

INFORMATION HANDOUT

**For Contract No. 01-378134
At 01-Men-128-VAR**

**Identified by
Project ID 0100000133**

PERMITS

California Department of Fish and Wildlife

U.S. Fish and Wildlife Service

United States Army Corps of Engineers

Non-Reporting Nationwide 404

WATER QUALITY

California Regional Water Quality Control Board

North Coast Region
Board Order No. 2003-0017-DWQ

MATERIALS INFORMATION

Naturally Occurring Asbestos Report

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



STREAMBED ALTERATION AGREEMENT
NOTIFICATION No. 1600-2015-0514-R1
ROBINSON, RANCHERIA, BEEBE, DRY, AND McDONALD CREEK WATERSHEDS

CALIFORNIA DEPARTMENT OF TRANSPORTATION
MEN 128 CULVERT REHAB PHASE III
EA 01-37813, MENDOCINO COUNTY

RECEIVED

APR 13 2016

CDFW - EUREKA

22 Encroachments

Mr. Sebastian Cohen Representing the Department of Transportation
MEN 128 CULVERT REHABILITATION PROJECT, MENDOCINO COUNTY

This Lake or Streambed Alteration Agreement (Agreement) is entered into between the California Department of Fish and Wildlife (CDFW) and Mr. Sebastian Cohen (Permittee) representing the California Department of Transportation (Caltrans).

RECITALS

WHEREAS, pursuant to Fish and Game Code (FGC) section 1602, Permittee notified CDFW on December 14, 2015 that Permittee intends to complete the project described herein.

WHEREAS, pursuant to FGC section 1602, 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 located along State Route (SR) 128 and affects unnamed ephemeral and intermittent streams that are tributaries to Robinson Creek, Rancheria Creek, Beebe Creek, Dry Creek, and McDonald Creek.

Detailed project location information is as follows:

Project Drainage System (DS) No.	State Route Milepost (PM)	Longitude (Decimal Degrees)	Latitude (Decimal Degrees)	Township	Range	Section
1	30.14	-123.353866	38.991546	13N	14W	13
2	30.57	-123.351509	38.985678	13N	14W	13
3	31.03	-123.349544	38.980091	13N	14W	13
4	31.09	-123.349746	38.979224	13N	14W	13
5	31.26	-123.348927	38.977176	13N	14W	24
6	35.42	-123.36001	38.932238	12N	13W	4
7	35.48	-123.305175	38.931787	12N	13W	4
8	35.94	-123.299415	38.927275	12N	13W	3
9	38.77	-123.257321	38.913995	12N	13W	1
10	40.52	-123.229329	38.90562	12N	12W	8
11	40.75	-123.22568	38.903994	12N	12W	8
12	41.12	-123.220689	38.90036	12N	12W	8
13	41.35	-123.216816	38.89876	12N	12W	15
14	42.81	-123.193505	38.894967	12N	12W	15
15	43.16	-123.187639	38.892637	12N	12W	15
16	44.85	-123.159061	38.885224	12N	12W	14
17	46.66	-123.132591	38.884632	12N	11W	18
18	47.52	-123.120058	38.885084	12N	11W	18
19	47.71	-123.116903	38.883331	12N	11W	17
20	47.97	-123.114515	38.880602	12N	11W	20
21	48.3	-123.110427	38.876976	12N	11W	20
22	48.44	-123.105863	38.875718	12N	11W	20

PROJECT DESCRIPTION

The project involves 22 encroachments on ephemeral and intermittent streams on SR 128, where a variety of culverts that are corroded or damaged, have inadequate lengths, or inadequate head walls, end walls, or rock energy dissipaters will be replaced and/or modified.

PROJECT IMPACTS

Existing fish or wildlife resources the project could substantially adversely affect include: populations of steelhead (*Oncorhynchus mykiss*), foothill yellow-legged frog (*Rana boylei*), northern red-legged frog (*Rana aurora*) 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 incidental take, impede up- and/or down-stream migration, damage to spawning and/or rearing habitat, temporary increase of sediment and turbidity, and potential cumulative impacts.

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 and California Environmental Quality Act (CEQA) documents, 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 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 to verify compliance with the Agreement.

2. Avoidance and Minimization Measures

To avoid or minimize adverse impacts to fish and wildlife resources identified above, Permittee shall implement each measure listed below.

- 2.1 Except where otherwise stipulated in this Agreement, all work shall be conducted in accordance with the forms, work plans, biological surveys, mitigation plans, maps and drawings submitted with Notification No. 1600-2015-0514, as modified or amended on February 3, 2016.
- 2.2 Permanent culverts at stream crossings shall be sized to pass the estimated 100-year flood flow, including debris and sediment loads, without overtopping or diverting. Culvert sizing factors shall include transportation of bedload, and the abundance and size of woody debris likely to be introduced to the stream upstream of the culvert crossing. The culverts shall be set at the natural streambed elevation to the maximum extent feasible.
- 2.3 If permanent culverts cannot be set to grade, they shall have downspouts and/or energy dissipators below the outfall as needed to effectively control erosion. Downspouts shall be securely attached to the culvert and staked or otherwise anchored to the fill slope.
- 2.4 All work within the bed, bank and channel shall be confined to the period June 15 through October 15 of each year. Work may be conducted in or near the stream during the late season work period October 15 through November 1, provided adherence to all conditions in this Agreement and a) – c) below:
 - a) The Permittee shall complete any unfinished encroachment work, including erosion control measures, within 24 hours of CDFW directing the Permittee to do so.
 - b) Prior to any work at a site, the Permittee shall stock-pile erosion control materials at the site. All bare mineral soil exposed in conjunction with crossing construction, deconstruction, maintenance or repair or removal shall be treated for erosion immediately upon completion of work on the crossing, and prior to the onset of precipitation capable of generating runoff.
 - c) When a 7-day National Weather Service forecast of rain 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 finish work underway at encroachment and refrain from starting any new work at encroachment prior to the rain event.

- 2.5 Equipment shall not operate in a live (flowing) stream or wetted channel except as may be necessary to construct and remove in-stream structures to catch and contain water (i.e., cofferdams) to divert stream flow and isolate the work site, or as otherwise specifically provided for in this Agreement.
- 2.6 Where flowing water is present during operations:
- a) Cofferdams shall be installed to divert stream flow and isolate and dewater the work site, and to catch any sediment-laden water and minimize sediment transport downstream. Cofferdams shall be constructed of non-polluting materials including sand bags, rock, and/or plastic tarps. Mineral soil shall not be used in the construction of cofferdams.
 - b) Flowing water shall be cleanly bypassed and/or prevented from entering the work area through pumping or gravity flow, and cleanly returned to the stream below the work area. Flow diversions shall be done in a manner that shall prevent pollution and/or siltation and provides flows to downstream reaches.
 - c) The Permittee shall remove any turbid water and sediment present in the work area prior to restoring water flow through the project site, and place them in a location where they cannot enter the Waters of the State.
- 2.7 To prevent the release of materials that may be toxic to fish and other aquatic species, poured concrete shall be isolated from stream flow and allowed to dry/cure for a minimum of 30 days. As an alternative, the Permittee 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 downstream 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.
- 2.8 All bare mineral soil exposed in conjunction with project related activities shall be treated for erosion prior to the onset of precipitation capable of generating run-off or the end of the yearly work period, whichever comes first. Treatments shall include using native slash or seeding and mulching of all bare mineral soil exposed in conjunction with encroachment work. Only clean straw (such as rice, barley, wheat, or weed-free straw), and seeding with regional native seed or non-native seed that is known not to persist or spread (e.g., barley (*Hordeum vulgare*) or wheat (*Triticum aestivum*) shall be used. No known invasive grass seed shall be

used such as annual or perennial ryegrass (*Lolium multiflorum* or *L. perenne*, which are now referred to as *Festuca perennis*).

- 2.9 Only wildlife-friendly 100 percent biodegradable erosion control products that will not entrap or harm wildlife shall be used. Erosion control products shall not contain synthetic (e.g., plastic or nylon) netting. Photodegradable synthetic products are not considered biodegradable.
- 2.10 The Permittee shall provide site maintenance including, but not limited to, re-applying erosion control to minimize surface erosion and ensuring drainage structures, streambeds and banks remain sufficiently armored and/or stable.
- 2.11 Structures and associated materials not designed to withstand high seasonal flows shall be removed to areas above the ordinary high water mark before such flows occur or the end of the yearly work period, whichever comes first.
- 2.12 Refueling of equipment and vehicles and storing, adding or draining lubricants, coolants or hydraulic fluids shall not take place within or adjacent to any stream. All such fluids and containers shall be disposed of properly. Heavy equipment parked within or adjacent to the stream shall use drip pans or other devices (e.g., absorbent blankets, sheet barriers or other materials) as needed to prevent soil and water contamination.
- 2.13 All activities performed in the field which involve the use of petroleum or oil based substances shall employ absorbent material designated for spill containment and clean up activity on site for use in case of accidental spill. Clean-up of all spills shall begin immediately. The Permittee shall immediately notify the State Office of Emergency Services at 1-800-852-7550. CDFW shall be notified by the Permittee and consulted regarding clean-up procedures.
- 2.14 No debris, soil, silt, sand, bark, slash, sawdust, rubbish, cement or concrete washings, oil or petroleum products, or other organic or earthen material from construction work, or associated activity of whatever nature shall be allowed to enter into, or be 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. (Not applicable to material installed permanently or temporarily as part of the project activities).
- 2.15 Upon CDFW determination that turbidity/siltation levels resulting from project related activities constitute a threat to aquatic life, activities associated with the turbidity/siltation, shall be halted until effective CDFW approved control devices are installed, or abatement procedures are initiated.

