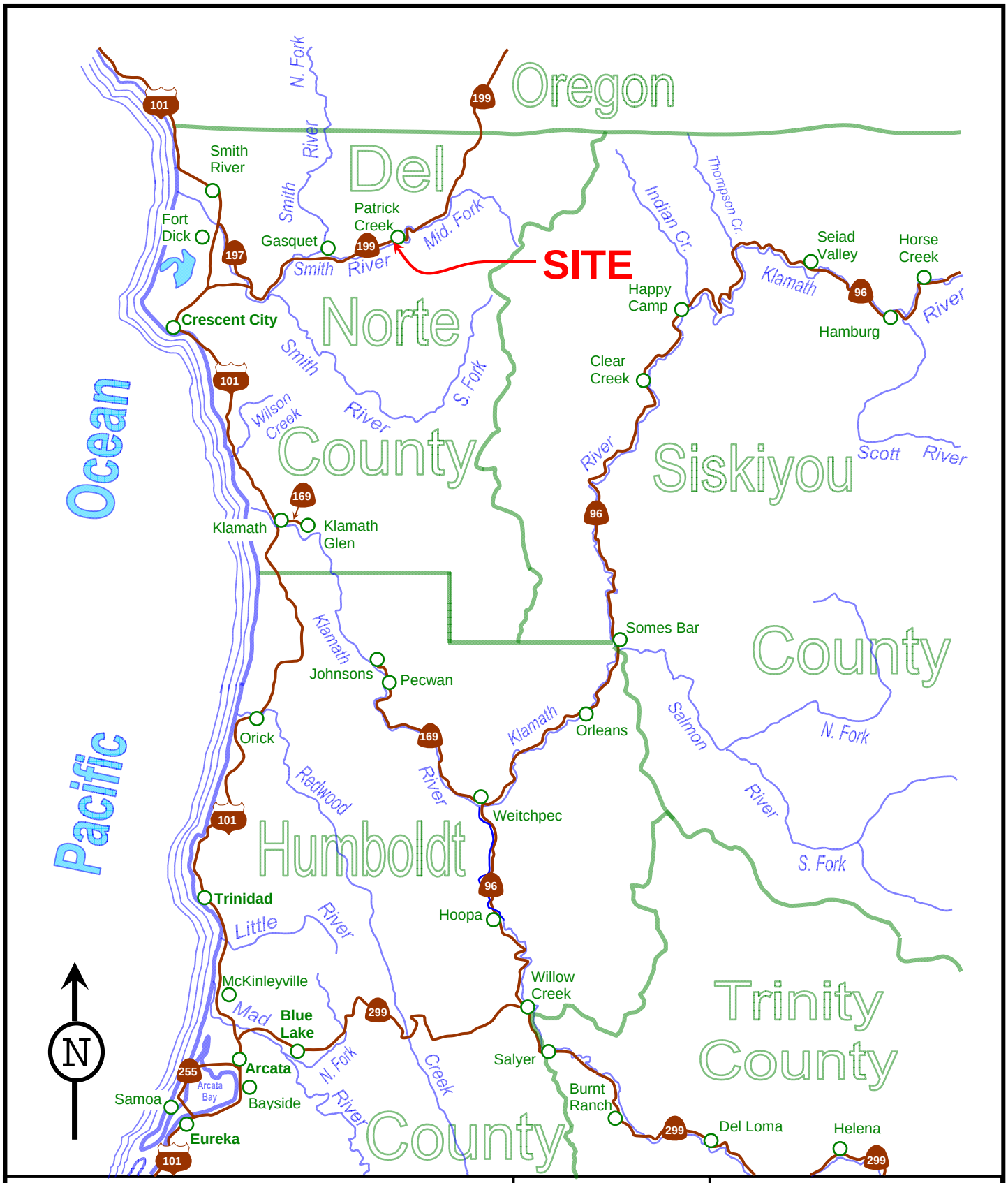
23. Caltrans (2012) "Corrosion Guidelines", Corrosion and Structure Concrete Field Investigation Branch, Materials Engineering and Testing Services, Caltrans, Version 2.0, November 2012.

24. Caltrans (2012) Caltrans Landscape Architecture Program Erosion Control Toolbox: "Soil Filled Rock Slope Protection (Nonstandard)"; updated 11-21-2012; website at: http://www.dot.ca.gov/hq/LandArch/ec/steep_slopes/soil_filled_rsp.htm.

25. Caltrans (2013) "Standard Penetration Test (SPT) Hammer Efficiencies For Caltrans Drill Rigs", Foundation Testing Branch, Caltrans Geotechnical Services, dated April 2013.

26. Caltrans (2013) "OHWE – DN 199 PM 21.7", 01-DN-199-PM 21.7, EA 01-03310, Caltrans North Region Hydraulics, Eureka Office, memo dated November 19, 2013.

27. GEOSLOPE International Ltd (2014) SLOPE/W software, GeoStudio 2012, Version 8.13.0.9042, May 2014 release.



CALTRANS
Division of Engineering Services
Geotechnical Services
Office of Geotechnical Design - North

EA: 01-0B3101

Date: February 2015

VICINITY MAP

01-DN-199 PM 21.65/21.67
PATRICK CREEK SLIP OUT #2
GEOTECHNICAL DESIGN REPORT

Plate No. 1

870
860
850
840
830
820
810
830
820
800
790
780

A

A'

APPROX. LOCATION OF PROPOSED GABION WALL FACE

TO CRESCENT CITY

106

107

108

"A1" LINE

RC-13-001

RC-13-002

BORING LOCATION, TYPICAL

CULVERT AT PM 21.69

TO GRANTS PASS

PRIMARY LOCATION OF SLOPE FAILURE

MIDDLE FORK SMITH RIVER

SECOND LOCATION OF SLOPE FAILURE

N

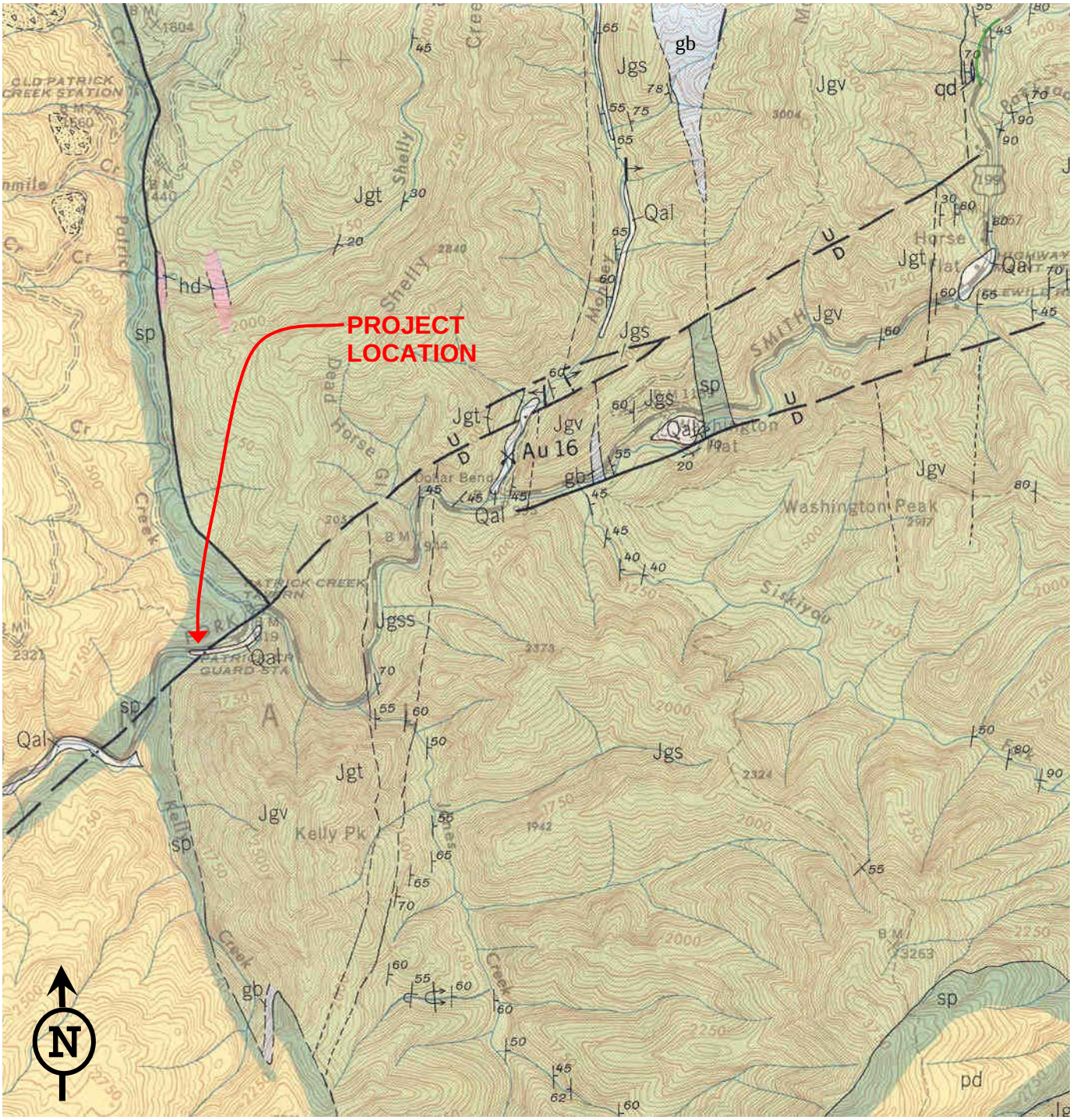
APPROXIMATE SCALE : 1" = 20 feet

0 20 40 feet

Base Plan Reference:
Topography plan from Microstation file "0B310_BASEMAP.DGN" provided by Caltrans District 3 Design E-3. Contour interval = 2 feet.

CALTRANS
Division of Engineering Services
Geotechnical Services
Office of Geotechnical Design North

EA: 01-0B3101	SITE PLAN
Date: February 2015	
01-DN-199 PM 21.65/21.67 Patrick Creek Slip Out #2 GEOTECHNICAL DESIGN REPORT	Plate No 2



APPROXIMATE SCALE: 1:50,000

0 0.5 1.0 1.5 2.0 2.5 miles

0 1 2 3 4 kilometers

See Plate No. 3b for map explanation.

Base Map Reference:
Portion of "Geology Map and the Structure Sections of the Gasquet Quadrangle, California", Plate 11, Scale 1:50,000, from Cater, F.W., Jr. and Wells, F.G. (1953) "Geology and Mineral Resources of the Gasquet Quadrangle, California-Oregon"; United States Geologic Survey Bulletin 995-C.

CALTRANS
Division of Engineering Services
Geotechnical Services
Office of Geotechnical Design North

EA: 01-0B3101

Date: February 2015

QUADRANGLE GEOLOGY MAP

01-DN-199 PM 21.65/21.67
Patrick Creek Slip Out #2
GEOTECHNICAL DESIGN REPORT

Plate No.3a

ABBREVIATED EXPLANATION

Approximate stratigraphic relationships only; see referenced publication for more detailed stratigraphic relationships and unit descriptions.

QUATERNARY

Recent

Qal — Alluvium
Deposits in present stream valleys and bench gravels

TERTIARY

Miocene (?)

Tg — Gravel deposits
Poorly sorted clay, sand and gravel on upland surface above 1900 feet. Some of coarser material partly decomposed

UNCONFORMITY

Miocene

Tm — Upper Miocene beds
Soft, friable shale and siltstone

rp — Albite rhyolite porphyry dikes

JURASSIC OR CRETACEOUS

Late Jurassic or Early Cretaceous

INTRUSIVE ROCKS

qd — Quartz diorite
Granitoid light-colored rocks, containing visible quartz

hd — Hornblende diorite
Medium- to coarse-grained rock. The proportion of light to dark minerals varies widely from place to place

gb — Gabbro and related rocks
Gray, medium-grained rocks. Composition ranges between wide limits and grades into hornblende diorite

sp — Serpentine
Completely serpentinized peridotite sheared into small blocks and aggregations of curved or bellied shiny translucent yellow, green, or black plates

pd — Periodotite undifferentiated
Green medium-grained rocks consisting of olivine with or without other mafic minerals. Weathers red. In places largely altered to serpentine but not crushed

we — Wehrlite
Dark coarse-grained rock consisting of olivine and diallage

JURASSIC

Upper Jurassic

Jgs, Jgv, Jgf, Jgss, Jgt, Jgl, Jga — Galice formation
Jgs, *dark-gray to black fine-grained thinly layered rocks generally with slaty cleavage, a few thin sandstone beds and some thin layers of grit;* Jgss, *medium-grained, massive, thick-bedded sandstone;* Jgv, *large thicknesses of andesitic flows, tuffs, and breccias;* Jgf, *predominantly flows, in places special phases of volcanic rocks are mapped separately or are indicated without boundaries by letters symbols;* Jgt, *predominantly tuffs;* Jga, *agglomerate;* Jgl, *limestone*

Jd — Dothan formation
Massive sandstone and thin layers of black or dark-gray slate; also some interlayered basalt flows

Landslide

Highly sheared rock

Contact, showing dip
Dashed where approximately located

Indefinite contact
Includes gradational and inferred contacts

Fault, showing dip
Dashed where approximately located; dotted where concealed. U, *upthrown side;* D, *downthrown side*

Trace of axial plane of anticline

Trace of axial plane of syncline

Axis of overturned anticline

Vertical plunging fold

Strike and dip of beds

Strike and dip of overturned beds

Strike of vertical beds

Strike and dip of joints

Lode mine or prospect

Placer mine

MINES AND PROSPECTS

CHROMITE

2. Pine Flat Chromite
5. Richey
6. Logan
7. Tangarene
8. Toujours Gai
9. Holiday group
17. Chrome Hill No. 1
18. Bonanza
19. High Plateau
20. Judy
21. Skyline
22. Angela
23. Black Jack
24. Niggerhead
25. Fairview
26. Margy
27. French Hill Chrome Mine
33. Hawkins
34. Fourth of July
36. Coon Mountain group
37. Coon Creek No. 1
38. Cooncan
39. Big Dipper
40. Patterson
41. Thursday Evening
42. Apex
43. Sunset
44. Zinc Saddle
46. Camp 8

CHROMITE

47. Sunrise
48. Grumpy
49. Gilmore
52. Bluebird

QUICKSILVER

Hg 4. Big Boy
10. Webb
50. Sunnybrook
51. Diamond Creek

GOLD

Au 11. Continental
12. Name unknown
13. Name unknown
14. Blue Rock
15. Name unknown
16. Name unknown
28. Morrel Placer
29. French Hill Placer
30. French Hill Placer
31. Name unknown
32. Name unknown
35. Name unknown