SITE-SPECIFIC CONDITIONS:

- 2.16 At Drainage System (DS) 2 at PM 30.57, conditions have changed such that a revision of the project is necessary. Permittee shall submit a new work plan for this site to CDFW for review and concurrence prior to any work at this site.
- 2.17 At DS 3 at PM 31.03, in addition to rip rap downstream of the culvert outlet, the head cut upstream of the culvert shall be contoured and stabilized using riprap or a base layer of fractured, graded rock overlain with larger, durable rock armor. Permittee shall install a minimum 30-inch alternative pipe culvert. If utilities lines cause a conflict with culvert alignment, a minimum 24-inch alternative pipe culvert may be used.
- 2.18 At DS 5 at PM 31.26, the outlet of the new culvert shall be aligned with the small stream visible downslope of the culvert outlet. Prior to construction work, and immediately following completion of construction work, all invasive broom species (e.g. French broom) in the project area shall be cut at ground level, removed from the site, and disposed of properly.
- 2.19 At DS 8 at PM 35.94, the culvert inlet and outlet shall be stabilized using rip rap or other suitable materials.
- 2.20 At DS 9 at PM 38.77, a new work plan that will install a drop inlet and rip-rap the channel upslope and downslope of the culvert inlet and outlet shall be submitted to CDFW for review and concurrence prior to any work at this site.
- 2.21 At DS 9 at PM 38.77, DS 12 at 41.12, and DS 17 at PM 46.66, the Right-of-Way (ROW) fences crossing the stream channel upstream and/or downstream of the culvert shall be cleaned of debris as soon as feasible upon receipt of a final Agreement. To avoid stream diversion, ROW fences shall permit passage of all streamflows underneath and through them. Modification of fences may be necessary; this agreement includes work done within channels in addressing the fence-streamflow passage issue as required herein. Permittee shall make an effort to work with neighboring landowners in order to remove as much stored sediment and debris as feasible from behind fences during ROW fence maintenance. Fences at these sites shall be maintained yearly as part of the encroachments, during the life of this Agreement.
- 2.22 At DS 12 at 41.12, the outlet of the culvert shall be aligned with the downstream channel to the maximum extent feasible.
- 2.23 At DS 18 at PM 47.52, if water is present immediately prior to initiating work, a qualified biologist shall visit this site to determine presence and species of frog(s) that may be impacted. If native frogs are identified, contact CDFW at (707) 441-

2075 and allow CDFW staff up to 10 business days for consultation regarding proposed impacts to native frogs.

- 2.24 At DS 19 at 47.71, a new plan that shows revised proposed work (a drop inlet without a concrete headwall), shall be submitted to CDFW for review and concurrence prior to any work at this site.
- 2.25 At DS 20 at PM 47.97, a concrete headwall shall be installed at the inlet, not at the outlet as identified in the Notification.
- 2.26 At DS 21 at PM 48.30, riprap shall be installed downstream of the culvert outlet as needed for erosion control.

3. Reporting Measures

Permittee shall meet each reporting requirement described below.

- 3.1 Permittee shall notify CDFW, in writing, at least five (5) days prior to initiation of construction (project) activities and at least five (5) days prior to completion of construction (project) activities. Notification shall be faxed to CDFW at (707) 441-2021, Attn: JoAnn Loehr, Senior Environmental Scientist (Specialist) or via e-mail at joann.dunn@wildlife.ca.gov.

CONTACT INFORMATION

Any communication that Permittee or CDFW submits to the other shall be in writing and any communication or documentation shall be delivered to the address below by U.S. mail, fax, or email, or to such other address as Permittee or CDFW specifies by written notice to the other.

To Permittee:

Mr. Sebastian Cohen
California Department of Transportation
1656 Union Street
Eureka, CA 95501
E-Mail: Sebastian.Cohen@dot.ca.gov

To CDFW:

Department of Fish and Wildlife
Region 1
619 Second Street, Eureka, California 95501
Attn: Lake and Streambed Alteration Program
Notification #1600-2015-0514-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 §§ 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 Cal. Code Regs., title 14, § 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 Cal. Code Regs., title 14, § 699.5).

EXTENSIONS

In accordance with FGC § 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 Cal. Code Regs., title 14, § 699.5). CDFW shall process the extension request in accordance with FGC 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 § 1605, subd. (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 § 711.4 filing fee listed at http://www.wildlife.ca.gov/habcon/ceqa/ceqa_changes.html.

TERM

This Agreement shall expire **five years** after the date the Agreement is fully executed, 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.

EXHIBITS

None.

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.

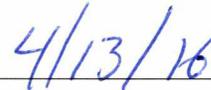
CONCURRENCE

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

FOR CALIFORNIA DEPT. OF TRANSPORTATION



Sebastian Cohen
Project Manager

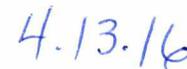


Date

FOR DEPARTMENT OF FISH AND WILDLIFE



for Name: Gordon Leppig
Senior Environmental Scientist Supervisor



Date

Received 4/20/05 PW



United States Department of the Interior



FISH AND WILDLIFE SERVICE

Arcata Fish and Wildlife Office
1655 Heindon Road
Arcata, CA 95521-5582
Phone: (707) 822-7201 Fax: (707) 822-8411

In Reply Refer To:
1-14-2003-1545.6

APR 15 2005

Gene K. Fong
Division Administrator
Federal Highway Administration
California Division
650 Capitol Mall, Suite 4-100
Sacramento, California 95814

Subject: Formal Consultation on the Proposed Replacement of Deteriorated Culverts on State Routes 128 and 253, in Mendocino County, California (01-MEN-128/253 VAR)

Dear Mr. Fong:

This document transmits the Fish and Wildlife Service's (Service) biological opinion, based on our review of your proposed project, Replacement of 274 Deteriorated Culverts on State Routes (SR) 128 and 253, in Mendocino County, California, and its effects on the threatened marbled murrelet (*Brachyramphus marmoratus*) (murrelet), in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (Act). We received your May 5, 2004, request for formal consultation on May 7, 2004.

Through this correspondence, we transmit our biological opinion regarding the effects of your proposed action on the murrelet. In an earlier correspondence, dated October 6, 2004, we provided our concurrence with your determination that the proposed action may affect, but is not likely to adversely affect, the endangered tidewater goby (*Eucyclogobius newberryi*), the threatened bald eagle (*Haliaeetus leucocephalus*), the threatened northern spotted owl (*Strix occidentalis caurina*), the endangered brown pelican (*Pelecanus occidentalis*), and threatened western snowy plover (*Charadrius alexandrinus nivosus*), in accordance with section 7 of the Act.

In your biological assessment, you indicate that the proposed action will have no effect on critical habitat for the marbled murrelet, since the proposed action does not occur within any critical

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habitat designated for the species. Therefore, critical habitat will not be discussed further in this correspondence.

This biological opinion is based on information you provided in the December 2003 biological assessment (BA) submitted with your request, and in other sources of information. A complete administrative record of this consultation is on file at this office.

Consultation History

During 2002, prior to the request for consultation, Caltrans met with Mr. David Solis and Ms. Robin Hamlin of the Arcata Fish and Wildlife Office (AFWO) to identify potential project impacts and minimization measures. Supplemental discussions occurred between Ray Bosch of AFWO and Mr. Peter Lewendal of Caltrans to consider take minimization measures. On April 5, 2004, Caltrans provided AFWO with an advance copy of the BA as part of their correspondence with FHWA indicating the need for formal consultation. On May 7, 2004, FHWA submitted its request for formal consultation to AFWO. On May 17, AFWO transmitted correspondence to FHWA indicating that the consultation package was complete and consultation had been initiated effective May 7, 2004. During the period June 2004 to November 2004, Caltrans contacted Mr. Bosch to ascertain the status of the preparation of the Biological Opinion.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

Caltrans, in conjunction with FHWA, proposes to rehabilitate or replace deteriorated culverts and install standard drainage inlet and outlet structures at 274 locations on SRs 128 and 253 in Mendocino County, California. Work on these culverts is needed because the 30 to 45-year old pipes are deteriorating (rusty, perforated, bent, separated at the joints, etc.). The deterioration will eventually lead to the pipes collapsing under the weight of the roadway and the roadway itself will begin to deteriorate, possibly resulting in unsafe conditions and increasing the costs of repair. Substantial environmental damage could also result if the roadway fill and/or road surface materials erode into a stream.

The proposed work on SR 128, located between Post Miles 0.18 to 50.59, involves rehabilitation or replacement of culverts at 217 locations. The proposed work on SR 253 includes 58 locations between Post Miles 0.99 and 17.15. Although exact scheduling of work has not yet been determined, all work is anticipated to be completed by December 31, 2010.

Because the culverts convey water beneath the existing highways, most of the required work will occur close to the roadways and within Caltrans right-of-way. Work may extend away from the road and outside of the right-of-way in a very limited number of cases, depending upon final design determinations. Some drainage work will be done at inlets and outlets, and minor

vegetation removal may be performed to improve water flow. Minor grading may also be performed at various locations to prevent water buildup at inlets and/or outlets.

At most sites, work will be confined to an area within 15 meters (50 feet) of either side of the road, and within 15 meters on either side of the culvert, for a maximum total impact area (excluding the road surface) of under 900 sq. meters (about 0.2 acre). At many sites, the impact area will be substantially less than this; at some sites, the work area will be larger due to access requirements or other physical constraints.

To minimize erosion and associated water quality impacts, culvert rehabilitation/replacement will be conducted outside of the rainy season, which generally extends from October through April. If water is present at any of the culvert locations, the contractor will de-water the work area by capturing the flow upstream of the culvert and pumping the water into a roadside ditch where it can flow to an adjacent culvert; utilizing an existing, to-be-abandoned culvert; or installing a small diameter pipe in a shallow trench across the roadway, in compliance with Caltrans Best Management Practices. Rubber tire backhoes are the most common equipment employed for this type of work, and movement of the equipment off the shoulder should only be required for deep installations. Crawler mounted excavators may also be used when the depth or reach of excavation is greater than 4.5 meters (15 feet).

Standard construction techniques will be employed to rehabilitate the culverts. The most commonly employed technique will be to completely replace the culvert and associated structural elements (headwall and/or endwall). The asphalt-concrete road surface will be sawcut, followed by excavation of backfill and removal of the existing culvert. The new culvert segment will be placed at the planned grade and backfilled with native soils or concrete slurry. Steel plates are placed over backfill until the paving occurs. Contractors typically pave once per week, usually covering three or more complete crossings. Depending on the situation, inlet or outlet work may be performed with a different crew at a later date.

At some sites, a new drainage inlet (metal or concrete) will be installed. Rock energy dissipaters (REDs) will be necessary at some culvert outlets to stabilize the outlet area and minimize erosion; REDs are currently proposed at about 50 of the 274 locations.

When the depth of the culvert below the road surface is too great for excavation, or the work would result in unacceptable traffic delays, jacking and boring techniques will be utilized. This technique is currently being considered at 4 of the 274 sites. Jacking and boring operations will require a larger work area for access and staging (up to 1,880 sq. meters, about 0.5 acre), and the period of construction may extend over several days. At some locations, it may be possible to install a new liner within an existing culvert rather than remove the culvert. This approach is typically limited to small diameter pipe (usually 600-900 millimeters/2-3 feet diameter). Liners are currently proposed at nine locations.

Paving of the invert is proposed at approximately ten locations. Grout is pumped from a transit mix truck via hose to pave the bottom of the culvert. The grout is quick setting and isolated from any stream flow.

In steep terrain, outlet pipes often extend down slopes. Suspension systems are generally used to support the segment of pipe installed on the exposed slope. Due to "reach" constraints (4.5 to 6 meters/15 to 20 feet for typical backhoes), a temporary workpad may need to be constructed part way down the slope at some sites to allow equipment to reach the outlet of the culvert.

A disposal agreement is usually prepared when any excess material is generated on a project. Through this agreement, the contractor assumes ownership of and responsibility for disposal of the excess material, with the requirement that Caltrans approve the disposal method and site. It is expected that this material will be hauled to aggregate pits, but occasionally private parties obtain the needed grading permits to allow disposal on private property.

Minimization Measures

The following measures have been incorporated into the project description to minimize potential adverse effects to the marbled murrelet:

1. To minimize or reduce disturbance during the more critical early part of the marbled murrelet breeding season, no work shall be performed along SR 128 at the 70 locations between and including Mile Posts 1.94 and 12.12 prior to July 9 each year. While the establishment of the July 9 date was primarily intended to fully minimize these effects to the northern spotted owl, this measure would also help to reduce, but would not eliminate, noise related effects to the murrelet. These 70 locations include all culvert replacements within the known or suspected range of the murrelet.
2. During the marbled murrelet nesting period, March 24 to September 15, all work involving loud equipment (e.g., jackhammers) performed along SR 128 at the 70 locations between and including Mile Posts 1.94 and 12.12 shall be limited to the hours between 10:00 am and 4:00 pm, when adult murrelets are less likely to be in transit to and from nests, either exchanging incubation shifts, or feeding young.
3. If an active murrelet nest is discovered in the vicinity of a culvert project, work at that location shall be deferred until the end of the nesting season (September 15) or until a qualified biologist confirms that the young has fledged or is otherwise no longer present.
4. Tree removal shall be limited to the minimum necessary to accomplish culvert rehabilitation, and shall include only riparian and understory growth in the immediate vicinity of the culverts. No trees greater than 6" dbh shall be removed for the project.
5. Measures shall be implemented at each culvert site to prevent encroachment into adjacent forested areas. All forested lands outside the designated work areas shall be designated as Environmentally Sensitive Areas (ESA's) and clearly indicated as such on project.

construction plans. Project specifications shall include a requirement that ESA's are clearly delineated with brightly colored fencing, rope or equivalent prior to beginning construction.

6. Blasting shall not be permitted.
7. All work shall be performed during daylight hours. No nighttime operations or use of staging lights shall be allowed.

Conservation Measures

When used in the context of the Act, "conservation measures" represent actions pledged in the project description that the action agency will implement to further the recovery of the species under review. Caltrans is not proposing to include any conservation measures as part of the proposed action.

Definition of the Action Area

The action area is defined at 50 CFR 402.02 to mean "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action". For the purposes of this consultation, the Service recognizes the action area to include the proposed project site and all lands within 0.25 mile of the proposed project sites. This analysis area enables the Service to more fully understand the cumulative, interrelated, and interdependent effects of the action within a more appropriate landscape context.

STATUS OF THE SPECIES (rangewide and recovery unit)

Background

Legal Status

The marbled murrelet was Federally listed as a threatened species in Washington, Oregon and California on September 28, 1992 (USDI Fish and Wildlife Service 1992). The final recovery plan was released in 1997 (USDI Fish and Wildlife Service 1997). The species is State-listed as endangered in California and as threatened in Oregon and Washington (USDI Fish and Wildlife Service 1997).

Life History

Accounts of the taxonomy, ecology, and reproductive characteristics of the marbled murrelet are found in the following publications: Ecology and Conservation of the Marbled Murrelet (Ralph et al. 1995a), the Final Recovery Plan Marbled Murrelet (*Brachyramphus marmoratus*) Washington, Oregon, and California Populations (Recovery Plan) (USDI Fish and Wildlife Service 1997), the Final Supplemental Environmental Impact Statement on Management of Habitat for Late-successional and Old-growth Forest Related Species Within the Range of the Northern Spotted Owl (FSEIS) (USDA Forest Service and USDI Bureau of Land Management 1994a), the Status of the Marbled Murrelet in North America: with Special Emphasis on Populations in California, Oregon, and Washington (Marshall 1988), and in Nelson (1997). Information from these sources is incorporated by reference and briefly summarized as follows.

Current and Historical Range

The breeding range of the marbled murrelet extends along the Pacific coast from Alaska to Monterey Bay in central California. Some wintering birds occur as far south as northern Baja California, Mexico. However, only the Washington, Oregon, and California population segment is Federally listed as threatened (USDI Fish and Wildlife Service 1992). Limited information is available on their historic distribution and numbers; however, most summaries give indications of a decrease in their range, distribution, and/or numbers (USDI Fish and Wildlife Service 1997).

Habitat

Marbled murrelets generally nest in old-growth forests, characterized by large trees, multiple canopy layers, and moderate to high canopy closure. In California, nest stands are typically composed of low elevation conifers, which include coastal redwood and Douglas-fir. These forests are located close enough to the marine environment for the birds to fly to and from nest sites. The furthest known inland occupied site is about 50 miles in Washington.

Reproductive Biology

Life history information for the marbled murrelet is limited (USDI Fish and Wildlife Service 1997). However, murrelets probably do not reach sexual maturity until at least their second year, and most birds probably do not lay eggs until they are at least 3 years old (USDI Fish and Wildlife Service 1997). Marbled murrelets are estimated to live an average of 10 years (Beissinger 1995). Marbled murrelets produce one egg per nest attempt and usually only nest once a year, however re-nesting is documented (Hebert and Golightly 2003). Nests are not built, but rather the egg is placed in a small depression or cup made in moss or other debris on the limb (USDI Fish and Wildlife Service 1997).