COPPER

Cu 1. Name unknown
3. Cleopatra
45. Higgins

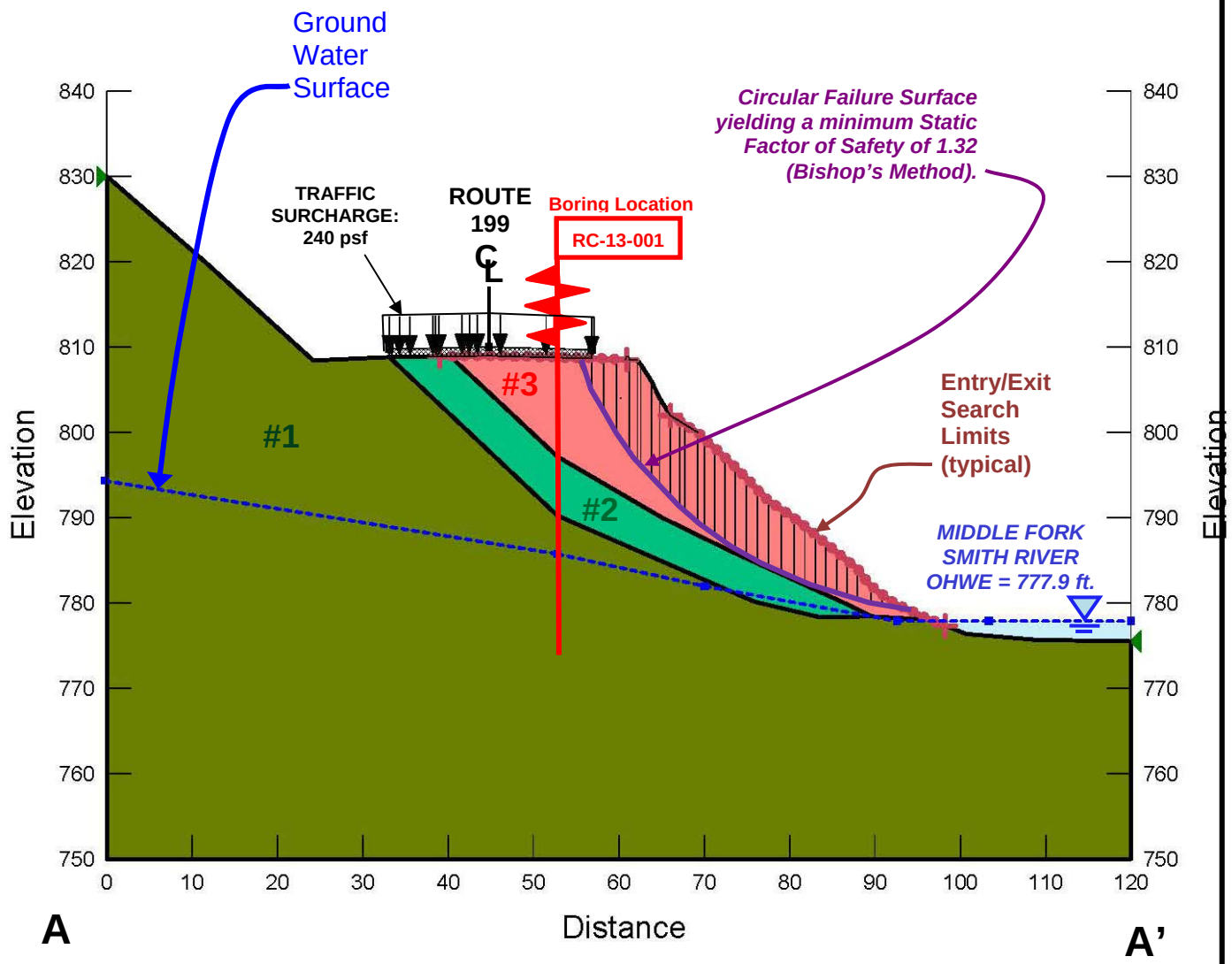
Reference: "Geology Map and the Structure Sections of the Gasquet Quadrangle, California", Plate 11, Scale 1:50,000, from Cater, F.W., Jr. and Wells, F.G. (1953) "Geology and Mineral Resources of the Gasquet Quadrangle, California-Oregon"; United States Geologic Survey Bulletin 995-C.

Caltrans	CALTRANS Division of Engineering Services Geotechnical Services Office of Geotechnical Design North	EA: 01-0B3101 Date: February 2015	**QUADRANGLE GEOLOGY MAP LEGEND**
		01-DN-199 PM 21.65/21.67 Patrick Creek Slip Out #2 GEOTECHNICAL DESIGN REPORT	Plate No. 3b

#1 – PERIDOTITE BEDROCK:
$\gamma = 145$ pcf
$\varphi' = 0^o$
c' = 3,000 psf

#2 – WEATHERED PERIDOTITE BEDROCK:
$\gamma = 135$ pcf
$\varphi' = 22^o$
c' = 1,000 psf

#3 – EMBANKMENT (fill materials):
$\gamma = 125$ pcf
$\varphi' = 35^o$
c' = 150 psf



APPROXIMATE SCALE : 1" = 20 feet
(vertical = horizontal)

0 20 40 feet

Note:
Ground surface elevations based on elevations presented topography plan from Microstation file "0B310_BASEMAP.DGN" provided by Caltrans District 3 Design E-3 (See "Site Plan", Plate No. 2). Contour interval = 2 feet.

CALTRANS Division of Engineering Services Geotechnical Services Office of Geotechnical Design - North	EA: 01-0B3101 Date: February 2015	**EXISTING CONDITIONS STABILITY RESULTS ("A1" STA 106+55)**
	01-DN-199 PM 21.65/21.67 PATRICK CREEK SLIPOUT #2 GEOTECHNICAL DESIGN REPORT	Plate No. 4a

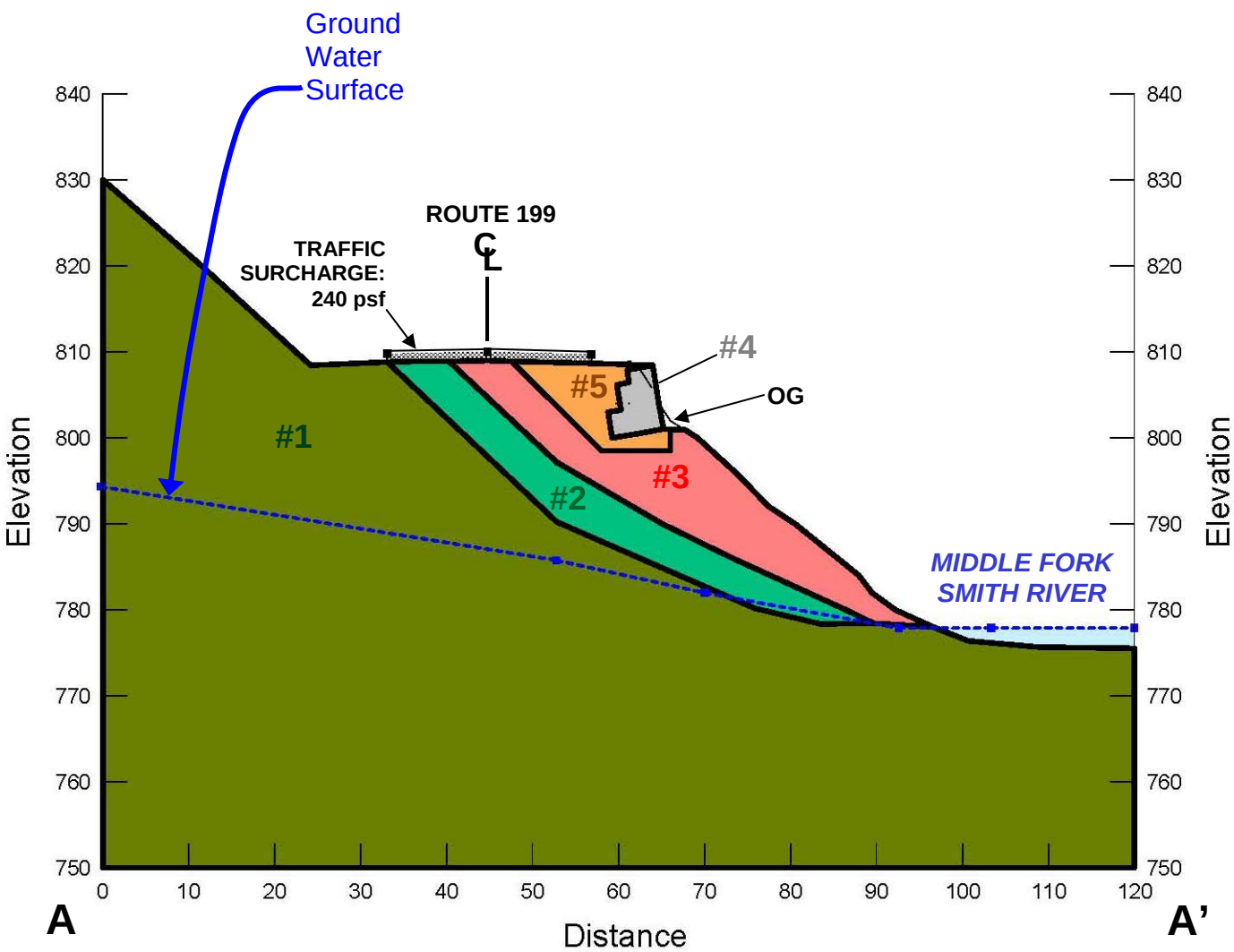
#1 – PERIDOTITE BEDROCK:
$\gamma = 145$ pcf
$\varphi' = 0^o$
c' = 3,000 psf

#2 – WEATHERED PERIDOTITE BEDROCK:
$\gamma = 135$ pcf
$\varphi' = 22^o$
c' = 1,000 psf

#3 – EMBANKMENT (fill materials):
$\gamma = 125$ pcf
$\varphi' = 35^o$
c' = 150 psf

#4 – GABION BASKET FILL:
$\gamma = 110$ pcf
$\varphi = 60^o$
c = 5000 psf
(Relatively Impenetrable)

#5 – WALL BACKFILL:
$\gamma = 125$ pcf
$\varphi = 35^o$
c = 150 psf



APPROXIMATE SCALE : 1" = 20 feet
(vertical = horizontal)

0 20 40 feet

Note:
Ground surface elevations based on elevations presented topography plan from Microstation file "0B310_BASEMAP.DGN" provided by Caltrans District 3 Design E-3 (See "Site Plan", Plate No. 2). Contour interval = 2 feet.

CALTRANS Division of Engineering Services Geotechnical Services Office of Geotechnical Design - North	EA: 01-0B3101 Date: February 2015	**GABION WALL OVERALL STABILITY MODEL**
	01-DN-199 PM 21.65/21.67 PATRICK CREEK SLIPOUT #2 GEOTECHNICAL DESIGN REPORT	Plate No. 4b

#1 – PERIDOTITE BEDROCK:
$\gamma = 145$ pcf
$\varphi' = 0^o$
c' = 3,000 psf

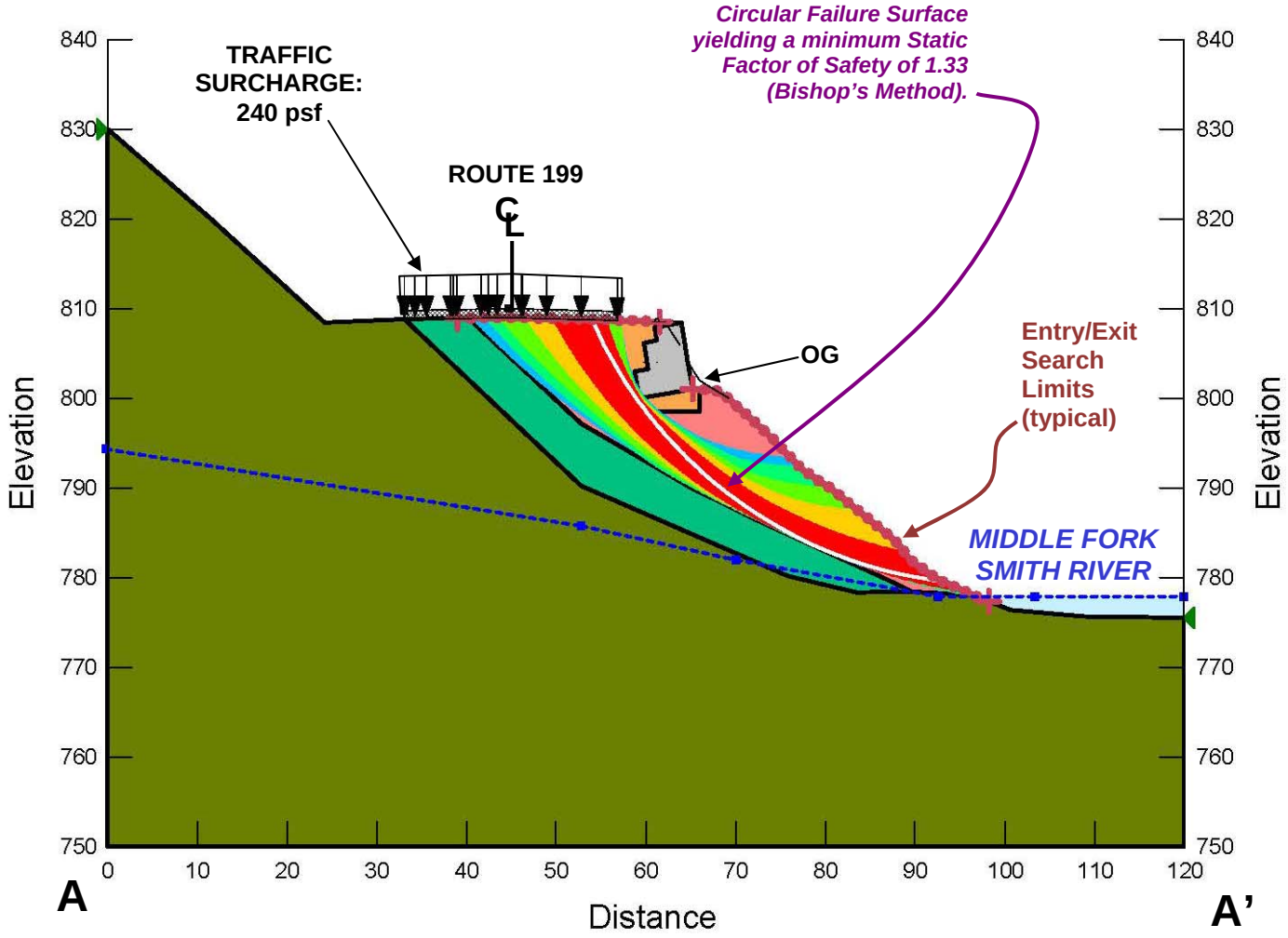
#2 – WEATHERED PERIDOTITE BEDROCK:
$\gamma = 135$ pcf
$\varphi' = 22^o$
c' = 1,000 psf

#3 – EMBANKMENT (fill materials):
$\gamma = 125$ pcf
$\varphi' = 35^o$
c' = 150 psf

#4 – GABION BASKET FILL:
$\gamma = 110$ pcf
$\varphi = 60^o$
c = 5000 psf
(Relatively Impenetrable)

#5 – WALL BACKFILL:
$\gamma = 125$ pcf
$\varphi = 35^o$
c = 150 psf

Safety Map Range of Factor of Safety	
1.33 to 1.38	
1.38 to 1.43	
1.43 to 1.48	
1.48 to 1.53	
1.53 to 1.58	



APPROXIMATE SCALE : 1" = 20 feet (vertical = horizontal)

0 20 40 feet

Note:
Ground surface elevations based on elevations presented topography plan from Microstation file "0B310_BASEMAP.DGN" provided by Caltrans District 3 Design E-3 (See "Site Plan", Plate No. 2). Contour interval = 2 feet.

CALTRANS
Division of Engineering Services
Geotechnical Services
Office of Geotechnical Design - North

EA: 01-0B3101

Date: February 2015

GABION WALL OVERALL STABILITY RESULTS

01-DN-199 PM 21.65/21.67
PATRICK CREEK SLIPOUT #2
GEOTECHNICAL DESIGN REPORT

Plate No. 4c

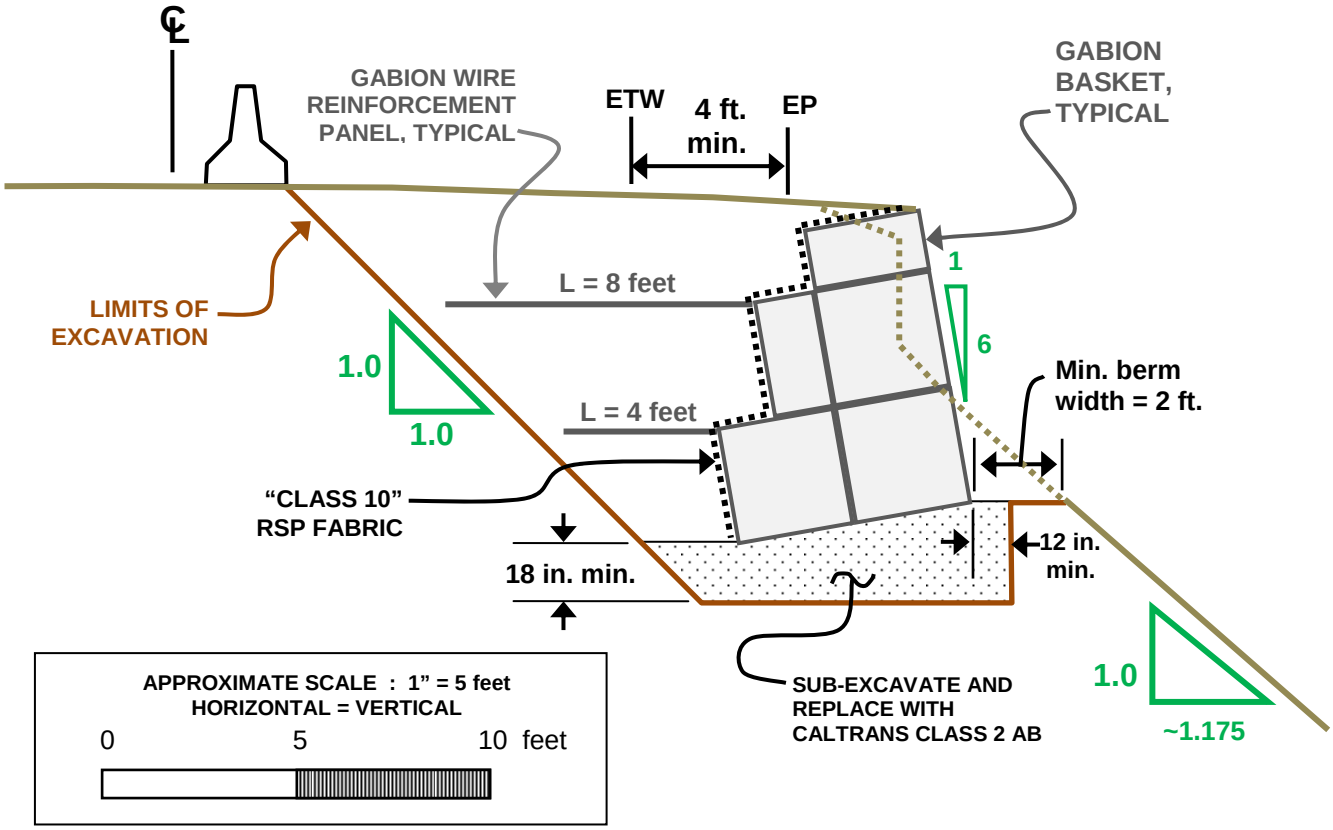


Figure A: Typical Detail of Gabion Basket Wall and Wire Reinforced Backfill (at "A1" STA 106+55).

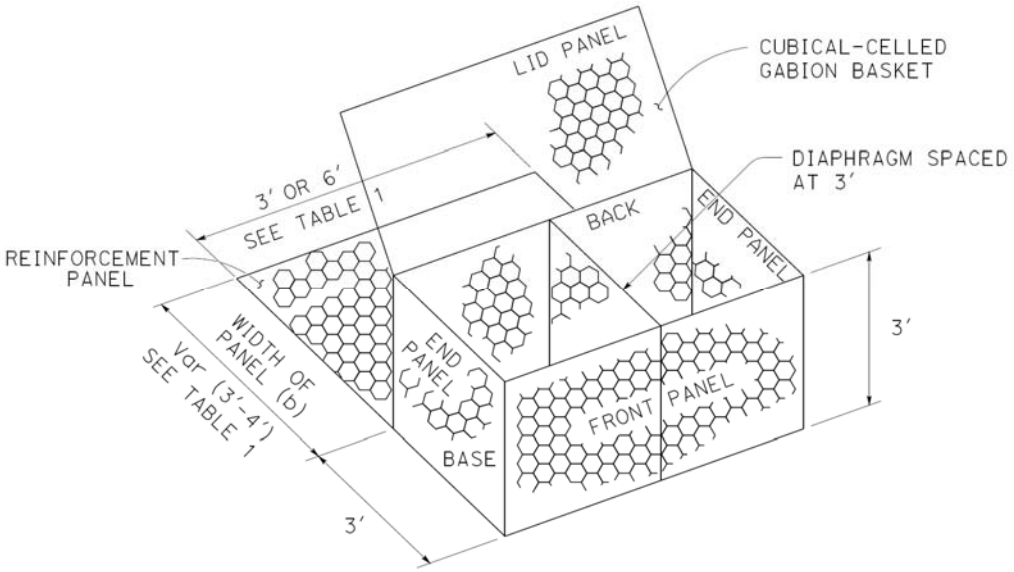


Figure B. Detail of Gabion Basket with Gabion Wire Reinforcement Panel (No Scale).

From: Project Plans for Construction, 03-COL-20 PM 10.8, Contract No. 03-0F0504, Project I.D. 0300000063, dated 3/21/11.

CALTRANS Division of Engineering Services Geotechnical Services Office of Geotechnical Design - North	EA: 01-0B3101	GABION WALL DETAILS	
	Date: February 2015		
	01-DN-199 PM 21.65-21.67 Patrick Creek Slip Out #2 GEOTECHNICAL DESIGN REPORT		Plate No. 5

01-0B3101
DN 101 PM 21.65-21.67

Appendix A

Photographs

Photo No. 1. Primary slipout viewing easterly from right of STA 106+30 (photo date 4-16-13).

Photo No. 2. Primary slipout viewing westerly from right of STA 106+90 (photo date 4-16-13).

Photo No. 3. Primary slipout viewing westerly from right of STA 107+10 (photo date 10-2-12).

Photo No. 4. Head scarp of primary slipout viewing northerly from right of STA 106+60; note thickness of asphalt (photo date 10-2-12).

CALTRANS Division of Engineering Services Geotechnical Services Office of Geotechnical Design - North	EA: 01-0B3101 Date: February 2015	**PHOTOGRAPHS**
	01-DN-199 PM 21.65/21.67 PATRICK CREEK SLIP OUT #2 GEOTECHNICAL DESIGN REPORT	Plate No. A-2

01-0B3101
DN 101 PM 21.65-21.67

Appendix B

Boring Records

LOGGED BY	BEGIN DATE	COMPLETION DATE	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID
J. Martin	8-8-13	8-8-13		RC-13-001
DRILLING CONTRACTOR			BOREHOLE LOCATION (Offset, Station, Line)	SURFACE ELEVATION
			7.0' Rt Sta 106+57 A1	~808.7 ft
DRILLING METHOD			DRILL RIG	BOREHOLE DIAMETER
Rotary Wire-Line			CS 2000 (truck) C#6832	3.7 in
SAMPLER TYPE(S) AND SIZE(S) (ID)			SPT HAMMER TYPE	HAMMER EFFICIENCY, ERi
SPT (1.4")			Auto: 140# dropped 30 inches	92%
BOREHOLE BACKFILL AND COMPLETION			GROUNDWATER READINGS: DURING DRILLING 23.0 ft; AFTER DRILLING (DATE)	TOTAL DEPTH OF BORING
				35.0 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	0		ASPHALT CONCRETE (14.4).		1			77							
	1		AGGREGATE BASE (5"); (CEMENT TREATED).												
806.73	2		CLAYEY GRAVEL with SAND and COBBLES (GC); medium dense; dark grayish brown; moist; fine and coarse, angular and subangular GRAVEL ; little fine and medium SAND ; some fines ; 15% PERIDOTITE COBBLES, hard, 4 to 6 inches; (FILL).												
804.73	3														
	4														
	5				2	5 5 7	12								from 5 to 23 feet depth: lost drilling mud circulation
802.73	6														
	7				3			69							
800.73	8														
	9														
798.73	10		Dense.		4	7 9 27	36								
	11														
796.73	12		IGNEOUS ROCK (SERPENTINIZED PERIDOTITE); gray; slightly weathered; hard; intensely fractured; frctures dip 20 to 30 degrees; open fractures filled with clayey sand (SC); some fracture surfaces serpentinized, oxide staining.		5			86	21						
	13														
794.73	14														
	15				6	6 7 14	21								
792.73	16														
	17				7			66	0						
790.73	18														17.0 to 19.0 feet depth: easier drilling
	19		IGNEOUS ROCK (SERPENTINIZED PERIDOTITE); dark greenish gray; moderately weathered; moderately hard and moderately soft; very intensely and intensely fractured; open fractures filled with clayey sand (SC); fracture surfaces serpentinized, oxide staining.												
788.73	20				8	REF									SPT sampler bouncing on rock
	21				9			100	17						asbestos fibers in rock materials
786.73	22		IGNEOUS ROCK (SERPENTINIZED PERIDOTITE); greenish gray; fresh; hard and very hard; moderately fractured; fractures dip 50 to 80 degrees; fracture surfaces serpentinized, contain white fiberous material. 23 to 23.5 feet depth: very intensely fractured.												
	23														
784.73	24														
	25														

(continued)

Department of Transportation
Division of Engineering Services
Geotechnical Services
Office of Geotechnical Design - North

REPORT TITLE				HOLE ID
BORING RECORD				RC-13-001
DIST.	COUNTY	ROUTE	POSTMILE	PROJECT ID
01	DN	199	21.7/21.7	01-0B3201
PROJECT OR BRIDGE NAME				
Patrick Creek Slipout #2				
BRIDGE NUMBER	PREPARED BY		DATE	SHEET
	M. Hagy		9-2-14	1 of 2

5 BR - STANDARD DN199PM21.67BORINGLOGS.GPJ DRAFT CALTRANS LIBRARY OCT 2011.GLB 10/25/14

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	25		IGNEOUS ROCK (Serpentinized Peridotite) *(continued)*.		10			90	77						
782.73	26														
	27														
780.73	28		27.5 to 28.0 feet depth: very intensely fractured.												
	29														
778.73	30				11			100	60						
	31														
776.73	32														
	33														
774.73	34														
	35		Bottom of borehole at 35.0 ft bgs												
772.73	36														
	37		This Boring Record was developed in accordance with the Caltrans Soil & Rock Logging, Classification, and Presentation Manual (2010) except as noted on the Soil or Rock Legend or below.												
770.73	38														
	39														
768.73	40														
	41														
766.73	42														
	43														
764.73	44														
	45														
762.73	46														
	47														
760.73	48														
	49														
758.73	50														
	51														
756.73	52														
	53														
754.73	54														
	55														

Department of Transportation
Division of Engineering Services
Geotechnical Services
Office of Geotechnical Design - North

REPORT TITLE				HOLE ID
BORING RECORD				**RC-13-001**
DIST. **01**	COUNTY **DN**	ROUTE **199**	POSTMILE **21.7/21.7**	PROJECT ID **01-0B3201**
PROJECT OR BRIDGE NAME **Patrick Creek Slipout #2**				
BRIDGE NUMBER	PREPARED BY **M. Hagy**		DATE **9-2-14**	SHEET **2 of 2**

5 BR - STANDARD DN199PM21.67BORINGLOGS.GPJ DRAFT CALTRANS LIBRARY OCT 2011.GLB 10/25/14

LOGGED BY	BEGIN DATE	COMPLETION DATE	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID
M. Hagy	8-8-13	8-8-13		RC-13-002
DRILLING CONTRACTOR			BOREHOLE LOCATION (Offset, Station, Line) 11.5' Rt Sta 107+33 A1	SURFACE ELEVATION ~808.0 ft
DRILLING METHOD Rotary Wire-Line			DRILL RIG CS 2000 (truck) C#9904	BOREHOLE DIAMETER 3.7 in
SAMPLER TYPE(S) AND SIZE(S) (ID) SPT (1.4")			SPT HAMMER TYPE Diedrich Auto: 140# dropped 30 inches	HAMMER EFFICIENCY, ERi 85%
BOREHOLE BACKFILL AND COMPLETION			GROUNDWATER READINGS DURING DRILLING 33.0 ft AFTER DRILLING (DATE)	TOTAL DEPTH OF BORING 43.0 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	0		ASPHALT CONCRETE (14.5).		1			58							
	1		AGGREGATE BASE (15).												
805.95	2														
	3		SILTY GRAVEL with SAND (GM); loose; brown; moist; some fine, angular GRAVEL ; some from fine to coarse SAND ; little fines ; trace oxide staining; (FILL).												
803.95	4														
	5				2	3 1 4	5								
801.95	6														
	7				3			21							
799.95	8														
	9														
797.95	10				4	4 3 3	6								
	11														
795.95	12				5			26							12 to 22 feet depth: washing out of fines on core run
	13														
793.95	14														
	15				6	2 2 3	5								
791.95	16														
	17				7			33							
789.95	18														
	19														
787.95	20		Dense.		8	10 17 16	33								
	21														
785.95	22				9			64	26						
	23														
783.95	24		Poorly graded GRAVEL with SILT, SAND, and COBBLES (GP-GM); very dense; dark grayish brown; moist; fine and coarse, angular GRAVEL ; little from												23.5 feet: harder drilling effort
	25														

(continued)

Department of Transportation
Division of Engineering Services
Geotechnical Services
Office of Geotechnical Design - North

REPORT TITLE				HOLE ID
BORING RECORD				RC-13-002
DIST. 01	COUNTY DN	ROUTE 199	POSTMILE 21.7/21.7	PROJECT ID 01-0B3201
PROJECT OR BRIDGE NAME Patrick Creek Slipout #2				
BRIDGE NUMBER	PREPARED BY M. Hagy		DATE 9-2-14	SHEET 1 of 2

5 BR - STANDARD DN199PM21.67BORINGLOGS.GPJ DRAFT CALTRANS LIBRARY OCT 2011.GLB 10/25/14

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	25		fine to coarse SAND ; little fines ; hard; 30% hard, up to 10"; (FILL).		10	23 34 50/5"	84/11								
781.95	26		Poorly graded GRAVEL with SILT, SAND, and COBBLES (GP-GM) *(continued)*.												
	27				11			64	0						
779.95	28														
	29														
777.95	30				12			52	28						
	31														
775.95	32														32 feet: drill rod dropped 1.5 feet (void between cobbles?)
	33														
773.95	34														
	35				13	25 50/2"	50/2								
771.95	36		IGNEOUS ROCK (SERPENTINTIZED PERIDOTITE); greenish gray; moderately and slightly weathered; moderately hard and hard; from very intensely fractured to mod. fractured.		14			76	10						
	37														
769.95	38														
	39														
767.95	40				15			47	0						
	41														
765.95	42														
	43		Bottom of borehole at 43.0 ft bgs												
763.95	44														
	45		This Boring Record was developed in accordance with the Caltrans Soil & Rock Logging, Classification, and Presentation Manual (2010) except as noted on the Soil or Rock Legend or below.												
761.95	46														
	47														
759.95	48														
	49														
757.95	50														
	51														
755.95	52														
	53														
753.95	54														
	55														

Department of Transportation
Division of Engineering Services
Geotechnical Services
Office of Geotechnical Design - North

REPORT TITLE				HOLE ID
BORING RECORD				**RC-13-002**
DIST. **01**	COUNTY **DN**	ROUTE **199**	POSTMILE **21.7/21.7**	PROJECT ID **01-0B3201**
PROJECT OR BRIDGE NAME **Patrick Creek Slipout #2**				
BRIDGE NUMBER	PREPARED BY **M. Hagy**	DATE **9-2-14**	SHEET **2 of 2**	

5 BR - STANDARD DN199PM21.67BORINGLOGS.GPJ DRAFT CALTRANS LIBRARY OCT 2011.GLB 10/25/14

GROUP SYMBOLS AND NAMES

Graphic / Symbol	Group Names
GW	Well-graded GRAVEL Well-graded GRAVEL with SAND
GP	Poorly graded GRAVEL Poorly graded GRAVEL with SAND
GW-GM	Well-graded GRAVEL with SILT Well-graded GRAVEL with SILT and SAND
GW-GC	Well-graded GRAVEL with CLAY (or SILTY CLAY) Well-graded GRAVEL with CLAY and SAND (or SILTY CLAY and SAND)
GP-GM	Poorly graded GRAVEL with SILT Poorly graded GRAVEL with SILT and SAND
GP-GC	Poorly graded GRAVEL with CLAY (or SILTY CLAY) Poorly graded GRAVEL with CLAY and SAND (or SILTY CLAY and SAND)
GM	SILTY GRAVEL SILTY GRAVEL with SAND
GC	CLAYEY GRAVEL CLAYEY GRAVEL with SAND
GC-GM	SILTY, CLAYEY GRAVEL SILTY, CLAYEY GRAVEL with SAND
SW	Well-graded SAND Well-graded SAND with GRAVEL
SP	Poorly graded SAND Poorly graded SAND with GRAVEL
SW-SM	Well-graded SAND with SILT Well-graded SAND with SILT and GRAVEL
SW-SC	Well-graded SAND with CLAY (or SILTY CLAY) Well-graded SAND with CLAY and GRAVEL (or SILTY CLAY and GRAVEL)
SP-SM	Poorly graded SAND with SILT Poorly graded SAND with SILT and GRAVEL
SP-SC	Poorly graded SAND with CLAY (or SILTY CLAY) Poorly graded SAND with CLAY and GRAVEL (or SILTY CLAY and GRAVEL)
SM	SILTY SAND SILTY SAND with GRAVEL
SC	CLAYEY SAND CLAYEY SAND with GRAVEL
SC-SM	SILTY, CLAYEY SAND SILTY, CLAYEY SAND with GRAVEL
PT	PEAT
	COBBLES COBBLES and BOULDERS BOULDERS