Data on timing of various aspects of the breeding season indicate that murrelets in California have the longest breeding period within the listed range. Incubation commences as early as March 24 and ends as late as August 13; the nestling period may begin April 23 and end September 9 (Hamer and Nelson 1995). In California, we have established the marbled murrelet breeding season as the period from March 24 through September 15. Data from murrelet populations throughout North America show that approximately 84 percent of murrelet young fledge from their nests by August 18 (Hamer and Nelson 1995). The latest fledging date was a record of a fledging found on September 21 in Oregon (Hamer and Nelson 1995).

Incubation lasts about 30 days, and chicks fledge about 28 days after hatching. Both sexes incubate the egg in alternating 24-hour shifts. The chick is fed up to eight times daily, and is usually fed only one fish at a time. Adults fly from the ocean to inland nest sites at all times of the day, but most often at dusk and dawn. New information from a radio-telemetry study in northern California indicates that inland flights at dusk are exclusively made by breeding birds, whereas inland flights at dawn are made by both breeding and non-breeding birds (B. Accord pers. comm.). The young are semi-precocial, capable of walking from the nest cup but not leaving the nest branch. Fledglings apparently fly directly from the nest to the ocean, but are sometimes found on the ground, indicating that they were unable to sustain flight to reach the marine environment (USDI Fish and Wildlife Service 1997).

Threats

Marbled murrelets prefer late-successional and old-growth forests for nesting. Habitat loss due to timber harvest was the primary reason for listing the species (USDI Fish and Wildlife Service 1992). Loss of nesting habitat and poor reproductive success in remaining habitat are the primary factors responsible for a decline in the marbled murrelet population, compared to the presumed historical population level in the early 1800's (USDI Fish and Wildlife Service 1997).

In addition to removal and degradation of nesting habitat, other threats include the following: predation; gill-net fishing operations; oil spills; marine pollution; and changes in prey abundances and distribution (USDI Fish and Wildlife Service 1997). Murrelets are highly vulnerable to oiling. Past oil spills occurring near murrelet concentrations have had catastrophic effects on murrelet populations (USDI Fish and Wildlife Service 1996).

Predation of eggs and chicks is a major cause of nest failure (Nelson and Hamer 1995a). Even small increases in predation can have deleterious effects to population viability, due to the murrelet's low reproductive rate (Nelson and Hamer 1995a). Poor reproductive success is likely caused by high predation rates; a reduction in direct or indirect human-caused disturbance to nests during the breeding season would reduce effects on reproductive success (USDI Fish and Wildlife Service 1997). In particular, human activities which increase the number of predators or risk of predation near nesting areas should be discouraged (USDI Fish and Wildlife Service 1997).

Predation rates are influenced largely by habitat patch size, habitat quality, nest location relative to edge of nest stand, and proximity of nesting habitat to areas of human activity. Quality of nesting habitat decreases as patch size decreases because the amount of forest edge increases in relation to the amount of interior forest habitat. The probability that nests would be located near an edge increases as the proportion of edge to interior habitat increases, as occurs in small habitat patches. Nests placed near the edge of a stand are more likely subject to predation (Ralph et al. 1995b). Forest stands within 0.6 mile of human activity centers, such as campgrounds, can experience increased nest predation because human food sources attract corvids (Marzluff et al. 2000). Probability of predation on simulated murrelet nests decreased from 95 percent to 50 percent when visitors and their food were not allowed into an area of the Olympic National Park (Marzluff and Neatherlin in review).

Conservation Needs

Recovery objectives for the marbled murrelet include the following (USDI Fish and Wildlife Service 1997): (1) stabilize and then increase population size, changing the current downward trend to an upward trend throughout the listed range; (2) provide conditions in the future that allow for a reasonable likelihood of continued existence of viable populations; and (3) gather the necessary information to develop specific delisting criteria. Stabilizing and increasing habitat quality and quantity on land and at sea are the primary means for stopping the current population decline and encouraging future population growth (USDI Fish and Wildlife Service 1997).

In this light, the short-term conservation needs of the marbled murrelet include the following (USDI Fish and Wildlife Service 1997): (1) maintain all occupied nesting habitat on Federal lands administered under the Northwest Forest Plan (NWFP) (USDA Forest Service and USDI Bureau of Land Management 1994b); (2) on non-Federal lands, maintain as much occupied habitat as possible and use the HCP process to avoid or reduce the loss of this habitat; (3) maintain potential and suitable habitat in large contiguous blocks; (4) maintain and enhance buffer habitat surrounding occupied habitat; (5) decrease adult and juvenile mortality; and (6) minimize nest disturbances to increase reproductive success.

Over the long-term, the conservation needs of the species include the following (USDI Fish and Wildlife Service 1997): (1) increase the amount and quality of suitable nesting habitat; (2) decrease fragmentation by increasing the size of suitable stands; (3) protect "recruitment" nesting habitat to buffer and enlarge existing stands, reduce fragmentation, and provide replacement habitat for current suitable nesting habitat lost to disturbance events; (4) increase speed of development of new habitat; and (5) improve and develop north/south and east/west distribution of nesting habitat.

Six marbled murrelet conservation zones occur throughout the listed range. They are as follows: Puget Sound (Zone 1); Western Washington Coast Range (Zone 2); Oregon Coast Range (Zone 3); Siskiyou Coast Range (Zone 4); Mendocino (Zone 5); and Santa Cruz Mountains (Zone 6). Specific conservation management plans need to be developed for each zone (USDI Fish and Wildlife Service 1997). Zones 1 to 4 must be managed to produce and maintain well distributed, viable populations to address the long-term survival and recovery of the murrelet.

Zone 5, in which this project is located, extends from the Humboldt/Mendocino county line south to the entrance of San Francisco Bay. Suitable nesting habitat for murrelets within this zone is extremely limited, and is located almost exclusively on State and private lands. The primary recovery strategy in this zone is to protect existing habitat within the zone; few opportunities exist to enhance habitat on Federal lands within this zone. This zone represents a gap of approximately 300 miles between Zone 4 to the north and Zone 6 to the south. Expansion of this gap should be avoided. Private lands in the southern portion of Zone 4 is important for meeting the goal of not expanding this gap. Actions in Zone 4 should focus on preventing the loss of occupied nesting habitat, minimizing the loss of unoccupied but suitable habitat, and decreasing the time for development of new suitable habitat (USDI Fish and Wildlife Service 1997).

Maintaining marbled murrelet populations on private lands is critical for arresting the population decline in the next 50 to 100 years, especially where additional nesting habitat will not be available on nearby Federal lands. The demographic bottleneck that the murrelet population may experience during the next 50 to 100 years makes the maintenance of populations found on private lands an important component to improve viability and the likelihood for recovery. On private lands, the maintenance of all occupied sites should be the goal where possible.

Conservation Strategy

The conservation strategy is to conserve as much of the remaining suitable or occupied habitat on Federal land (i.e., the NWFP) and on key non-Federal lands. These habitats would provide a system of long-term habitat reserves which are needed to stabilize and eventually recover the declining population. This approach assumes that murrelet populations have not already declined below an extinction threshold from which recovery is not possible (USDA Forest Service and USDI Bureau of Land Management 1994a). It also assumes that murrelet populations will respond positively to a long-term reversal in the trend of habitat loss (Raphael et al. 2002). Our ability to predict extinction thresholds for the marbled murrelet is still quite crude (National Research Council 1995). In addition, our ability to estimate the size and trend in the murrelet population is limited (Becker et al. 1997).

The NWFP is a conservative approach to managing murrelet habitat, and it accommodates our inability to identify an extinction threshold. The biological opinion on the NWFP concluded that it "...should provide for the survival of a marbled murrelet population that is well distributed on Federal lands throughout the planning area" (USDA Forest Service and USDI Bureau of Land Management 1994a). The NWFP is designed to enable Federal lands to bear most of the burden for recovering and maintaining late-successional species such as the murrelet. The NWFP protects approximately 90 percent of suitable murrelet habitat on Federal lands (USDI Fish and Wildlife Service 1997); it prohibits removal of occupied murrelet habitat on Federal lands, including the Matrix where intensive timber harvest is otherwise allowed.

Non-Federal land makes an important contribution to murrelet recovery where gaps occur in the distribution of suitable habitat (USDA Forest Service and USDI Bureau of Land Management 1994a, USDI Fish and Wildlife Service 1997). Removal of some occupied murrelet habitat on non-Federal land is likely and potentially permissible, assuming sufficient high quality habitat is protected throughout the listed range to maintain well distributed, viable subpopulations. On non-Federal lands in California, the California Forest Practice Rules and California Endangered Species Act protect occupied murrelet habitat and a 300-foot buffer around the occupied habitat during the breeding season. Non-Federal landowners who propose to harvest occupied habitat may incidentally take the marbled murrelet in known or likely occupied habitat, in accordance with section 7 or section 10 of the Act. The Service applies recommendations of the Recovery Plan when authorizing incidental take of murrelets. These recommendations include the following (USDI Fish and Wildlife Service 1997): minimize the loss of occupied murrelet habitat by evaluating and ranking various types of occupied habitat, and balance short-term risks with long term tradeoffs.

Several HCPs and on tribal lands have authorized incidental take of the marbled murrelet (Table 1). Each of these approved actions retained the highest quality murrelet habitat as part of a management strategy that was consistent with the Recovery Plan.

Current Conditions

The current condition of the species incorporates the effects of all past human and natural activities or events that have led to the present-day status of the species (USDI Fish and Wildlife and USDC National Marine Fisheries Service 1998).

Habitat

Suitable habitat has declined throughout the range of the marbled murrelet, due primarily to commercial timber harvest. Some habitat loss is attributed to natural disturbance, such as fire and windthrow. Timber harvest has eliminated most suitable habitat on private lands within Washington, Oregon, and California (USDI Fish and Wildlife Service 1997). In the early to mid-1800s, Western Washington and Oregon contained 14 to 20 million acres of old-growth forest, compared to about 3.4 million acres in 1991. This loss of habitat represents a reduction of 82 percent (USDI Fish and Wildlife Service 1997). About 1.3 million to 3.2 million acres of old-growth Douglas-fir/mixed conifer and 2.7 million acres of old-growth redwood forests occurred in northwestern California during the early to mid-1800s (USDI Fish and Wildlife Service and USDC National Oceanic and Atmospheric Administration 1999). For comparison, California currently contains approximately 394,000 acres of suitable marbled murrelet nesting habitat (USDI Fish and Wildlife Service 2003).

Acreage

The precise amount of suitable murrelet habitat within the listed range is unknown. However, based on recent agency estimates and the Service's internal files, the best estimate of potentially suitable habitat for the murrelet within the listed range is 2,223,048 acres of which approximately 154,838 acres or 7 percent are classified as remnant habitat (USDI Fish and Wildlife Service 2003). Approximately 93 percent of the suitable habitat occurs on Federal land. Suitable habitat is distributed among the three States as follows: Washington, 1,034,754 acres; Oregon, 794,708 acres; and California, 393,586 acres (USDI Fish and Wildlife Service 2003). Though our ability to quantify suitable habitat has improved recently, the current estimates likely overestimate the amount in many areas because of the lack of detail on the presence of nesting structure. In fact, habitat suitable for the northern spotted owl was used as a surrogate for murrelet habitat in some areas. Murrelet habitat quality depends on its proximity to marine waters, landscape context, and stand size. This information is needed to refine estimates of total suitable habitat. Suitable habitat must meet basic nesting requirements, provide refuge from predators, and be relatively stable against catastrophic disturbances. It is not possible at this time to estimate the amount of high quality habitat which contributes to long-term nesting success.

The NWFP protects murrelet habitat on Federal land by prohibiting timber harvest of occupied murrelet habitat, regardless of the land allocation (USDA Forest Service and USDI Bureau of Land Management 1994b). In addition, the system of Federal reserves protects currently suitable murrelet habitat and allows currently unsuitable habitat to develop into larger blocks of suitable habitat. Currently there are about 56,000 acres of old-growth redwood forest remaining in California, representing about 2.5 percent of the original old-growth redwood forest. More

detailed descriptions of suitable murrelet habitat throughout its listed range are given in Nelson (1997) and USDI Fish and Wildlife Service (1997) and are incorporated herein by reference.

Occupied habitat is defined as that portion of potentially suitable habitat which is occupied by nesting murrelets (Evans Mack et al. 2003), or expected to be occupied, based on survey history in the area and the application of an occupancy index to unsurveyed areas. At least 475,247 acres of potentially occupied murrelet habitat exist within the listed range of the species (Table 2); data are not available for Washington. Murrelets may not occupy a large portion of potentially suitable habitat, due to the absence of nesting structure or its spatial configuration. As a result, the 2.2 million acres of suitable habitat likely overestimates the amount of actual occupied murrelet habitat (USDI Fish and Wildlife Service 2003). For example, about 100,000 acres of late-seral forests occur on the Siskiyou and Rogue River National Forests and the Mcdford District of the Bureau of Land Management. Survey results in the area closest to the coast suggest that murrelets actually occupy approximately 26 percent of the suitable habitat, based on existing survey data and assumptions about areas not adequately surveyed. Where published data were lacking, the Service solicited professional judgments from agency biologists and considers these simple estimates as the best available information (USDI Fish and Wildlife Service 2003).

About 58,946 acres of occupied murrelet habitat occur in the California portion of Zone 4. The agencies were unable to separate habitat estimates for Zones 3 and 4 in Oregon. In California, high quality habitat occurs primarily in unmanaged redwood forests which are found close to the coast. Lower quality habitat occurs inland in managed Douglas-fir forests. In California, the estimated 356,447 acres of potentially suitable habitat far exceeds the estimated 58,946 acres of occupied habitat (USDI Fish and Wildlife Service 2003). It is likely the marbled murrelet does not occupy most suitable habitat on Forest Service lands in California.

The Service estimates that murrelets likely occupy 430 acres of habitat in Zone 5. Most suitable habitat in this Zone was historically harvested; suitable habitat which remains is of lower quality and found in scattered, small patches in State Parks and on private lands. Very few murrelets occur in coastal waters of Zone 5, probably due to the small amount of low quality habitat which occurs inland in this area.

Distribution

The Recovery Plan (USDI Fish and Wildlife Service 1997) summarizes the current distribution of suitable habitat and is incorporated herein by reference. Breeding populations of murrelets are not currently distributed continuously throughout the forested portions of Washington, Oregon, and California. A gap of 100 miles in the north/south distribution of suitable habitat exists in southwestern Washington and northwestern Oregon, and a north/south gap of 300 miles exists in central California in the southernmost portion of the species' range. These gaps consist of areas of second-growth and remnant older forests where murrelets occur in very low numbers. The inland distribution is greatest in Washington at about 50 miles from the marine environment; it narrows down in Oregon; and it declines to as close as 10 to 15 miles from the coast in California.

Quality

Overall, quality of existing marbled murrelet habitat has diminished, compared to conditions which existed prior to logging (USDI Fish and Wildlife Service 1997). Total habitat area is greatly reduced, and remaining habitat is often fragmented and further from the marine environment. In California, a large amount of remaining habitat occurs on National, State, and County Park lands which are utilized as public recreation areas. Certain recreational uses can affect the quality of the habitat for marbled murrelet nesting.

Habitat quality varies on a range-wide basis. Some excellent old-growth habitat remains on Federal lands in each of the three states. However, habitat quality has declined throughout the murrelet's range, compared to historic times. Habitat occurs in smaller patch sizes, consists of smaller trees, and contains more roads and clearcut openings. Predation has likely increased at the local level, due to increased numbers of predators which find food sources associated with human recreational activities. At a landscape level, the abundance of avian predators has probably increased. Ongoing research should shed more light on specific factors which affect marbled murrelet nest predation and stand size preferences. The best available information strongly suggests forest fragmentation may adversely affect the reproductive success of marbled murrelets (USDI Fish and Wildlife Service 1997).

Numbers

The size of the listed population of the murrelet in Washington, Oregon and California was initially estimated at 18,550-32,000 birds (Ralph et al. 1995b). Two largely divergent population estimates in Oregon account for the wide range in the estimated population size.

Monitoring to determine a trend in murrelet populations began in 2000 and has continued annually since, as part of effectiveness monitoring for the NWFP (Bentivoglio et al. 2002) (Table 3). A separate population monitoring effort is conducted each year in Zone 6, which is not part of the NWFP area. The population point estimates from this monitoring are as follows: 2000, 18,574 birds; 2001, 22,715 birds; and 2002, 24,419 birds (Table 3).

It is premature to determine if biologically meaningful trends in population size exist, given that we have analyzed only 3 years of population monitoring data. However, several modeling efforts were conducted that predict population trend into the future. Two sources provide the best available information on the murrelet population trend: Marbled Murrelet Recovery Plan (Beissinger and Nur 1995 in USDI Fish and Wildlife Service 1997); and a subsequent analysis by Beissinger and Peery 2003. See section 2.6.4 on reproduction for further information. Both sources concluded that the listed population apparently exhibits a long-term downward trend. In 1997, the population was assumed to be declining at a rate of 4 to 7 percent per year, and perhaps as much as 12 percent per year (Beissinger and Nur 1995). In 2003, the population is assumed to be declining from 2.0 to 15.8 percent per year, depending upon the recovery zone and the values used for adult survival. A downward trend of this magnitude means that the population could be less than one-half to one-twelfth its current size in 20 years.

Four of the six Zones must be functional to effectively recover and maintain a well-distributed, viable murrelet population, both in the short- and long-term (USDI Fish and Wildlife Service 1997). Based on the new estimates of population size it appears that only three of the Zones contain relatively robust numbers of murrelets (Zones 1, 3, and 4). However these robust populations continue to be affected. For example, both Zones 3 and 4 have experienced oil spills within the last 5 years, resulting in significant murrelet mortality. Recent radio telemetry work in Zone 4 indicates nest success is very low (Hebert and Golightly 2003).