Graphic / Symbol	Group Names
CL	Lean CLAY Lean CLAY with SAND Lean CLAY with GRAVEL SANDY lean CLAY SANDY lean CLAY with GRAVEL GRAVELLY lean CLAY GRAVELLY lean CLAY with SAND
CL-ML	SILTY CLAY SILTY CLAY with SAND SILTY CLAY with GRAVEL SANDY SILTY CLAY SANDY SILTY CLAY with GRAVEL GRAVELLY SILTY CLAY GRAVELLY SILTY CLAY with SAND
ML	SILT SILT with SAND SILT with GRAVEL SANDY SILT SANDY SILT with GRAVEL GRAVELLY SILT GRAVELLY SILT with SAND
OL	ORGANIC lean CLAY ORGANIC lean CLAY with SAND ORGANIC lean CLAY with GRAVEL SANDY ORGANIC lean CLAY SANDY ORGANIC lean CLAY with GRAVEL GRAVELLY ORGANIC lean CLAY GRAVELLY ORGANIC lean CLAY with SAND
OL	ORGANIC SILT ORGANIC SILT with SAND ORGANIC SILT with GRAVEL SANDY ORGANIC SILT SANDY ORGANIC SILT with GRAVEL GRAVELLY ORGANIC SILT GRAVELLY ORGANIC SILT with SAND
CH	Fat CLAY Fat CLAY with SAND Fat CLAY with GRAVEL SANDY fat CLAY SANDY fat CLAY with GRAVEL GRAVELLY fat CLAY GRAVELLY fat CLAY with SAND
MH	Elastic SILT Elastic SILT with SAND Elastic SILT with GRAVEL SANDY elastic SILT SANDY elastic SILT with GRAVEL GRAVELLY elastic SILT GRAVELLY elastic SILT with SAND
OH	ORGANIC fat CLAY ORGANIC fat CLAY with SAND ORGANIC fat CLAY with GRAVEL SANDY ORGANIC fat CLAY SANDY ORGANIC fat CLAY with GRAVEL GRAVELLY ORGANIC fat CLAY GRAVELLY ORGANIC fat CLAY with SAND
OH	ORGANIC elastic SILT ORGANIC elastic SILT with SAND ORGANIC elastic SILT with GRAVEL SANDY elastic ELASTIC SILT SANDY ORGANIC elastic SILT with GRAVEL GRAVELLY ORGANIC elastic SILT GRAVELLY ORGANIC elastic SILT with SAND
OL/OH	ORGANIC SOIL ORGANIC SOIL with SAND ORGANIC SOIL with GRAVEL SANDY ORGANIC SOIL SANDY ORGANIC SOIL with GRAVEL GRAVELLY ORGANIC SOIL GRAVELLY ORGANIC SOIL with SAND

FIELD AND LABORATORY TESTS

C	Consolidation (ASTM D 2435-04)
CL	Collapse Potential (ASTM D 5333-03)
CP	Compaction Curve (CTM 216 - 06)
CR	Corrosion, Sulfates, Chlorides (CTM 643 - 99; CTM 417 - 06; CTM 422 - 06)
CU	Consolidated Undrained Triaxial (ASTM D 4767-02)
DS	Direct Shear (ASTM D 3080-04)
EI	Expansion Index (ASTM D 4829-03)
M	Moisture Content (ASTM D 2216-05)
OC	Organic Content (ASTM D 2974-07)
P	Permeability (CTM 220 - 05)
PA	Particle Size Analysis (ASTM D 422-63 [2002])
PI	Liquid Limit, Plastic Limit, Plasticity Index (AASHTO T 89-02, AASHTO T 90-00)
PL	Point Load Index (ASTM D 5731-05)
PM	Pressure Meter
PP	Pocket Penetrometer
R	R-Value (CTM 301 - 00)
SE	Sand Equivalent (CTM 217 - 99)
SG	Specific Gravity (AASHTO T 100-06)
SL	Shrinkage Limit (ASTM D 427-04)
SW	Swell Potential (ASTM D 4546-03)
TV	Pocket Torvane
UC	Unconfined Compression - Soil (ASTM D 2166-06) Unconfined Compression - Rock (ASTM D 2938-95)
UU	Unconsolidated Undrained Triaxial (ASTM D 2850-03)
UW	Unit Weight (ASTM D 4767-04)
VS	Vane Shear (AASHTO T 223-96 [2004])

SAMPLER GRAPHIC SYMBOLS

- Standard Penetration Test (SPT)
- Standard California Sampler
- Modified California Sampler
- Shelby Tube
- Piston Sampler
- NX Rock Core
- HQ Rock Core
- Bulk Sample
- Other (see remarks)

DRILLING METHOD SYMBOLS

- Auger Drilling
- Rotary Drilling
- Dynamic Cone or Hand Driven
- Diamond Core

WATER LEVEL SYMBOLS

- First Water Level Reading (during drilling)
- Static Water Level Reading (short-term)
- Static Water Level Reading (long-term)

Department of Transportation
Division of Engineering Services
Geotechnical Services
Office of Geotechnical Design - North

REPORT TITLE
BORING RECORD LEGEND

DIST.	COUNTY	ROUTE	POSTMILE	EA
01	Del Norte	199	21.7/21.7	01-01-0B3201

PROJECT OR BRIDGE NAME
Patrick Creek Slipout #2

BRIDGE NUMBER	PREPARED BY	DATE	SHEET
			1 of 3

CONSISTENCY OF COHESIVE SOILS

Descriptor	Unconfined Compressive Strength (tsf)	Pocket Penetrometer (tsf)	Torvane (tsf)	Field Approximation
Very Soft	< 0.25	< 0.25	< 0.12	Easily penetrated several inches by fist
Soft	0.25 - 0.50	0.25 - 0.50	0.12 - 0.25	Easily penetrated several inches by thumb
Medium Stiff	0.50 - 1.0	0.50 - 1.0	0.25 - 0.50	Can be penetrated several inches by thumb with moderate effort
Stiff	1.0 - 2.0	1.0 - 2.0	0.50 - 1.0	Readily indented by thumb but penetrated only with great effort
Very Stiff	2.0 - 4.0	2.0 - 4.0	1.0 - 2.0	Readily indented by thumbnail
Hard	> 4.0	> 4.0	> 2.0	Indented by thumbnail with difficulty

APPARENT DENSITY OF COHESIONLESS SOILS

Descriptor	SPT N_{60} - Value (blows / foot)
Very Loose	0 - 4
Loose	5 - 10
Medium Dense	11 - 30
Dense	31 - 50
Very Dense	> 50

MOISTURE

Descriptor	Criteria
Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp but no visible water
Wet	Visible free water, usually soil is below water table

PERCENT OR PROPORTION OF SOILS

Descriptor	Criteria
Trace	Particles are present but estimated to be less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

SOIL PARTICLE SIZE

Descriptor		Size
Boulder		> 12 inches
Cobble		3 to 12 inches
Gravel	Coarse	3/4 inch to 3 inches
	Fine	No. 4 Sieve to 3/4 inch
Sand	Coarse	No. 10 Sieve to No. 4 Sieve
	Medium	No. 40 Sieve to No. 10 Sieve
	Fine	No. 200 Sieve to No. 40 Sieve
Silt and Clay		Passing No. 200 Sieve

PLASTICITY OF FINE-GRAINED SOILS

Descriptor	Criteria
Nonplastic	A 1/8-inch thread cannot be rolled at any water content.
Low	The thread can barely be rolled, and the lump cannot be formed when drier than the plastic limit.
Medium	The thread is easy to roll, and not much time is required to reach the plastic limit; it cannot be rerolled after reaching the plastic limit. The lump crumbles when drier than the plastic limit.
High	It takes considerable time rolling and kneading to reach the plastic limit. The thread can be rerolled several times after reaching the plastic limit. The lump can be formed without crumbling when drier than the plastic limit.

CEMENTATION

Descriptor	Criteria
Weak	Crumbles or breaks with handling or little finger pressure.
Moderate	Crumbles or breaks with considerable finger pressure.
Strong	Will not crumble or break with finger pressure.

NOTE: This legend sheet provides descriptors and associated criteria for required soil description components only. Refer to Caltrans Soil and Rock Logging, Classification, and Presentation Manual (July 2007), Section 2, for tables of additional soil description components and discussion of soil description and identification.

ROCK GRAPHIC SYMBOLS

IGNEOUS ROCK

SEDIMENTARY ROCK

METAMORPHIC ROCK

BEDDING SPACING

Descriptor	Thickness or Spacing
Massive	> 10 ft
Very thickly bedded	3 to 10 ft
Thickly bedded	1 to 3 ft
Moderately bedded	3-5/8 inches to 1 ft
Thinly bedded	1-1/4 to 3-5/8 inches
Very thinly bedded	3/8 inch to 1-1/4 inches
Laminated	< 3/8 inch

WEATHERING DESCRIPTORS FOR INTACT ROCK

	Diagnostic Features					
	Chemical Weathering-Discoloration-Oxidation		Mechanical Weathering and Grain Boundary Conditions	Texture and Solutioning		
Descriptor	Body of Rock	Fracture Surfaces		Texture	Solutioning	General Characteristics
Fresh	No discoloration, not oxidized	No discoloration or oxidation	No separation, intact (tight)	No change	No solutioning	Hammer rings when crystalline rocks are struck.
Slightly Weathered	Discoloration or oxidation is limited to surface of, or short distance from, fractures; some feldspar crystals are dull	Minor to complete discoloration or oxidation of most surfaces	No visible separation, intact (tight)	Preserved	Minor leaching of some soluble minerals may be noted	Hammer rings when crystalline rocks are struck. Body of rock not weakened.
Moderately Weathered	Discoloration or oxidation extends from fractures usually throughout; Fe-Mg minerals are "rusty"; feldspar crystals are "cloudy"	All fracture surfaces are discolored or oxidized	Partial separation of boundaries visible	Generally preserved	Soluble minerals may be mostly leached	Hammer does not ring when rock is struck. Body of rock is slightly weakened.
Intensely Weathered	Discoloration or oxidation throughout; all feldspars and Fe-Mg minerals are altered to clay to some extent; or chemical alteration produces in situ disaggregation (refer to grain boundary conditions)	All fracture surfaces are discolored or oxidized; surfaces are friable	Partial separation, rock is friable; in semi-arid conditions, granitics are disaggregated	Altered by chemical disintegration such as via hydration or argillation	Leaching of soluble minerals may be complete	Dull sound when struck with hammer; usually can be broken with moderate to heavy manual pressure or by light hammer blow without reference to planes of weakness such as incipient or hairline fractures or veinlets. Rock is significantly weakened.
Decomposed	Discolored of oxidized throughout, but resistant minerals such as quartz may be unaltered; all feldspars and Fe-Mg minerals are completely altered to clay		Complete separation of grain boundaries (disaggregated)	Resembles a soil; partial or complete remnant rock structure may be preserved; leaching of soluble minerals usually complete		Can be granulated by hand. Resistant minerals such as quartz may be present as "stringers" or "dikes".

Note: Combination descriptors (such as "slightly weathered to fresh") are used where equal distribution of both weathering characteristics is present over significant intervals or where characteristics present are "in between" the diagnostic feature. However, combination descriptors should not be used where significant identifiable zones can be delineated. Only two adjacent descriptors shall be combined. "Very intensely weathered" is the combination descriptor for "decomposed to intensely weathered".

RELATIVE STRENGTH OF INTACT ROCK

Descriptor	Uniaxial Compressive Strength (psi)
Extremely Strong	> 30,000
Very Strong	14,500 - 30,000
Strong	7,000 - 14,500
Medium Strong	3,500 - 7,000
Weak	700 - 3,500
Very Weak	150 - 700
Extremely Weak	< 150

ROCK HARDNESS

Descriptor	Criteria
Extremely Hard	Specimen cannot be scratched with pocket knife or sharp pick; can only be chipped with repeated heavy hammer blows
Very hard	Specimen cannot be scratched with pocket knife or sharp pick; breaks with repeated heavy hammer blows
Hard	Specimen can be scratched with pocket knife or sharp pick with heavy pressure; heavy hammer blows required to break specimen
Moderately Hard	Specimen can be scratched with pocket knife or sharp pick with light or moderate pressure; breaks with moderate hammer blows
Moderately Soft	Specimen can be grooved 1/6 in. with pocket knife or sharp pick with moderate or heavy pressure; breaks with light hammer blow or heavy hand pressure
Soft	Specimen can be grooved or gouged with pocket knife or sharp pick with light pressure, breaks with light to moderate hand pressure
Very Soft	Specimen can be readily indented, grooved, or gouged with fingernail, or carved with pocket knife; breaks with light hand pressure

CORE RECOVERY CALCULATION (%)

$$\frac{\Sigma \text{ Length of the recovered core pieces (in.)}}{\text{Total length of core run (in.)}} \times 100$$

RQD CALCULATION (%)

$$\frac{\Sigma \text{ Length of intact core pieces > 4 in.}}{\text{Total length of core run (in.)}} \times 100$$

FRACTURE DENSITY

Descriptor	Criteria
Unfractured	No fractures
Very Slightly Fractured	Lengths greater 3 ft
Slightly Fractured	Lengths from 1 to 3 ft, few lengths outside that range
Moderately Fractured	Lengths mostly in range of 4 in. to 1 ft, with most lengths about 8 in.
Intensely Fractured	Lengths average from 1 in. to 4 in. with scattered fragmented intervals with lengths less than 4 in.
Very Intensely Fractured	Mostly chips and fragments with few scattered short core lengths

01-0B3101
DN 101 PM 21.65-21.67

<u>Appendix C</u>

2011 DAF

"Damage Assessment Form (DAF)", DN-199-pm begin 21.67,
DAF No. CEP-CT01-008-0, Disaster No. CA11-3, 4 sheets,
incident date March 26, 2011.

U.S. Department of Transportation Federal Highway Administration- California Division- Title 23 Damage Assessment Form (DAF)	DAF No. CEP - CT01 - 0 0 8 - 0 Sheet # 1 of 4 Federal Project # EO ER - _____ ( ) Disaster No. CA 1 1 - 3 PR ER - _____ ( )

Applicant	County	Incident Date (mm/dd/yyyy)	Inspection
CALTRANS	DEL NORTE	03/26/2011	

Location of Damage: Per Site [✓] or [ ] Per Mile

Name of Road/Bridge: Route 199

PM Begin: 21.67 PM Length: 100.00 (in feet)

PM End:

Federal-aid Highway? Y for yes, if no, ineligible for ER funds [Y]

Map No [2A]

Functional Classification Type: Principal Arterial

Route # 199

Road/Bridge Data: Bridge No n/a Type:

Traveled Way: Width 2-12' lanes Type: PCC [ ] AC [✓] Gravel [ ]

Shoulder: Width var 1-4' Type: PCC [ ] AC [✓] Gravel [ ]

Forest Hwy? Y/N [ ] Interstate? Y/N [Y]

Existing ADT: 4,000

Description of Damage: Slipout Undermining Roadway

COST ESTIMATE

	Type of Repair	Description of Work	Cost Summary	
Emergency Opening (EO)	EO- AGENCY FORCES CT Work Order #(s):_____ EA(s):_____		PE	
			CE	
			Construction	
	EO- CONTRACT EO EA(s): _____		PE	
			CE	
			Construction	
	NOTE: Environmental documentation for EO is required. It is generally started after work has begun.		R/W	
		Subtotal Emergency Opening		
Permanent Restoration (PR)	PR- CONSTRUCTION FA requires an approved PIF [✓] Contract [ ] FA PR EAs _____	Work includes reconstruct shoulder and construct reinforce embankment or gravity wall.	PE	
			CE	
			Construction	
	NOTE:PRIOR AUTHORIZATION (APPROVED E-76) IS REQUIRED TO PROCEED WITH PERMANENT RESTORATION R/W & CONSTRUCTION		R/W	
	NOTE: Environmental clearance for permanent restoration is conducted through normal Federal-aid procedures	**Subtotal Permanent Restoration**		

Eligible		Signature	Date		
[ ] Yes	[ ] No	Local Agency (if applicable):		PE Total	
[ ] Yes	[ ] No	Caltrans:		CE Total	
[ ] Yes	[ ] No	FHWA*:		R/W Total	
				Construction Total	
			TOTAL ESTIMATE		

Agency sig. Name (print): _____ FHWA Sig. Name (print): _____

CT signature Name (print): _____ DAF Prepared by (print): _____

Original: Caltrans District **Copies**: FHWA, Division of Local Assistance(local roads), Federal Resources (state hwy), HQ Major Damage Engineer (state hwy)

*Write "N/A" in FHWA signature block if the project has no Federal ER funding or Federal ER funding delegated to the State.

FHWA Signature: REQUIRED for all Federal Funded State projects. REQUIRED for any Local Agency projects with 1) any BETTERMENT, 2) more than 2 ROW takes or 3) when paving is more than 50% of the Total Estimated Cost. **Reminder: This DAF must be accompanied by photos of the damage.**

U.S. Department of Transportation Federal Highway Administration- California Division- Title 23 Damage Assessment Form (DAF)	DAF # CEP - CT01 - 0 0 8 - 0 Sheet # 2 of 4 Applicant CALTRANS Agency EO Calc ☐ EO contract ☐ PR Calc ☑

Quantity*	Unit*	Labor, Materials, and Equipment	Unit Price	Cost
1	EA	CONSTRUCTION SITE MANAGEMENT		
1	EA	PREPARE WPCP		
1	EA	TEMPORARY CONSTRUCTION BMPS		
1	EA	CONSTRUCTION AREA SIGNS		
1	EA	TRAFFIC CONTROL SYSTEM		
2	EA	PORTABLE CHANGEABLE MESSAGE SIGNS		
1	EA	CLEARING AND GRUBBING		
450	CY	ROADWAY EXCAVATION		
20	SQYD	EROSION CONTROL (TYPE D)		
10	CY	CLASS 2 AGGREGATE BASE		
10	TON	HOT MIX ASPHALT (TYPE A)		
300	CY	BIOENGINEERED VEGETATED BUTTRESS		
60	LF	THERMOPLASTIC STRIPE		
1		MISCELLANEOUS MINOR ITEMS		
1		MOBILIZATION		
1		ENVIRONMENTAL MITIGATION PLANTING		

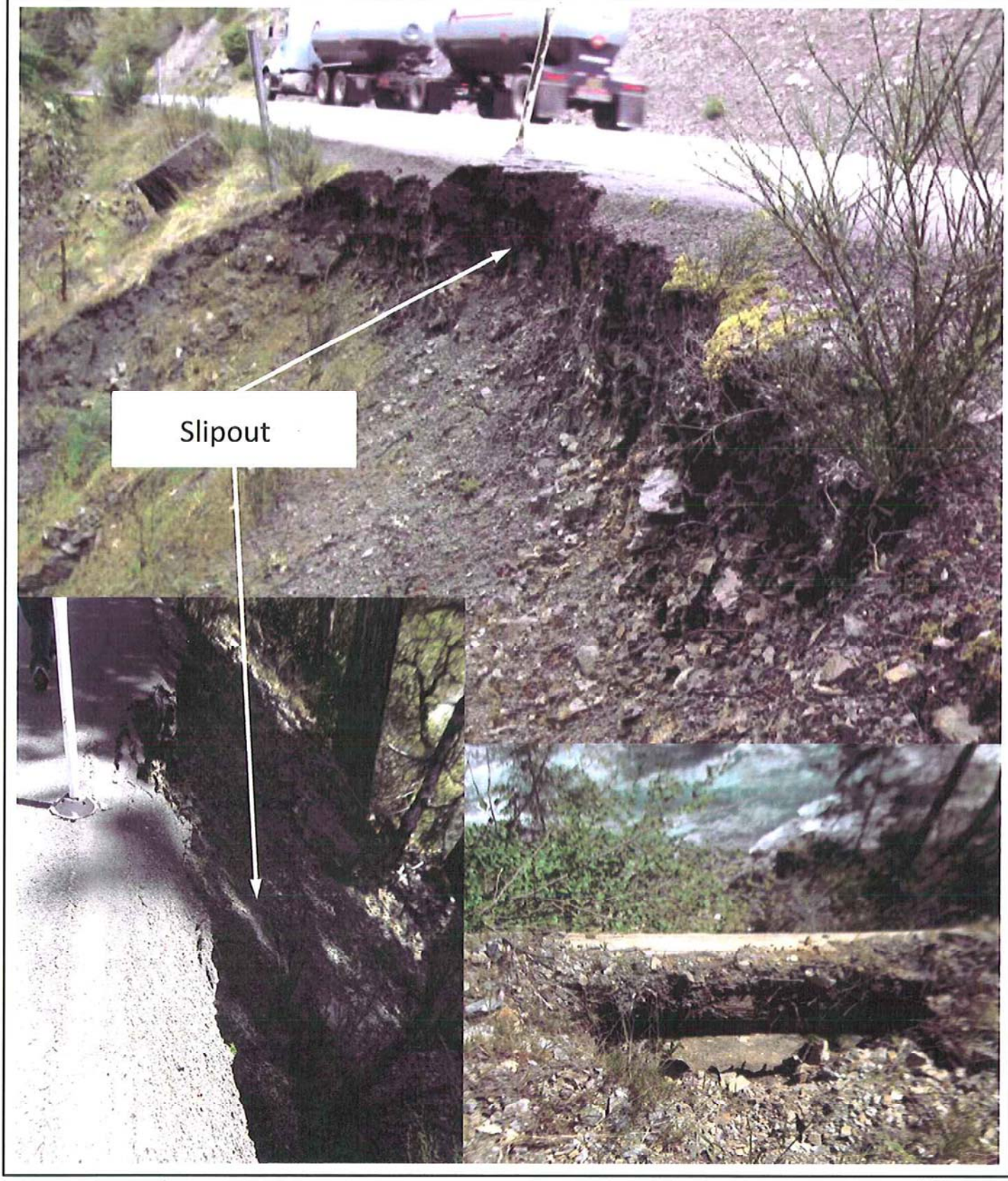
*Lump Sum will generally only be accepted for non biddable items, such as Mobilization.

Justifications/comments: Non-typical Scope, PE/CE Cost, Engineering estimates etc.

U.S. Department of Transportation
Federal Highway Administration
California Division – Title 23
Damage Assessment Form (DAF)

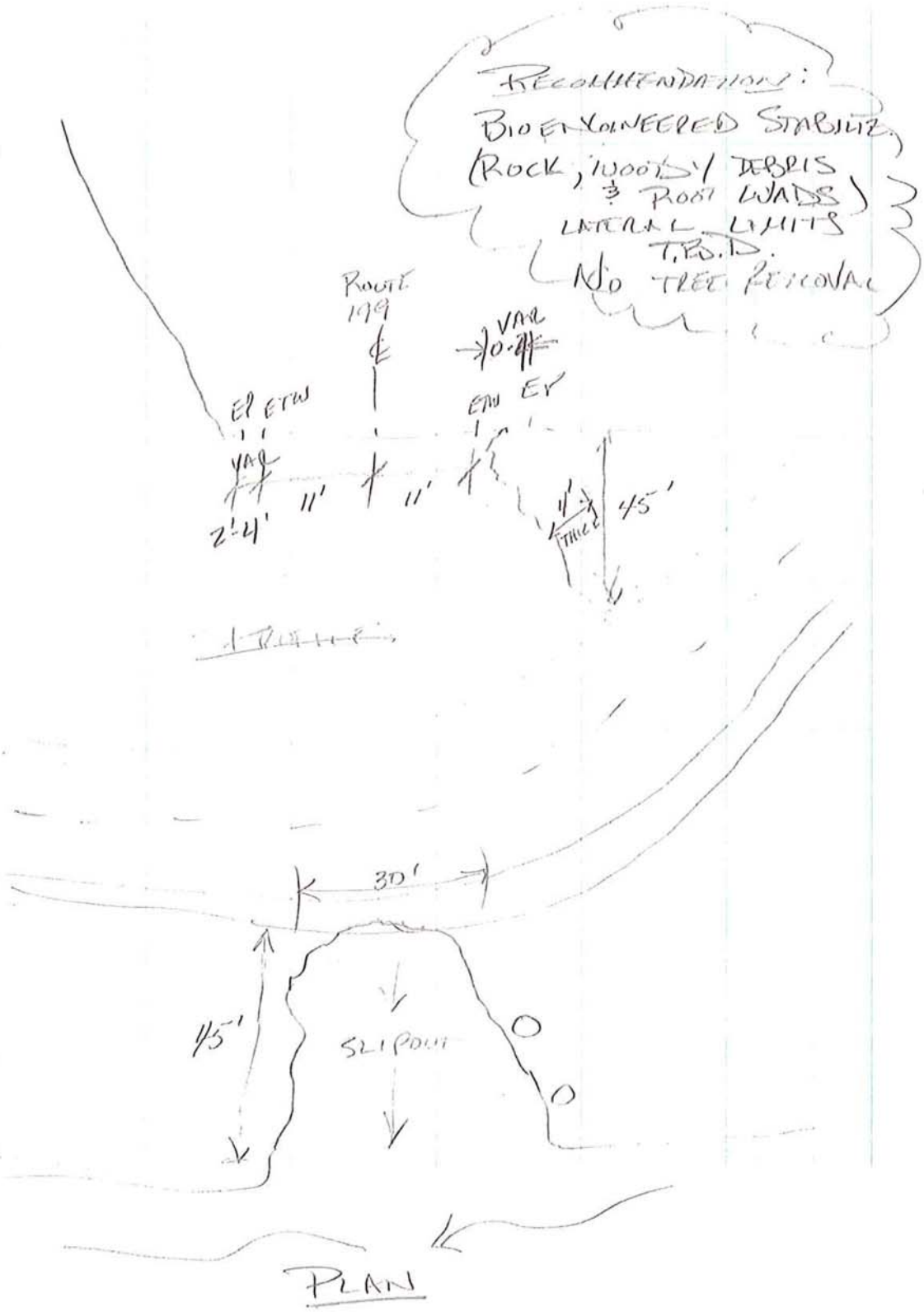
DAF # CEP - CT01 - 0 0 8 - 0
Sheet # 3 of 4
Applicant
CALTRANS

Photos, Sketches and/or Narrative



U.S. Department of Transportation Federal Highway Administration California Division – Title 23 Damage Assessment Form (DAF)	DAF # CEP - CT01 - 008 - 0 Sheet # 4 of 4 Applicant CALTRANS

Photos, Sketches and/or Narrative



01-0B3101
DN 101 PM 21.65-21.67

Appendix D

Laboratory Tests Results

Results sent to: MARK HAGY

Division of Engineering Services
Materials Engineering and Testing Services
Corrosion and Structural Concrete Field Investigation Branch

Report Date: 9/17/2014
Reported by Michael Mifkovic

CORROSION TEST SUMMARY REPORT - SOIL

EFIS: **0112000115**

Dist/Co/Rte/PM **01 / DN /101/ / 21.67 PM**

CORROSION LAB #	TL101 #	BORE #	DEPTH (FT) START	DEPTH (FT) END	MINIMUM RESISTIVITY[1] (ohm-cm)	pH[1]	CHLORIDE CONTENT[2] (ppm)	SULFATE CONTENT[3] (ppm)	IS SAMPLE CORROSIVE?
SOIL SAMPLE FROM: PATRICK CREEK SLIP OUT #2									
CR20140254†	**C835552**	RC-13-001	0	16.5	6699	7.7			NO
†Comment: COMBINED SAMPLE FROM RC-13-001 AND RC-13-002									

This site is not corrosive to foundation elements (see note below).

Note: For Structural Elements, the Department considers a site corrosive if one or more of the following conditions exist: pH is 5.5 or less, chloride concentration is 500 ppm or greater, sulfate concentration is 2000 ppm or greater. Resistivity is not considered for Structural Elements. MSE backfill shall conform to the requirements of section 47-2.02C Structure Backfill in the 2010 Standard Specifications.

[1]CT 643, [2]CT 422, [3]CT 417

01-0B3101
DN 101 PM 21.65-21.67

APPENDIX E

GawacWin 2003 Results

Program released in license to: Mark Hagy

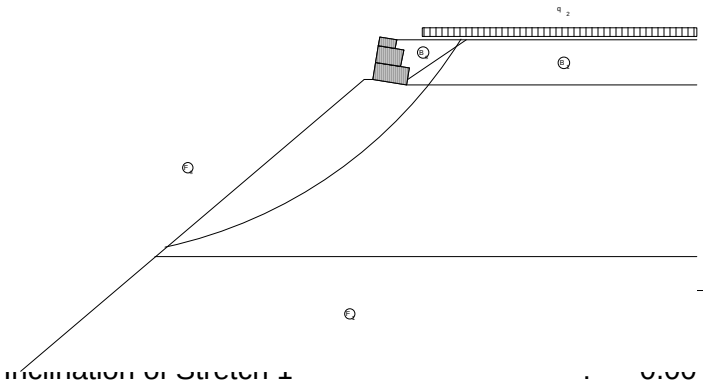
Project: DN 199 PM 21.65/21.67
File: DN101pm21 phi35c150LLbatter Date: 10/29/2014

INPUT DATA

Wall data

Wall batter	:	9.50 deg
Rockfill unit weight	:	24.66 kN/m³
Porosity of gabions	:	30.00 %
Geotextile in the backfill	:	Yes
Friction reduction	:	10.00 %
Geotextile on the base	:	No
Friction reduction	:	%
Mesh and the wire diam.:	:	8x10, ø 2.70 mm

Layer	Length m	Width m	Offset m
1	1.83	0.91	-
2	1.37	0.91	0.00
3	0.91	0.46	0.00



Inclination of Stretch 1	:	0.00 deg
Length of stretch 1	:	1.37 m
Inclination of Stretch 2	:	0.00 deg
Soil unit weight	:	19.64 kN/m³
Soil friction angle	:	35.00 deg
Soil cohesion	:	7.18 kN/m²

Additional Backfill Layers

Layer	Initial height m	Incl. angle deg	Unit weight kN/m³	Cohesion kN/m²	Friction angle deg
1	0.00	33.70	19.64	7.18	35.00

Maccaferri INC. is not responsible for the reliability of the geotechnical parameters assumed, or the improper use of the software. The program takes into account the physical characteristics of materials as manufacturated by the Maccaferri group; its results will not be realistic if a different material is used.

Foundation data

Top surface height	:	0.00 m
Top surface init. length	:	0.47 m
Top surface incl. angle	:	40.40 deg
Soil unit weight	:	19.63 kN/m³
Soil friction angle	:	35.00 deg
Soil cohesion	:	7.18 kN/m²
Foundation allowable pressure	:	kN/m²
Water table height	:	m

Additional Foundation Layers

Layer	Depth m	Unit weight kN/m³	Cohesion kN/m²	Friction angle deg
1	9.50	19.64	47.88	35.00

Water profile data

Initial height	:	m
Inclination of the 1st stretch	:	deg
Length of the 1st stretch	:	m
Inclination of the 2nd stretch	:	deg
Length of the 2nd stretch	:	m

Loads data

Distributed loads on backfill			First stretch	:	0.00 kN/m²
			Second stretch	:	11.49 kN/m²
Distributed loads on wall			Load	:	kN/m²
Line loads on backfill					
Load 1	:	kN/m	Distance from wall face	:	m
Load 2	:	kN/m	Distance from wall face	:	m
Load 3	:	kN/m	Distance from wall face	:	m
Line load on wall					
Load	:	kN/m	Distance from wall face	:	m

Seismic action data

Horizontal coefficient	:	0.00	Vertical coefficient	:	0.00

Maccaferri INC. is not responsible for the reliability of the geotechnical parameters assumed, or the improper use of the software. The program takes into account the physical characteristics of materials as manufacturated by the Maccaferri group; its results will not be realistic if a different material is used.