Zone 1

Based on 3 years of survey, Zone 1 apparently contains the largest, most robust population in the listed range. Most of the murrelet population in Washington occurs in Zone 1 (Bentivoglio et al. 2002; Jodice et al. 2002; USDI Fish and Wildlife Service 1997).

Effects occur to marbled murrelet populations in both the marine and terrestrial environments in Zone 1. Mortality due to nest fisheries is most prevalent in Zone 1, compared to other zones, and a high threat of oil and other marine pollution exists in this zone (USDI Fish and Wildlife Service 1997). Most suitable murrelet habitat in Zone 1 occurs in northwest Washington; it is found on Forest Service and National Park Service lands, and to a lesser extent on State lands. Suitable habitat along the eastern and southern shores of the Puget Sound was removed by urban development; the remaining suitable habitat is a considerable distance from the marine environment (USDI Fish and Wildlife Service 1997). Lands considered essential for the recovery of the murrelet within Zone 1 are as follows: any suitable habitat in a late-successional reserve (LSR); all suitable habitat located in the Olympic Adaptive Management Area; suitable habitat on State lands within 40 miles of the coast; and habitat within occupied murrelet sites on private lands (USDI Fish and Wildlife Service 1997).

Zone 2

Point estimates of population size in Zone 2 are difficult to interpret, due to the high degree of variation. However, Zone 2 contains the fourth largest murrelet population in the listed range.

Effects to the murrelet population in Zone 2 have occurred primarily in the terrestrial environment. Suitable murrelet habitat north of Gray's Harbor in Zone 2 occurs largely on State, Forest Service, National Park Service, and Tribal lands, and to a lesser extent on private lands. The majority of habitat in the southern portion of Zone 2 occurs primarily on State lands, with a small amount on privately owned lands. These lands were extensively harvested in the last century (USDI Fish and Wildlife Service 1997). Some of the privately owned lands were purchased and put into the Federal refuge system. The absence of Federal lands in southwestern Washington means that conservation of the murrelet is largely dependent on contributions from non-Federal lands in that area. Lands considered essential for the recovery of the murrelet within Zone 2 are as follows: any suitable habitat in a LSR, suitable habitat located in the Olympic Adaptive Management Area, suitable habitat on State lands within 40 miles of the coast, and habitat within occupied murrelet sites on private lands (USDI Fish and Wildlife Service 1997).

Zone 3

Along with Zone 1, Zone 3 appears to contain a larger, more robust population than Zones 2, 5, or 6. Strong (2004) continues to assert that murrelet population numbers have declined since the early 1990's, but they appear to have stabilized at a lower level in recent years. The highest murrelet density occurs off the central Oregon coast or the southern portion of Zone 3.

Alternatively, the northern Oregon coast and northern portion of Zone 3 contains much lower densities of murrelets.

Effects to the murrelet population in Zone 3 occur both in the marine and terrestrial environment. In February and March of 1999, the M/V New Carissa oil spill occurred in Zone 3 near Coos Bay, Oregon; an estimated 262 marbled murrelets were killed, about 4 percent of the population in Zone 3 (Ford et al. 2001).

High quality suitable murrelet habitat in Zone 3 occurs primarily in central Oregon on Forest Service and Bureau of Land Management lands. These lands are currently protected in LSRs. Alternatively, northwest Oregon contains less suitable habitat that is generally of lower quality and is found in small scattered patches. The remaining suitable habitat is largely found on State and private lands; it has a long history of timber harvest and wildfire.

Zone 4

Along with Zones 1 and 3, Zone 4 appears to contain a larger, more robust population than Zones 2, 5, or 6. However, new information from a radio-telemetry study in this Zone indicates nesting success is very low (Hebert and Golightly 2003).

Effects to the murrelet population in Zone 4 occur both in the marine and terrestrial environment. Two oil spills, M/V Kure and M/V Stuyvesant, have resulted in the deaths of murrelets within this zone. The M/V Kure oil spill occurred in Humboldt Bay in November 1997. Nine dead marbled murrelets were recovered during cleanup and recovery efforts. A conservative estimate of murrelet mortality attributed to Kure spill is 150 birds.

The Stuyvesant oil spill occurred in September 1999 at the entrance to Humboldt Bay. A total of 24 murrelets were recovered during the cleanup and recovery efforts. A conservative estimate of murrelet mortality attributed to the Stuyvesant spill is 135 birds. In total, the M/V Kure and the Stuyvesant oil spills are estimated to have killed 7 to 10 percent of the population in Zone 4, based on the year 2000 population estimate of more than 4,876 birds (Bentivoglio et al. 2002). These estimated effects are for direct mortality only; oil can have a number of adverse effects on seabirds other than direct mortality (Burger and Fry 1993), but these effects have not been quantified for either oil spill.

Suitable murrelet habitat in Zone 4 is fairly well distributed across the zone. Habitat in southwest Oregon is generally of high quality, occurring largely on Forest Service lands, and to a lesser extent on Bureau of Land Management lands. These lands are currently protected in LSRs. Northern California contains several large Parks and Reserves, and to a lesser extent some privately owned lands that are known to contain murrelets. The Pacific Lumber Company HCP,

located in northern California, permitted loss of nearly 5,000 acres of occupied murrelet habitat. Though large amounts of habitat occur on Bureau of Land Management and Forest Service lands further inland, they contain few murrelets.

Zone 5

The population in Zone 5 is extremely low. Recent surveys have confirmed the Recovery Plan's assumption that Zone 5 is not expected to substantially contribute to recovery (USDI Fish and Wildlife Service 1997).

Effects to the murrelet population in Zone 5 have occurred largely in the terrestrial environment. A limited amount of suitable murrelet habitat occurs in Zone 5. It is largely limited to State, County, and National Park lands. Most of the habitat that occurred historically in this Zone was harvested. The remaining habitat is of low quality and found in scattered small patches in Parks and on private lands.

Zone 6

Monitoring of the NWFP does not cover Zone 6, but independent research conducted in Zone 6 provides reliable population estimates. Like Zone 5, population size in Zone 6 is also quite low. Additional new information from a radio-telemetry study in this Zone indicates the murrelet population has minimal breeding success and is highly endangered. A juvenile-to-adult ratio of 0.02 derived from surveys at sea is alarmingly low and further indicates a general failure in reproduction (Peery et al. 2002). Although Zone 6 is highly vulnerable, it was expected to contribute to recovery of the murrelet in the short-term (i.e., 50-100 years) (USDI Fish and Wildlife Service 1997). Recent evidence in Peery et al. (2002) suggests this may not occur.

Effects to the murrelet population in Zone 6 have occurred largely in the terrestrial environment. Suitable murrelet habitat is restricted to small pockets of State and County Park lands and private lands in San Mateo and Santa Cruz Counties. Like Zone 5, most suitable habitat was harvested; remaining habitat is of lower quality, found in smaller patches, and highly affected by human recreational activity.

Distribution

The distribution of marbled murrelet populations has significantly reduced as habitat was removed. Populations declined as a result. In some areas, only small numbers of murrelets persist or they were locally extirpated, risking maintenance of the species' distribution. These areas are identified as "areas of concern" (USDI Fish and Wildlife Service 1997). They include distribution gaps in central California, northwestern Oregon, and southwestern Washington, where very little suitable habitat remains, and what habitat does remain occurs in small, fragmented patches.

The historic distribution of the marbled murrelet within its listed range was probably relatively continuous in near-shore waters and in coniferous forests near the coast from the Canadian border south to Monterey County, California (USDI Fish and Wildlife Service 1997). Current breeding populations are discontinuous and generally concentrated at-sea in areas adjacent to

remaining late-successional coniferous forests near the coast (Nelson 1997). At-sea observations of murrelets are rare between the Olympic Peninsula in Washington and Tillamook County, Oregon, a gap of approximately 100 miles.

Off the California coast, marbled murrelets are concentrated in two areas at-sea that correspond to the three largest remaining blocks of older, coastal forest. These forest blocks are separated by areas of little or no habitat, which correspond to locations at-sea where few marbled murrelets occur. A 300-mile gap occurs in the southern portion of the marbled murrelet's breeding range, between Humboldt and Del Norte counties in the north and San Mateo and Santa Cruz counties to the south. Marbled murrelets likely occurred in this gap prior to extensive logging of redwood forests (USDI Fish and Wildlife Service 1997).

Reproduction

Estimates of fecundity (i.e., number of female young produced per adult female) can currently be generated from estimates of nest success, either from radio-telemetry studies or from juvenile-to-adult ratios obtained in the marine environment. Though each estimate has inherent biases, it is instructive to examine corroboration between the two techniques.

In 1995, juvenile-to-adult ratios for murrelets ranged between 0.01 and 0.14, while fecundity was estimated at less than 0.2, a value well below the level of productivity needed to sustain stable populations (Beissinger 1995). Fecundity would have to range from 0.2 to 0.46 to sustain stable populations. Marbled murrelet populations in California, Oregon, and Washington may be declining at a rate of 4 to 12 percent per year at most locations (Beissinger and Nur 1995 in USDI Fish and Wildlife Service 1997).

In 2003, juvenile-to-adult ratios were once again reviewed, based on 8 additional years of survey data collected at-sea (Beissinger and Peery 2003). Juvenile-to-adult ratios varied from 0.038 to 0.089, depending on Zone. Fecundity estimates were developed for four Zones, but unlike the analysis in 1995, fecundity estimates were compared to reproductive histories of individual birds, based on recent radio-telemetry studies. Using a stage-based Leslie matrix model with a range of values for adult survival, fecundity derived from juvenile-to-adult ratios was too low to maintain stable populations in most zones. Rates of population decline ranged from 2.0 to 15.8 percent per year, depending upon the recovery zone and the values used for survival. A comparison of fecundity values derived from juvenile-to-adult ratios, to fecundity values from individual reproductive histories resulted in good agreement between the estimates. Both techniques support the assertion that fecundity is too low to maintain viable populations of marbled murrelets in the listed range (Beissinger and Peery 2003).

In general, the murrelet has a low annual reproductive potential because it only lays one egg and probably nests once a year (Nelson 1997). Even if reproductive potential is fully realized over several years, the population will recover slowly, about 3 percent per year, from declines or disasters. Low productivity likely reflects poor breeding success. To a lesser extent, it could also reflect the development of a larger than normal nonbreeding segment of the population. Little opportunity exists for increases in murrelet productivity as a result of forest in-growth in the near

future because hundreds of years are needed to develop suitable habitat. However, habitat conditions in some areas could be improved in shorter time periods with active stand management where large residual trees are present (USDI Fish and Wildlife Service 1997).

Such a low level of productivity in murrelet populations may be attributed to high rates of predation, particularly of their eggs and young. In fact, predation is the number one cause of nest failure (Nelson and Hamcr 1995a). Refer to above section on threats for further discussion.

ENVIRONMENTAL BASELINE (in the Action Area):

Regulations implementing the Act (50 CFR §402.02) define the environmental baseline as the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation process. As stated earlier, the action area for this consultation includes all areas of forested habitat within 1/4 mile of the culvert rehabilitation/replacement sites.

Conservation Needs of the Marbled Murrelet in the Action Area

The primary conservation needs of the marbled murrelet, as identified in the recovery plan, are to implement short-term actions to stabilize the population and longer-term actions to increase population growth and distribution (U.S. Fish and Wildlife Service 1997). Short-term actions applicable to the action area include: (1) maintaining occupied habitat; (2) maintaining and enhancing buffer habitat; (3) minimizing disturbance. Long-term actions include decreasing fragmentation of existing habitat.

The very small nesting and at-sea population of marbled murrelets along the coast of Mendocino, Sonoma and Marin Counties is important to future re-connection of marbled murrelet populations in northern and central California, if they can survive over the short term. Almost all of the older forest has been removed from this area, although small pockets of old-growth forest occur in State parks and on private lands. Forests in southeast Marin County and in the Berkeley Hills (Alameda County) may have been used for nesting in the distant past, but these areas were logged from the early 1800's to the early 1900's. Much of the remaining marbled murrelet nesting habitat in this zone is located on private lands.

The maintenance of this population will require considerable cooperation between State, Federal and private management representatives. Recovery efforts in this Conservation Zone could enhance the probability of survival and recovery in adjacent Conservation Zones by minimizing the current gap in distribution. The population is so small that immediate recovery efforts may not be successful at maintaining this population over time and longer term recovery efforts (e.g., developing new suitable habitat) may be most important. However, if this small population can be maintained over the next 50 years, it will greatly speed recovery in this Conservation Zone.

Whether or not marbled murrelets can recolonize regenerated old-growth forests over such a large geographic area is not known.

Current Condition in the Action Area

The population in Zone 5 is extremely low. Recent surveys have confirmed the Recovery Plan's assumption that Zone 5 is not expected to substantially contribute to recovery (USDI Fish and Wildlife Service 1997).

Effects to the murrelet population in Zone 5 have occurred largely in the terrestrial environment. A limited amount of suitable murrelet habitat occurs in Zone 5. It is largely limited to State, County, and National Park lands. Most of the habitat that occurred historically in this Zone was harvested. The remaining habitat is of low quality and found in scattered small patches in parks and on private lands.

Scientific Basis for Evaluating Potential Effects on the Marbled Murrelet

Potential Effects of Habitat Modification

Activities such as road construction and rehabilitation have the potential to reduce the quantity and quality of suitable marbled murrelet nesting habitat should it be necessary to remove trees and other large vegetation as part of the project. Activities that remove trees may result in the complete removal of murrelet nesting habitat, or the degradation of components of nesting habitat. Degraded habitat may retain nesting structure, but overall habitat quality and nesting function are reduced.

Site-Specific Effects

Murrelets lay a single egg in a depression (often referred to as the nest cup) in moss or other debris on a platform such as a large limb. Nest trees are generally greater than 32 inches diameter-at-breast height, contain potential platforms or deformities of sufficient size to support adult murrelets and an egg, and contain high canopy cover directly over the nest cup to hide murrelets and their eggs or young from predators and protect them from weather. The canopy of adjacent trees or the nest tree itself may provide cover over the nest site (Hamer and Nelson 1995, USDI Fish and Wildlife Service 1996). These structures are typically found in old-growth and mature forests. However, younger forests with older residual trees may also provide nesting opportunities.

Murrelets have been shown to exhibit a high degree of fidelity to specific nest branches or sites (Hebert and Golightly 2003). Furthermore, at the larger landscape scale, Meyer et al. (2002) found that at least a few years are required before birds abandon degraded, fragmented forests. This high degree of nest site/area fidelity underscores the importance of currently used nesting sites.

Forest management practices, particularly timber harvest, may alter nest site characteristics such as the availability of platforms or deformities, and canopy cover over platforms. Management activities that remove individual nest platforms and nest trees likely result in the abandonment of

the site for nesting and the loss of several future breeding attempts by the displaced breeders. Furthermore, as nest sites continue to be lost, competition for remaining sites likely is increased.

Management activities that degrade nest platforms, nest trees, or remove or degrade trees adjacent to known and potential nest trees that provide cover for nesting platforms adversely affect the murrelet by decreasing the site's value for future nesting.

Landscape-Level Effects

Changes in the amount, distribution, and quality of occupied, suitable and unoccupied, and potentially suitable habitat at the larger landscape scale have implications to the species' range-wide survival and recovery. The marbled murrelet recovery plan (USDI Fish and Wildlife 1997) focuses on protecting large blocks of well distributed occupied habitat and minimizing the loss of unoccupied but suitable habitat for the following reasons. Large stands provide more nesting and hiding opportunities and facilitate nesting for multiple pairs of birds, which promotes increased social contact. Large stands provide greater interior forest habitat conditions to reduce predation of nests and adults and increase protection of nests from windthrow and fire. An increased distribution of contiguous habitat lowers the likelihood that catastrophic events would produce large gaps in the species' distribution.

Harvest of suitable unoccupied habitat may adversely affect both survival and recovery of the marbled murrelet depending upon its quality and location relative to currently occupied habitat. Meyer et al. (2002) found that murrelets were less likely to occupy old-growth habitat if it was isolated (>5 km) from other nesting murrelets. Suitable unoccupied habitat that is in close proximity to currently occupied habitat is more likely to be used by dispersing or colonizing birds, especially as occupied habitat is degraded or removed.

Harvest of habitat that is not yet suitable may adversely affect recovery of the marbled murrelet depending upon its quality and location relative to currently suitable habitat. Habitat that will become suitable in the future and that is located in close proximity to currently occupied habitat is more likely to be used by murrelets, thus providing for recovery opportunities in the future (USDI Fish and Wildlife Service 1996).

Nest Stand Effects

Nest stands include known or potential nest trees and the forested area that contributes to the overstory canopy around known or potential nest trees. These stand attributes contribute to successful reproduction by providing alternate nest structures, maintaining a microclimate suitable for nesting, and reducing the negative effects of fragmentation and edge (USDI Fish and Wildlife Service 1996). Several authors have documented that high vertical complexity, older stand age, and high densities of trees with nest platforms are positively correlated with murrelet nesting (Hamer and Nelson 1995, Nelson and Wilson 2002, Waterhouse et al. 2002).

Timber harvest activities may result in changes in habitat microclimate by reducing overall canopy closure within a stand. A reduction in canopy closure can result in exposure to environmental factors such as increased temperatures that may impact both the species and nest

stand structure. Marbled murrelets nest in older forests subject to marine influences such as fog, presumably because these forests provide a suitable microclimate for nesting and for the development of the most commonly used nest substrates such as moss and lichen (Hamer and Nelson 1995, USDI Fish and Wildlife Service 1997).

Management activities that remove or degrade components of suitable habitat within a nest stand, such as live trees with or without nest platforms that contribute to the overstory canopy, may alter stand structure, complexity and integrity, and adversely affect reproduction.