Program released in license to: Mark Hagy

Project: DN 199 PM 21.65/21.67
File: DN101pm21 phi35c150LLbatter Date: 10/29/2014

STABILITY ANALYSIS RESULTS

Active and Passive Thrust

Active Thrust	:	20.29 kN/m
Point of application ref. to X axis	:	1.65 m
Point of application ref. to Y axis	:	0.38 m
Direction of the thrust ref. to X axis	:	43.97 deg
Passive Thrust	:	0.00 kN/m
Point of application ref. to X axis	:	0.00 m
Point of application ref. to Y axis	:	0.00 m
Direction of the thrust ref. to X axis	:	0.00 deg

Sliding

Normal force on the base	:	69.49 kN/m
Point of application ref. to X axis	:	0.93 m
Point of application ref. to Y axis	:	-0.16 m
Shear force on the base	:	3.18 kN/m
Resisting force on the base	:	55.22 kN/m
Sliding Safety Coefficient	**:**	**5.31**

Overturning

Overturning Moment	:	5.53 kN/m x m
Restoring Moment	:	70.11 kN/m x m
Overturning Safety Coefficient	**:**	**12.67**

Stresses Acting on Foundation

Eccentricity	:	-0.03 m
Normal stress on outer border	:	36.18 kN/m²
Normal stress on inner border	:	39.76 kN/m²
Max. allowable stress on the foundation	:	313.58 kN/m²

Maccaferri INC. is not responsible for the reliability of the geotechnical parameters assumed, or the improper use of the software. The program takes into account the physical characteristics of materials as manufacturated by the Maccaferri group; its results will not be realistic if a different material is used.

Program released in license to: Mark Hagy

Project: DN 199 PM 21.65/21.67
File: DN101pm21 phi35c150LLbatter Date: 10/29/2014

Overall Stability

Initial distance at pivot leftside	:	m
Initial distance at pivot rightside	:	m
Initial depth referred to base	:	m
Max depth allowed in calculation	:	m
Center of the arch referred to X axis	:	-16.32 m
Center of the arch referred to Y axis	:	15.27 m
Radius of the arch	:	24.86 m
Number of search surfaces	:	176
Overall Stability Safety Coefficient	**:**	**1.31**

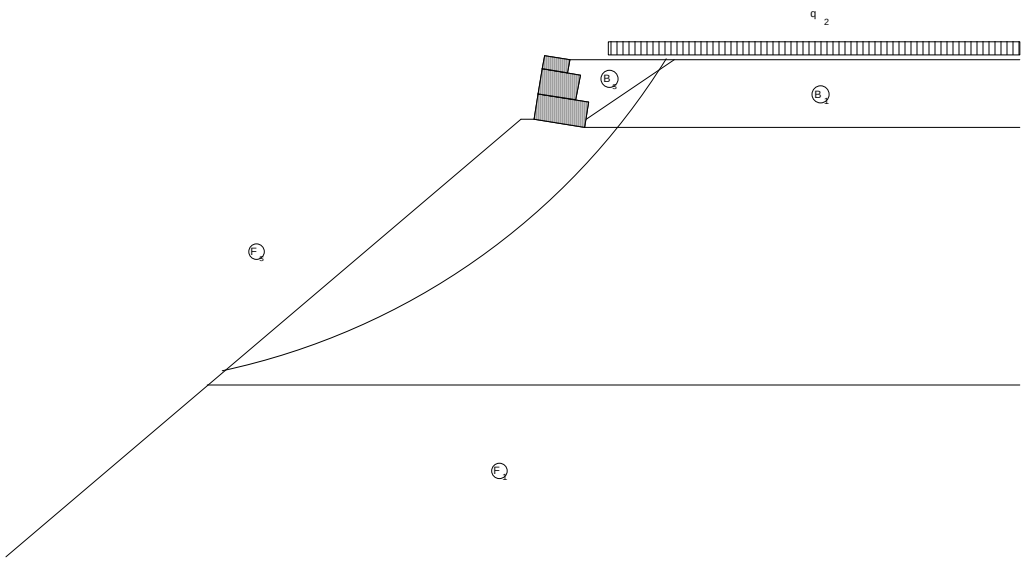
Internal Stability

Layer	H m	N kN/m	T kN/m	M kN/m x m	τ_{Max} kN/m²	τ_{All} kN/m²	σ_{Max} kN/m²	σ_{All} kN/m²
1	1.43	26.59	-4.45	18.21	-3.25	32.90	19.42	568.89
2	0.45	7.13	-1.19	3.52	-1.31	35.10	7.22	

Maccaferri INC. is not responsible for the reliability of the geotechnical parameters assumed, or the improper use of the software. The program takes into account the physical characteristics of materials as manufacturated by the Maccaferri group; its results will not be realistic if a different material is used.

Program released in license to: Mark Hagy

Project: DN 199 PM 21.65/21.67
File: DN101pm21 phi35c150LLbatter Date: 10/29/2014



SOIL DATA

Soil	γ kN/m³	c kN/m²	ϕ deg	Soil	γ kN/m³	c kN/m²	ϕ deg
B_s	19.64	7.18	35.00	F_s	19.63	7.18	35.00
B_1	19.64	7.18	35.00	F_1	19.64	47.88	35.00

LOADS

Load	Value kN/m²	Load	Value kN/m
q_2	11.49		

STABILITY CHECKS

Sliding Safety Coefficient	5.31	Base normal stress (left)	36.18kN/m²
Overturning Safety Coefficient	12.67	Base normal stress (right)	39.76kN/m²
Overall Stability Safety Coefficient	1.31	Max. allowable stress	313.58kN/m²

Maccaferri INC. is not responsible for the reliability of the geotechnical parameters assumed, or the improper use of the software. The program takes into account the physical characteristics of materials as manufacturated by the Maccaferri group; its results will not be realistic if a different material is used.

INFORMATION HANDOUT

For Contract No. 01-0B3104
At DN-199-8.7, 21.7

Identified by
Project ID 0112000115

PERMITS

PLAC – Department of the Army, San Francisco District, United States Army Corps of Engineers

Nationwide Permit (NWP)
File No. 2015-00074N, dated April 14, 2015

WATER QUALITY

PLAC - California Regional Water Quality Control Board, North Coast Region

Water Quality Certification
WDID No. 1B15012WNDN
Dated March April 7, 2015

AGREEMENTS

PLAC - California Department of Fish and Wildlife, Region 1 - Northern

Streambed Alteration Agreement
Notification No. 1600-2015-0032-R1
Dated April 28, 2015

MATERIALS INFORMATION

Revised Foundation Report for Patrick Creek Slip Out No. 1 ERS dated March 16, 2015

Geotechnical Design Report for Patrick Creek Slip Out No. 2 ERS dated February 2, 2015

Naturally Occurring Asbestos Summary Report State Route 199, Post Miles 8.71 (Patrick Creek) and 24.67 (Middle Fork), dated February 18, 2015

Project No. S9805-01-43
February 18, 2015

Steve Werner, Task Order Manager
California Department of Transportation – District 1
Environmental Engineering Office
1656 Union Street
Eureka, California 95501

Subject: NATURALLY OCCURRING ASBESTOS SUMMARY REPORT
STATE ROUTE 199, POST MILES 8.71 (PATRICK CREEK)
AND 24.67 (MIDDLE FORK)
DEL NORTE COUNTY, CALIFORNIA
CONTRACT NO. 03A2132, EA 01-0B3100
TASK ORDER NO. 43

Dear Mr. Werner:

In accordance with California Department of Transportation (Caltrans) Contract No. 03A2132 and Task Order (TO) No. 43, we have evaluated the potential presence of naturally occurring asbestos (NOA) at two proposed landslide repair areas along State Route 199 (SR-199) in Del Norte County, California. This letter report outlines the procedures and methods employed by Geocon to complete the NOA evaluation.

PROJECT LOCATION AND PROPOSED IMPROVEMENTS

The project areas are located along Caltrans right-of-way on SR-199 at Post Mile (PM) 8.71 (Patrick Creek) and PM 24.67 (Middle Fork) approximately 12 and 28 miles east of Crescent City, respectively. Caltrans proposes to remediate failing roadway sections by installing an earth retaining system (e.g., soldier pile wall) downhill below the roadway at each site. The approximate project locations are depicted on the Vicinity Map, Figure 1, and Site Plans, Figures 2a and 2b.

PURPOSE

The purpose of the scope of services performed for TO No. 43 was to evaluate whether NOA-containing soil or rock is present at the project locations. The investigative results will be used by Caltrans to inform construction contractors of whether potentially NOA-containing soil and/or rock is present within the project locations for construction worker health and safety, and soil management and disposal purposes. Accordingly, Caltrans requested the data regarding the potential presence of NOA-containing soil or rock within the project locations.

Construction activities proposed by Caltrans will require the disturbance of soil and rock on the two sites. Geologic mapping by the California Geological Survey (CGS) depicts a fault and ultramafic rock formations west and east of the project locations. The alteration of ultramafic rock can lead to the formation of NOA minerals. If not managed, disturbance of NOA during construction activities may potentially pose an inhalation risk to the health of construction personnel.

PROJECT SCOPE

Outlined below is a summary of the scope of services performed by Geocon under TO No. 43.

Pre-field Activities

- Participated in a TO Meeting via phone and email during December 2014. Caltrans Task Order Manager Steve Werner and Geocon representative John Pfeiffer participated in the meeting. The purpose of the TO Meeting was to identify and discuss the project locations and conditions and the TO scope of services.
- Reviewed geological maps and studies of the general project area for information on the geologic setting and potential presence of NOA.
- Reviewed Caltrans geotechnical reports for each site.
- Retained the services of EMSL Analytical Inc. (EMSL), a Caltrans-approved and California-certified analytical laboratory, to perform the asbestos analyses of samples.

Sampling Activities

John Pfeiffer, a California Certified Engineering Geologist (CEG 2372) with experience in the assessment of NOA, conducted the evaluation to identify potentially NOA-containing materials in soil/rock samples collected from geotechnical borings performed at the project locations. The locations of the borings are depicted on Figures 2a and 2b. Our services did not include a field survey of the project locations.

The archived soil/rock cores were viewed and sampled at Caltrans' core storage warehouse in Sacramento on December 11, 2014. We sampled two cores (RC-13-001 and -002) from PM 8.71 and five cores (RC-13-001 through -005) from PM 24.67. The cores were obtained by Caltrans during geotechnical investigations in August 2013. Eight composite soil/rock samples were obtained from the upper 40 feet of core based on the anticipated maximum depths of excavation.

The samples were collected and placed into resealable plastic bags for field homogenization. Each sample bag was marked with a unique sample identification number, the TO number, and the date and time the sample was collected. The samples were delivered to EMSL for asbestos analysis under chain-of-custody (COC) protocol.

Quality assurance/quality control procedures were performed during the core review/sampling activities. These procedures included collection of each sample using new disposable gloves and providing COC documentation for each sample submitted to the laboratory. Soil/rock types observed in the cores were noted.

Laboratory Analyses

The samples were submitted to EMSL Analytical, Inc., for asbestos fiber analysis by California Air Resources Board (CARB) Method 435 using polarized light microscopy (PLM). The CARB 435 preparation includes milling the sample to a minus 200-mesh size, which also homogenizes the sample. The analytical sensitivity of the PLM analysis was 0.25% by area. The samples were analyzed on a two-week turnaround time.

INVESTIGATIVE RESULTS

Site Geology

We reviewed the following documents pertaining to the geologic setting of the two sites:

1. *Geologic Map of the Weed Quadrangle*, Department of Conservation, Division of Mines and Geology, Scale 1:250,000, 1987.
2. *A General Location Guide for Ultramafic Rocks in California – Areas More Likely to Contain Naturally Occurring Asbestos*, California Department of Conservation, Division of Mines and Geology, Open-File Report 2000-19, Scale 1:1,100,000, 2000.
3. *Fault Activity Map of California and Adjacent Areas, Map No. 6*, Department of Conservation, Division of Mines and Geology, Scale 1:750,000, 1994.
4. *Foundation Report for Patrick Creek Slip Out No. 1 ERS*, California Department of Transportation, Division of Engineering Services, Geotechnical Services – MS 5, Office of Geotechnical Design – North, September 4, 2014.
5. *Foundation Report for Middle Fork ERS*, California Department of Transportation, Division of Engineering Services, Geotechnical Services – MS 5, Office of Geotechnical Design – North, September 4, 2014.

Reference 1 depicts the geologic unit underlying the landslide area at Patrick Creek as Quaternary landslide deposits. Reference 1 depicts the geologic unit underlying the landslide area at Middle Fork as Jurassic rock of the Galice Formation, which consists primarily of metamorphic rock (slate and metagraywacke) and metavolcanic rock (greenstone). Reference 2 depicts the nearest ultramafic rock located approximately 0.8 mile from Patrick Creek and 1.6 miles from Middle Fork. Reference 3 depicts several branches of faults in the vicinity of the project locations on SR-199 east of the South Fork Fault.

During the 2013 geotechnical investigation for the Patrick Creek site, Caltrans advanced two borings along northbound SR-199 (Figure 2a). Caltrans encountered up to 15 inches of asphalt concrete pavement and 7.5 inches of aggregate material. Underlying the pavement, Caltrans encountered up to 17 feet of fill materials consisting of silty gravel with sand, clayey gravel with sand, and gravel with clay, sand and cobbles. Underlying the fill material, Caltrans encountered metamorphic rock consisting of metagraywacke and peridotite. Caltrans described the metamorphic rock as “slightly weathered to fresh with some decomposed layers” and “intensely fractured and moderately fractured.” Caltrans noted that the fracture surfaces in the peridotite rock cores collected during the subsurface exploration were serpentinized, and noted some quartz veins and calcite veins in the rock.

During the 2013 geotechnical investigation for the Middle Fork site, Caltrans advanced a total of five borings along northbound and southbound SR-199 (Figure 2b). Caltrans encountered up to 12 inches of asphalt concrete pavement and 6 inches of aggregate base. Underlying the pavement, Caltrans encountered up to 18 feet of fill materials consisting of silty gravel with sand and cobbles and silty sand with gravel. Underlying the fill material, Caltrans encountered metamorphic rock consisting of interbedded metagraywacke, metasandstone, metasiltstone, and slate. Caltrans described the metamorphic rocks as “moderately weathered to fresh” with some sheared zones and “intensely fractured and slightly fractured with some very intensely fractured zones.” Caltrans noted that some zones included hard quartz veins and calcite veins.

We reviewed Caltrans core samples obtained at the project locations. The soil/rock materials observed in the Caltrans core samples were generally consistent with conditions described in the referenced documents.

PM 8.71 – Patrick Creek

Soil/rock materials observed in the Caltrans core samples obtained from this area consist of highly to moderately weathered peridotite (an ultramafic rock) with slightly serpentinized peridotite present in some zones of core sample RC-13-001. Serpentinized peridotite is considered likely to contain NOA. We observed fill material (clayey and sandy gravel) in Caltrans core samples RC-13-001 and RC-13-002 to a depth of approximately 15 feet.

The Caltrans rock cores from this area that were sampled for this NOA evaluation were drilled to depths of approximately 35 to 45 feet.

PM 24.67 – Middle Fork

Soil/rock materials observed in the Caltrans core samples obtained from this area consist of metamorphic rock, predominantly dark gray slate, which is not considered likely to contain NOA. We observed fill material in core samples RC-13-002 and RC-13-003 to a depth of 18 feet. The fill material appeared to be locally derived slatey metamorphic rock.

The Caltrans rock cores from this area that were sampled for this NOA evaluation were drilled to depths of approximately 24 to 50 feet.

Asbestos Analytical Results

The samples from the project locations were analyzed by EMSL for asbestos by PLM using the CARB 435 method. All eight composite samples from the Caltrans cores were reported as none detected for asbestos. The analytical laboratory reported each of the samples as 100% non-fibrous. A summary of NOA analytical results is presented on Table 1. A copy of the laboratory reports and COC documentation is attached to this report.

CONCLUSIONS AND RECOMMENDATIONS

The project locations are discussed in the following sections.

PM 8.71 – Patrick Creek

The soil/rock materials observed in the Caltrans core samples from the Patrick Creek site consist of fill in the top 15 feet, and highly to moderately weathered peridotite between 15 and 45 feet. Slightly serpentinized peridotite was observed in Caltrans core sample RC-13-001 as a minor component (estimated at less than 5%) of the predominantly peridotite host rock. Although NOA was not detected in the four composite samples obtained from Caltrans core samples from this area, these materials are considered likely to contain NOA.

None of the samples from the Patrick Creek site submitted for analysis were reported to contain asbestos at or above the regulatory threshold of 0.25% by the PLM method. Additionally, given the low proportion of serpentinization noted in the Caltrans core samples from the site, we would not expect material excavated from the site to contain NOA at levels equal to or greater than the 0.25% regulatory threshold.

Based on the presence of serpentinized rock and associated potential for NOA in a core sample from a portion of the Patrick Creek site, engineering controls are required to minimize the potential aerial dispersion of NOA as described in California Code of Regulations (CCR) Title 17, § 93105. Since NOA was not detected at or above the CARB regulatory limit of 0.25% in the samples analyzed, material excavated at the Patrick Creek site may be reused onsite or elsewhere within the Caltrans right-of-way without restriction. The contractor(s) should implement asbestos worker protection measures as discussed in the section below.

Based on the presence of serpentinized rock and the potential for NOA in a portion of the Patrick Creek site, Caltrans requires that the contractor(s) prepare and implement an Asbestos Dust Mitigation Plan (ADMP) that describes measures that will be taken to control the potential release of asbestos-containing dust from this area as a result of onsite construction excavation activities. Asbestos dust control activities to be implemented shall be in compliance with the following:

- CCR Title 17, §93105 – Asbestos Airborne Toxic Control Measure for Construction, Grading, Quarrying, and Surface Mining Operations (ATCM 93105);
- CCR Title 17, §93106 – Asbestos Airborne Toxic Control Measure for Surfacing Applications (ATCM 93106); and
- North Coast Unified Air Quality Management District guidelines.

Excess material generated from the Patrick Creek site would be considered Restricted Material per Title 17 CCR, §93106(i)(20). Therefore, recipients of excess material from the site must be provided the following warning statement:

"WARNING!

This material may contain asbestos.

It is unlawful to use this material for surfacing or any application in which it would remain exposed and subject to possible disturbance.

Extreme care should be taken when handling this material to minimize the generation of dust."

PM 24.67 – Middle Fork

The soil/rock materials observed in the Caltrans core samples from the Middle Fork site consist of metamorphic rock, predominantly dark gray slate, which is not considered likely to contain NOA. The composite samples collected from Caltrans soil/rock cores from the Middle Fork site and submitted for analysis were not reported to contain asbestos at or above the regulatory threshold of 0.25% by the PLM method. Since materials conducive to the formation of NOA were not observed in the soil/rock materials from the Middle Fork site and the laboratory did not report asbestos in the composite samples, engineering controls to minimize the aerial dispersion of NOA are not required for operations at the Middle Fork site, and soil/rock materials generated from the Middle Fork site during construction can be reused or disposed of without restrictions with regard to NOA.

Asbestos Risk to Human Health

Currently, regulatory exposure limits and health hazard data are not available for NOA in soil/rocks. Federal regulations governing asbestos define it as the asbestiform variety of the amphibole minerals actinolite, amosite, anthophyllite, crocidolite, and tremolite, and the asbestiform variety of serpentine, chrysotile. Asbestos fibers occurring in industrial materials are considered by the National Institute for Occupational Safety and Health as potential occupational carcinogens.

Prudence is recommended, therefore, in dealing with soil/rock containing NOA. Engineering controls such as wet suppression should be utilized to minimize aerial dispersion of NOA fibers in planned work areas during excavation and road construction activities. Under CCR Title 8, §5208, disturbance of asbestos-containing materials requires wet working methods and possible respiratory protection and air monitoring. The CARB has established protocols outlined in CCR Title 17, §93105 for the implementation of worker health, safety and monitoring plans for excavation, grading and transport of NOA-containing soils. Contractors working at the project locations identified as containing or likely to contain NOA should consult CCR Title 17, §93105 and contact Cal-OSHA to establish the appropriate regulatory protocol and actions necessary for excavation and/or disturbance of asbestos-containing soil/rock.

The contents of this report reflect the views of Geocon Consultants, Inc., who are responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the State of California or the Federal Highway Administration. This report does not constitute a standard, specification, or regulation.

Please contact us if you have any questions concerning the contents of this report or if we may be of further service.

Sincerely,

GEOCON CONSULTANTS, INC.

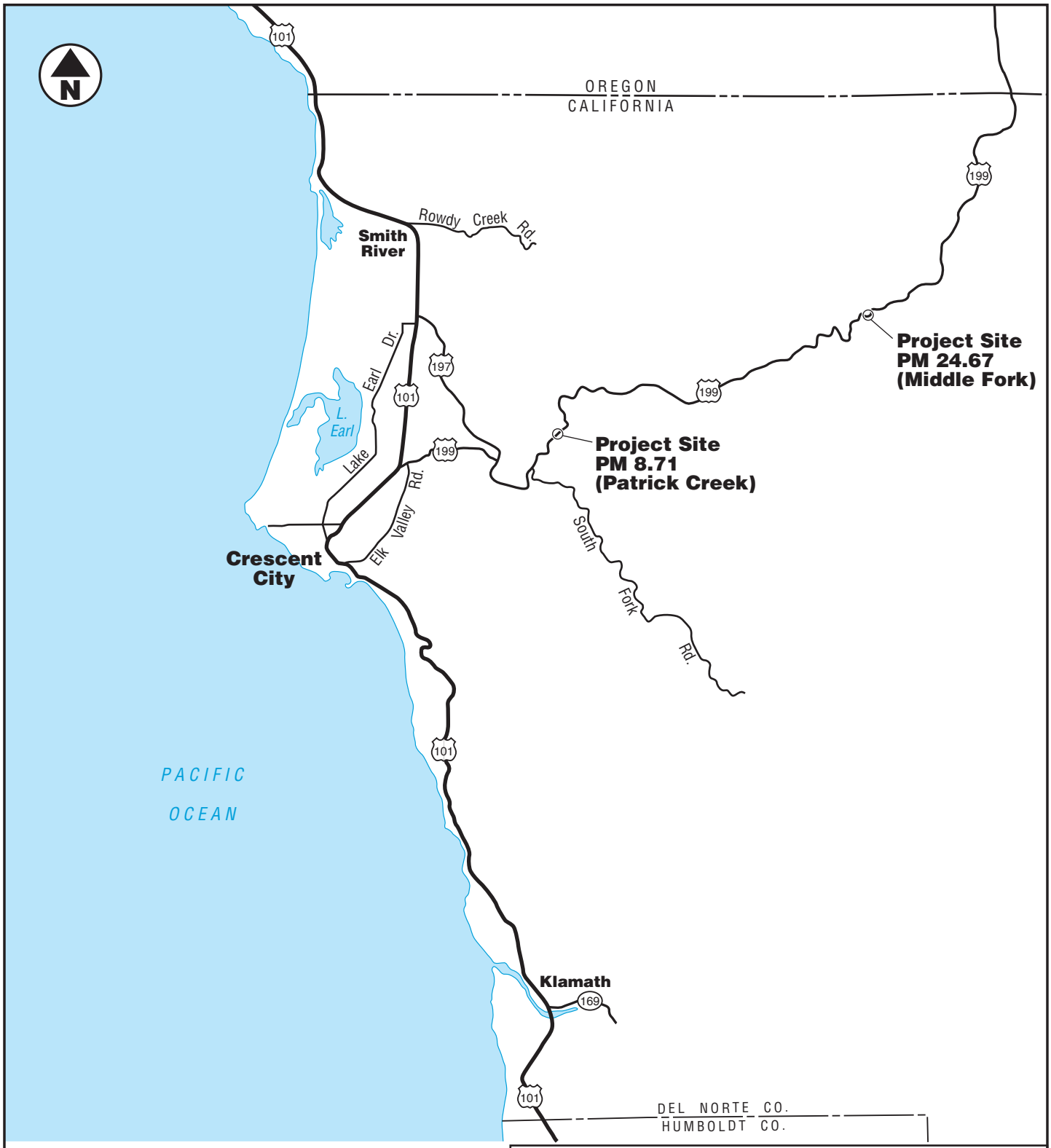
Gemma G. Reblando
Project Geologist

John C. Pfeiffer, PG, CEG
Senior Geologist

PROFESSIONAL GEOLOGIST
JOHN C. PFEIFFER
No. 2372
CERTIFIED ENGINEERING GEOLOGIST
STATE OF CALIFORNIA

(2 + 2 CD) Addressee

Attachments: Figure 1, Vicinity Map
Figure 2a, Site Plan – Patrick Creek
Figure 2b, Site Plan – Middle Fork
Table 1, Summary of Soil Analytical Results – Asbestos
Laboratory Report and Chain-of-custody Documentation



0 5 10
Scale in Miles

GEOCON
CONSULTANTS, INC.
3160 GOLD VALLEY DR – SUITE 800 – RANCHO CORDOVA, CA 95742
PHONE 916.852.9118 – FAX 916.852.9132

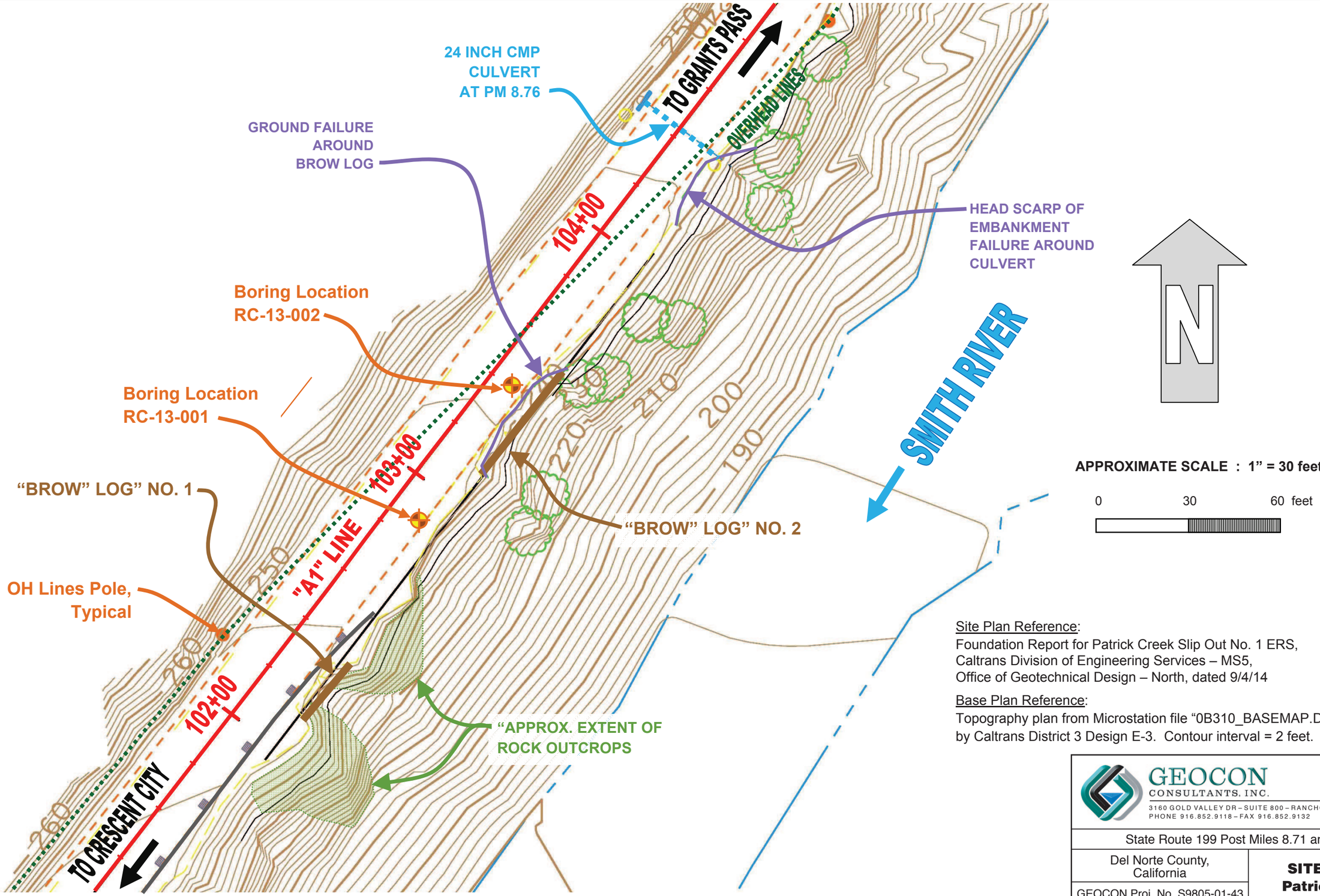
State Route 199 Post Miles 8.71 and 24.67

Del Norte County, California

GEOCON Proj. No. S9805-01-43

VICINITY MAP

Task Order No. 43, EA 01-0B3100 | February 2015 | Figure 1

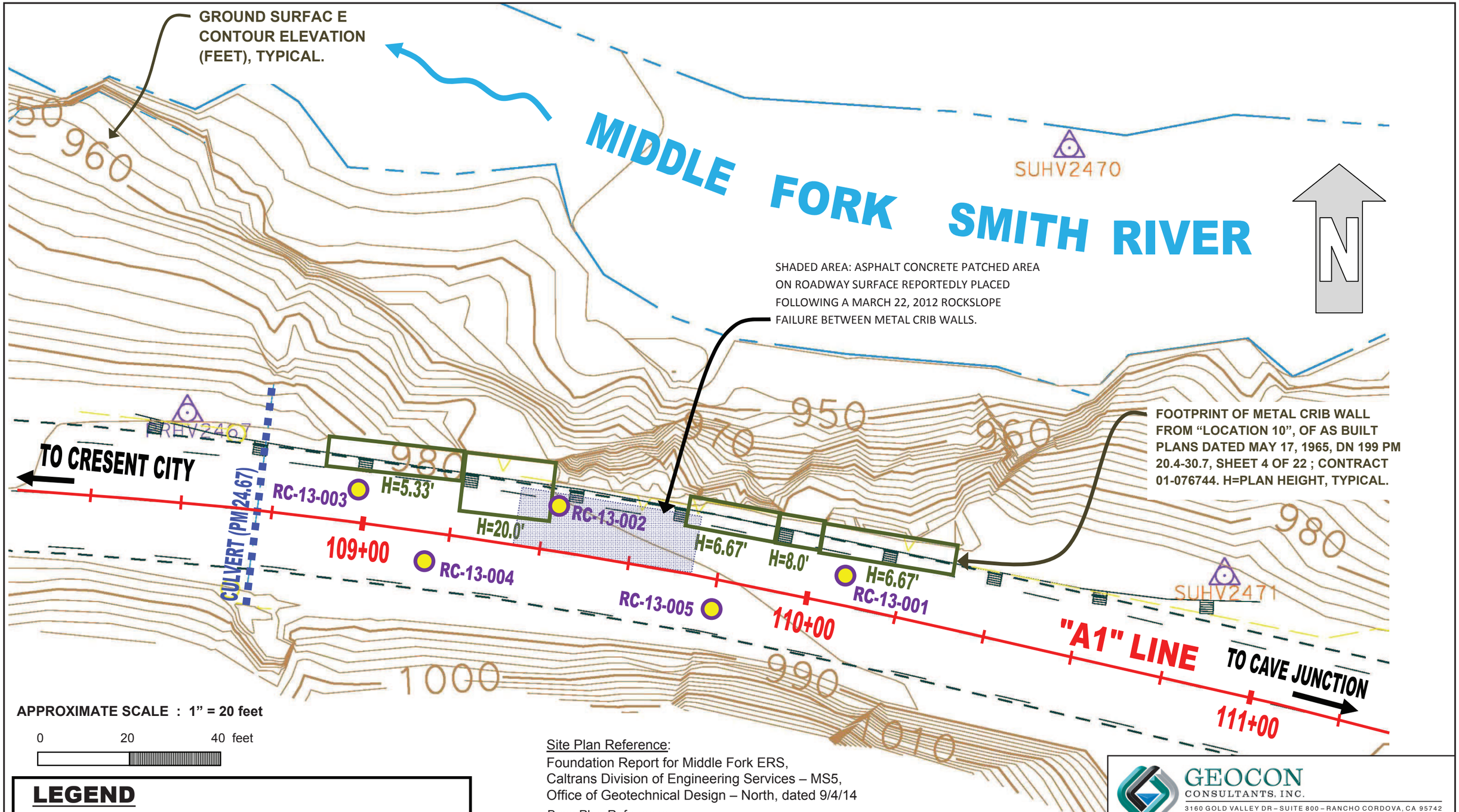


Site Plan Reference:
Foundation Report for Patrick Creek Slip Out No. 1 ERS,
Caltrans Division of Engineering Services – MS5,
Office of Geotechnical Design – North, dated 9/4/14

Base Plan Reference:
Topography plan from Microstation file "0B310_BASEMAP.DGN" provided by Caltrans District 3 Design E-3. Contour interval = 2 feet.

GEOCON
CONSULTANTS, INC.
3160 GOLD VALLEY DR – SUITE 800 – RANCHO CORDOVA, CA 95742
PHONE 916.852.9118 – FAX 916.852.9132

State Route 199 Post Miles 8.71 and 24.67		
Del Norte County, California	**SITE PLAN – Patrick Creek**	
GEOCON Proj. No. S9805-01-43		
Task Order No. 43, EA 01-0B3100	February 2015	Figure 2a



APPROXIMATE SCALE : 1" = 20 feet

0 20 40 feet

LEGEND

RC-13-001 BORING NO. 1 LOCATION.

SUHV2466 CONTROL MONUMENT WITH POSTMILE (HV = HORIZONTAL AND VERTICAL)

Site Plan Reference:
Foundation Report for Middle Fork ERS,
Caltrans Division of Engineering Services – MS5,
Office of Geotechnical Design – North, dated 9/4/14

Base Plan Reference:
Topography plan from Microstation file "0B320_BASEMAP.DGN" provided by Caltrans District 3 Design E-3. Contour interval = 2 feet.

Wall Data:
General Plan, Middle Fork Wall, Structure Design - Design Branch 1, DN 199 PM 24.5, Sheet 1, revision date 7-7-14.

GEOCON CONSULTANTS, INC.
3160 GOLD VALLEY DR – SUITE 800 – RANCHO CORDOVA, CA 95742
PHONE 916.852.9118 – FAX 916.852.9132

State Route 199 Post Miles 8.71 and 24.67		
Del Norte County, California	**SITE PLAN – Middle Fork**	
GEOCON Proj. No. S9805-01-43		
Task Order No. 43, EA 01-0B3100	February 2015	Figure 2b

TABLE 1
SUMMARY OF SOIL ANALYTICAL RESULTS - ASBESTOS
EA 01-0B3100
STATE ROUTE 199 POST MILE 8.71 AND 24.67
DEL NORTE COUNTY, CALIFORNIA

SAMPLE ID	ANALYTICAL METHOD	ASBESTOS %	ASBESTOS TYPE
POST MILE 8.71 - Patrick Creek			
PM 8.7 RC-13-001 0' TO 15' COMP	PLM	ND	None Reported
PM 8.7 RC-13-001 16' TO 40' COMP	PLM	ND	None Reported
PM 8.6 RC-13-002 0' TO 15' COMP	PLM	ND	None Reported
PM 8.6 RC-13-002 16' TO 35' COMP	PLM	ND	None Reported
POST MILE 24.67 - Middle Fork			
PM 24.6 RC-13-001/005 2' TO 20' COMP	PLM	ND	None Reported
PM 24.6 RC-13-002 7' TO 18' COMP	PLM	ND	None Reported
PM 24.6 RC-13-003 0' TO 15' COMP	PLM	ND	None Reported
PM 24.6 RC-13-002/003 20' TO 35' COMP	PLM	ND	None Reported

Notes:
PLM = Polarized Light Microscopy
ND = None detected

EMSL Analytical, Inc
2235 Polvorosa Ave , Suite 230, San Leandro, CA 94577
Phone/Fax: (510) 895-3675 / (510) 895-3680
http://www.EMSL.com sanleandrolab@emsl.com

EMSL Order:	091418470
CustomerID:	GECN80
CustomerPO:	S9805-01-43
ProjectID:	03A2132

Attn: **John Pfeiffer**
Geocon Consultants, Inc.
3160 Gold Valley Drive
Suite 800
Rancho Cordova, CA 95742

Phone:	(916) 852-9118
Fax:	(916) 852-9132
Received:	12/17/14 9:30 AM
Analysis Date:	12/31/2014
Collected:	12/11/2014

Project: **PATRICK CREEK NOA/S9805-01-43**

Test Report: PLM Analysis of Bulk Samples for Asbestos via EPA 600/R-93/116 Method with CARB 435 Prep (Milling) Level A for 0.25% Target Analytical Sensitivity

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
PM8.7 RC-13-001 *091418470-0001*	0 TO 15 COMP	Brown Non-Fibrous Homogeneous		100.00% Non-fibrous (other)	**None Detected**
PM8.7 RC-13-001 *091418470-0002*	16 TO 40 COMP	Brown Non-Fibrous Homogeneous		100.00% Non-fibrous (other)	**None Detected**
PM8.6 RC-13-002 *091418470-0003*	0 TO 15 COMP	Brown Non-Fibrous Homogeneous		100.00% Non-fibrous (other)	**None Detected**
PM8.6 RC-13-002 *091418470-0004*	16 TO 35 COMP	Brown Non-Fibrous Homogeneous		100.00% Non-fibrous (other)	**None Detected**
PM 24.6 RC-13-001/005 *091418470-0005*	2 TO 20 COMP	Brown Non-Fibrous Homogeneous		100.00% Non-fibrous (other)	**None Detected**
PM 24.6 RC-13-002 *091418470-0006*	7 TO 18 COMP	Brown Non-Fibrous Homogeneous		100.00% Non-fibrous (other)	**None Detected**
PM 24.6 RC-13-003 *091418470-0007*	0 TO 15 COMP	Brown Non-Fibrous Homogeneous		100.00% Non-fibrous (other)	**None Detected**

Analyst(s)

Matthew Batongbacal (8)

Chris Dojlidko, Laboratory Manager
or other approved signatory

This report relates only to the samples listed above and may not be reproduced except in full, without EMSL's written approval. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. EMSL is not responsible for sample collection activities or method limitations. Some samples may contain asbestos fibers below the resolution limit of PLM. EMSL recommends that samples reported as none detected or less than the limit of detection undergo additional analysis via TEM.Samples received in good condition unless otherwise noted.

Samples analyzed by EMSL Analytical, Inc San Leandro, CA

Initial report from 12/31/2014 09:53:38

EMSL Analytical, Inc
2235 Polvorosa Ave , Suite 230, San Leandro, CA 94577
Phone/Fax: (510) 895-3675 / (510) 895-3680
http://www.EMSL.com sanleandrolab@emsl.com

EMSL Order:	091418470
CustomerID:	GECN80
CustomerPO:	S9805-01-43
ProjectID:	03A2132

Attn: **John Pfeiffer**
Geocon Consultants, Inc.
3160 Gold Valley Drive
Suite 800
Rancho Cordova, CA 95742

Phone:	(916) 852-9118
Fax:	(916) 852-9132
Received:	12/17/14 9:30 AM
Analysis Date:	12/31/2014
Collected:	12/11/2014

Project: **PATRICK CREEK NOA/S9805-01-43**

Test Report: PLM Analysis of Bulk Samples for Asbestos via EPA 600/R-93/116 Method with CARB 435 Prep (Milling) Level A for 0.25% Target Analytical Sensitivity

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
PM 24.6 RC-13-002/003 *091418470-0008*	20 TO 35 COMP	Brown Non-Fibrous Homogeneous		100.00% Non-fibrous (other)	**None Detected**

Analyst(s)

Matthew Batongbacal (8)

Chris Dojlidko, Laboratory Manager
or other approved signatory

This report relates only to the samples listed above and may not be reproduced except in full, without EMSL's written approval. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. EMSL is not responsible for sample collection activities or method limitations. Some samples may contain asbestos fibers below the resolution limit of PLM. EMSL recommends that samples reported as none detected or less than the limit of detection undergo additional analysis via TEM.Samples received in good condition unless otherwise noted.

Samples analyzed by EMSL Analytical, Inc San Leandro, CA

Initial report from 12/31/2014 09:53:38

EMSL ANALYTICAL, INC.

Asbestos Lab Services Chain of Custody

EMSL Order Number *(Lab Use Only)*:

San Leandro CA
Suite 230
2235 Polvorosa Ave
San Leandro, CA 94577
PHONE (510) 895-3675
FAX: (510) 895-3680

Company: Geocon Consultants, Inc.	**EMSL-Bill to:** ☑ Same ☐ Different If Bill to is Different note instructions in Comments** *Third Party Billing requires written authorization from third party*
Street: 3160 Gold Valley Drive, Suite 800	
City/State/Zip: Rancho Cordova, CA 95742	
Report To (Name): John Pfeiffer	**Fax:**
Telephone: 916-852-9118	**Email Address:** pfeiffer@geoconinc.com
Project Name/Number: Patrick Creek NOA / 59805-01-43	
Please Provide Results: Email **Purchase Order:**	**State Samples Taken:** CA

Turnaround Time (TAT) Options* – Please Check

☐ 3 Hour ☐ 6 Hour ☐ 24 Hour ☐ 48 Hour ☐ 72 Hour ☐ 96 Hour ☐ 1 Week ☒ 2 Week

*For TEM Air 3 hr through 6 hr, please call ahead to schedule. *There is a premium charge for 3 Hour TEM AHERA or EPA Level II TAT. You will be asked to sign an authorization form for this service. Analysis completed in accordance with EMSL's Terms and Conditions located in the Analytical Price Guide.

PCM - Air ☐ Check if samples are from NY
- ☐ NIOSH 7400
- ☐ w/ OSHA 8hr. TWA

PLM - Bulk (reporting limit)
- ☐ PLM EPA 600/R-93/116 (<1%)
- ☐ PLM EPA NOB (<1%)

Point Count
- ☐ 400 (<0.25%) ☐ 1000 (<0.1%)

Point Count w/Gravimetric
- ☐ 400 (<0.25%) ☐ 1000 (<0.1%)
- ☐ NYS 198.1 (friable in NY)
- ☐ NYS 198.6 NOB (non-friable-NY)
- ☐ NIOSH 9002 (<1%)

TEM – Air ☐ 4-4.5hr TAT (AHERA only)
- ☐ AHERA 40 CFR, Part 763
- ☐ NIOSH 7402
- ☐ EPA Level II
- ☐ ISO 10312

TEM - Bulk
- ☐ TEM EPA NOB
- ☐ NYS NOB 198.4 (non-friable-NY)
- ☐ Chatfield SOP
- ☐ TEM Mass Analysis-EPA 600 sec. 2.5

TEM – Water: EPA 100.2
- Fibers >10µm ☐ Waste ☐ Drinking
- All Fiber Sizes ☐ Waste ☐ Drinking

TEM - Dust
- ☐ Microvac - ASTM D 5755
- ☐ Wipe - ASTM D6480
- ☐ Carpet Sonication (EPA 600/J-93/167)

Soil/Rock/Vermiculite
- ☒ PLM CARB 435 - A (0.25% sensitivity)
- ☐ PLM CARB 435 - B (0.1% sensitivity)
- ☐ TEM CARB 435 - B (0.1% sensitivity)
- ☐ TEM CARB 435 - C (0.01% sensitivity)
- ☐ EPA Protocol (Semi-Quantitative)
- ☐ EPA Protocol (Quantitative)

Other:
- ☐

☐ **Check For Positive Stop – Clearly Identify Homogenous Group** | **Filter Pore Size (Air Samples):** ☐ 0.8µm ☐ 0.45µm

Samplers Name: John Pfeiffer **Samplers Signature:** John Pfeiffer

Sample #	~~Sample Description~~	Volume/Area (Air) HA # (Bulk)	Date/Time Sampled
PM 8.7 RC-13-001	0' to 15' comp		12/11/14
PM 8.7 RC-13-001	16' to 40' comp		
PM 8.6 RC-13-002	0' to 15' comp		
PM 8.6 RC-13-002	16' to 35' comp		
PM 24.6 RC-13-001/005	2' to 20' comp		
PM 24.6 RC-13-002	7' to 18' comp		
PM 24.6 RC-13-003	0' to 15' comp		
PM 24.6 RC-13-002/003	20' to 35' comp		

Client Sample # (s): **Total # of Samples:** 8

Relinquished (Client): John Pfeiffer **Date:** 12/16/14 **Time:** 1600

Received (Lab): **Date:** **Time:**

Comments/Special Instructions:
Billing per Caltrans Contract 03A2132

Controlled Document – Asbestos Lab Services COC – A1.0 – 11/23/2009

№ 0 9 1 4 1 8 4 7 0

Asbestos Lab Services Chain of Custody

EMSL Order Number *(Lab Use Only)*:

San Leandro CA
Suite 230
2235 Polvorosa Ave
San Leandro CA 94577
PHONE (510) 895-3675
FAX: (510) 895-3680

Company: Geocon Consultants, Inc	**EMSL-Bill to:** ☑ Same ☐ Different If Bill to is Different note instructions in Comments** *Third Party Billing requires written authorization from third party*
Street: 3160 Gold Valley Drive, Suite 800	
City/State/Zip: Rancho Cordova, CA 95742	
Report To (Name): John Pfeiffer	**Fax:**
Telephone: 916-852-9118	**Email Address:** pfeiffer@geoconinc.com
Project Name/Number: Patrick Creek NOA / S9805-01-43	
Please Provide Results: Email **Purchase Order:**	**State Samples Taken:** CA

Turnaround Time (TAT) Options* – Please Check

☐ 3 Hour ☐ 6 Hour ☐ 24 Hour ☐ 48 Hour ☐ 72 Hour ☐ 96 Hour ☐ 1 Week ☒ 2 Week

*For TEM Air 3 hr through 6 hr, please call ahead to schedule. *There is a premium charge for 3 Hour TEM AHERA or EPA Level II TAT You will be asked to sign an authorization form for this service. Analysis completed in accordance with EMSL's Terms and Conditions located in the Analytical Price Guide

PCM - Air ☐ Check if samples are from NY
- ☐ NIOSH 7400
- ☐ w/ OSHA 8hr. TWA

PLM - Bulk (reporting limit)
- ☐ PLM EPA 600/R-93/116 (<1%)
- ☐ PLM EPA NOB (<1%)

Point Count
- ☐ 400 (<0.25%) ☐ 1000 (<0.1%)

Point Count w/Gravimetric
- ☐ 400 (<0.25%) ☐ 1000 (<0.1%)
- ☐ NYS 198.1 (friable in NY)
- ☐ NYS 198.6 NOB (non-friable-NY)
- ☐ NIOSH 9002 (<1%)

TEM – Air ☐ 4-4.5hr TAT (AHERA only)
- ☐ AHERA 40 CFR, Part 763
- ☐ NIOSH 7402
- ☐ EPA Level II
- ☐ ISO 10312

TEM - Bulk
- ☐ TEM EPA NOB
- ☐ NYS NOB 198.4 (non-friable-NY)
- ☐ Chatfield SOP
- ☐ TEM Mass Analysis-EPA 600 sec. 2.5

TEM – Water: EPA 100.2
- Fibers >10µm ☐ Waste ☐ Drinking
- All Fiber Sizes ☐ Waste ☐ Drinking

TEM- Dust
- ☐ Microvac - ASTM D 5755
- ☐ Wipe - ASTM D6480
- ☐ Carpet Sonication (EPA 600/J-93/167)

Soil/Rock/Vermiculite
- ☒ PLM CARB 435 - A (0.25% sensitivity)
- ☐ PLM CARB 435 - B (0.1% sensitivity)
- ☐ TEM CARB 435 - B (0.1% sensitivity)
- ☐ TEM CARB 435 - C (0.01% sensitivity)
- ☐ EPA Protocol (Semi-Quantitative)
- ☐ EPA Protocol (Quantitative)

Other:
- ☐

☐ **Check For Positive Stop – Clearly Identify Homogenous Group** | **Filter Pore Size (Air Samples):** ☐ 0.8µm ☐ 0.45µm

Samplers Name: John Pfeiffer **Samplers Signature:** John Pfeiffer

Sample #	~~Sample Description~~	Volume/Area (Air) HA # (Bulk)	Date/Time Sampled
PM 8.7 RC-13-001	0' to 15' comp		12/11/14
PM 8.7 RC-13-001	16' to 40' comp		
PM 8.6 RC-13-002	0' to 15' comp		
PM 8.6 RC-13-002	16' to 35' comp		
PM 24.6 RC-13-001/005	2' to 20' comp		
PM 24.6 RC-13-002	7' to 18' comp		
PM 24.6 RC-13-003	0' to 15' comp		
PM 24.6 RC-13-002/003	20' to 35' comp		

Client Sample # (s): **Total # of Samples:** 8

Relinquished (Client): John Pfeiffer **Date:** 12/16/14 **Time:** 1600

Received (Lab): FA **Date:** 12/17/14 **Time:** 9:30 Fed Ex

Comments/Special Instructions:
Billing per Caltrans Contract 03A2132

Controlled Document – Asbestos Lab Services COC – A1.0 – 11/23/2009