Large Landscape-scale Effects

Marbled murrelets nests may be highly susceptible to predation in landscapes dominated by human development. Numerous studies of murrelets have shown that there is a correlation with corvid abundance and local depredation rates (Marzluff et al. 1999, Bradley 2002, Luginbuhl 2003). The introduction of human activities such as housing developments and campgrounds near nesting areas are likely to result in an increase in the number of predators, such as Steller's jays (*Cyanocitta stelleri*) and common ravens (*Corvus corax*), and lead to a greater likelihood of predation of murrelet eggs or young.

Raphael et al. (2002) found that murrelet radar counts were positively correlated with the amount of late-seral forest within 10 river drainages in Washington. Additionally, numbers of murrelets increased when the amount of core area of late-seral forest and proximity of patches increased, and decreased with increasing edge of late-seral patches. Meyer and Miller (2002) also found that murrelets generally occupied landscapes with low fragmentation and isolation of old-growth forest patches. Contrary to these studies, Bradley (2002) found little influence of edge or fragmentation on murrelet nest success in British Columbia. He theorized the reason may be that relative to the other study areas, his study area is remote and the larger landscape is not as influenced by human induced nest predators.

Though there are inconsistencies in the published literature on numerous avian species regarding the impacts of landscape fragmentation and local edge effects on avian productivity (Paton 1994, Chalfoun et al. 2002), data on the murrelet indicate that fragmentation and edge in landscapes dominated by human developments negatively influences occupancy. Management activities that decrease the core area and contribute to the fragmentation of patches of occupied habitat are likely to adversely affect marbled murrelet occupancy on the landscape.

Disturbance-Related Effects

Management activities that use heavy equipment, chainsaws, and large vehicles introduce auditory, visual, and air disturbances into the environment. The effects of auditory and visual disturbances on birds are difficult to determine (Knight and Skagen 1988). Confounding factors include the tolerance level of individual birds, type and frequency of human activity, ambient sound levels, how sound reacts with topography and vegetation, and differences in how species perceive noise and human presence. Regardless of these difficulties, research conducted on a variety of bird species does suggest that the effects of human disturbance can have a negative impact on reproductive success (Carney and Sydeman 1999, Frid and Dill 2002, Marzluff and

Neatherlin In review). Disturbance can affect productivity in a number of ways, including interference of courtship (Bednarz and Hayden 1988), nest abandonment (White and Thurow 1985), egg and hatchling mortality due to exposure and predation (Drent 1972; Swensen 1979), and altered parental care (Fyfe and Olendorff 1976; Bortolotti et al. 1984).

Though largely inconclusive, Hebert and Golightly (2003) examined the effects of chainsaw noise during incubation and chick rearing periods on nesting adult murrelets and chicks. Adult murrelets and chicks both spent less time motionless and resting and more time exhibiting "raised head" and "bill up" behaviors during the disturbance trial than pre- and post-trial. The relevance of these behaviors is unknown; however, a species that relies on being cryptic and motionless to avoid predation at the nest may risk being detected by a predator if it moves more often.

The relationship between the human caused disturbance events, predators, and fledging success remains unclear (Hebert and Golightly 2003). However, predators can be attracted to human presence, noise and provisioning of food (Miller et al. 1998, Marzluff et al. 1999). A local increase in predator density may increase the risk of predation.

Injury or Mortality

Construction activities that include tree felling in occupied or unsurveyed suitable habitat during the breeding season could directly injure or kill adults, eggs, or young. Murrelets may be struck and killed or injured by falling trees during harvest or stand improvement, although such risk is likely confined to the area relatively close to the nest tree. Adults can reasonably be expected to move from the area and avoid injury or death. However, eggs and flightless young are vulnerable to injury or death for approximately 60 days (Nelson and Hamer 1995b).

EFFECTS OF THE ACTION

Several measures to minimize effects of the proposed construction activities on the marbled murrelet have been incorporated into the project design. They are listed with the Project Description section of this biological opinion, and will not be repeated here. The reader is referred to that section for details.

Habitat Modification

Murrelet occupancy of suitable habitat in the action area has not been verified through surveys. However, limited amounts of habitat suitable for murrelet nesting occurs adjacent to culvert rehabilitation and replacement sites, and murrelets have been detected in limited surveys in similar habitats in the general vicinity of SR 128 and other coastal locations in Mendocino County. No marbled murrelet suitable habitat will be removed or degraded by any of the construction activities.

Disturbance-Related Effects

Disturbance is defined as noise in excess of ambient levels within 0.25 mile of nesting habitat capable of resulting in disruption of essential behaviors. Disturbance during the breeding season

may potentially disrupt the species' essential breeding behaviors by: 1) causing abandonment of the breeding effort by failure to initiate nesting or to complete incubation; 2) disrupting nesting activity such as feeding young; and 3) causing premature dispersal of juveniles. In addition, disturbance may result in increased predation of young or adults.

Activities which required the use of heavy equipment, chainsaws, and pumps potentially introduce high levels of noise into the environment. Noise-generating activities associated with the proposed construction activities may occur near suitable nesting habitat during the breeding season from July 10 through September 15.

The disturbance associated with the construction activities near suitable nesting habitat would occur later in the murrelet breeding season, thus minimizing potential impacts on nesting murrelets. However, late nesting murrelets would still be vulnerable to disturbance during the breeding season from July 10 through September 15 for the following reasons: 1) some construction activities may occur in and within 0.25 mile of suitable but unsurveyed marbled murrelet habitat and, 2) some murrelet nests may still have incubating adults on eggs or unfledged young.

In some instances, topographic features may reduce the distance at which elevated sound levels at the construction site (in this case the actual locations of culvert rehabilitation or replacement) remain significantly above ambient levels within adjacent suitable nesting habitat. For the activities considered here, the effect of topographic features on action-generated and ambient sound attenuation into nearby suitable habitat is not known, as the specific topographic features are not described and therefore unavailable.

Of the 275 culverts to be rehabilitated or replaced as part of this project, approximately 70 occur within the known or suspected range of the murrelet. All 70 sites occur along SR 128 between Post Mile 0.18 and Post Mile 12.12. Precise habitat data is unavailable, but several of these 70 culvert sites are known to occur within 1/4 mile of suitable murrelet nesting habitat; the exact number of sites is not known. Disturbance of murrelets from elevated sound levels could occur at any of these 70 sites should murrelets be nesting or attempting to nest within 1/4 mile of the culvert site, and either of the following conditions occur: 1) sound levels generated on the roadway from construction activities significantly exceeds ambient levels from normal daily road use; or 2) sound levels exceeding ambient are generated by construction activities away from the immediate roadway and closer to suitable habitat.

Work will be confined to within 15 m (50 ft) of the roadway at 49 of the these 70 locations. At these 49 locations, sound levels generated by most construction activity are unlikely to exceed the ambient sound conditions from normal daily road use. At the remaining 21 locations, clearing of downstream drainages may necessitate work extending up to 50 m (167 ft) from the roadway, increasing the potential for noise-related effects to nesting murrelets. We anticipate that these circumstances have the potential to disturb murrelets for a distance up to 110 meters from the actual location construction activities, in the direction away from the roadbed. Thus, a

maximum of approximately 1.9 acres is likely to be subject to disturbance due to elevated sound levels at each of the 21 off-roadbed locations.

In addition, as many as four culvert sites may require jack-and-bore techniques that could result in sound levels elevated above ambient levels occurring during normal daily use of the highway. The Service anticipates elevated noise could occur up to 140 meters from the jack-and-bore site, resulting in disturbance to as much as 6.2 acres of suitable habitat per jack-and-bore site. The number of jack-and-bore sites within the range of the murrelet were not reported, so the precise number of sites likely to be affected by this technique could not be determined. Should all four sites be adjacent to suitable murrelet nesting habitat, a total of approximately 24.8 acres could be affected.

For all activities, the Service anticipates a maximum of approximately 64.7 acres would be subject to elevated sound levels resulting in adverse effects to the species. The actual number of acres subject to disturbance are likely less than this reported number, since many of the sites are unlikely to have suitable murrelet nesting habitat nearby. Further, of those sites with suitable habitat, some may not be occupied by murrelets during the construction period. In some circumstances, topographic features may further limit the distance at which sound levels are elevated to above ambient in suitable nesting habitat. Therefore, the actual area subject to the effects of the action may be substantially less than the reported 64.7 acres.

At each of these affected culvert sites, the actual duration of action-generated, elevated sound levels will last only for the period of actual work at the site. This time duration is expected to be as short as one or two days to a maximum of 10 days. The short duration of elevated sound at these sites is expected to result in a slightly elevated risk to murrelets, should they attempt breeding activities near any of these work sites.

The actual risk of disturbance to murrelets where elevated sound levels might occur in suitable habitat are reduced by conditions placed on the construction work, as identified earlier in the mitigation measures. While most of these conditions would not reduce the area of suitable habitat subject to elevated sound, the effects of that sound on the murrelets themselves would be partially ameliorated. This would occur due (in part) to: limiting the work period to after July 9, later in the breeding season; limiting use of jackhammers and other excessively loud equipment to the daily period between 10:00 am and 4:00 pm, when adult murrelets are less likely to be approaching the nest to feed young; and, work near any murrelet nest site discovered during the breeding season will be delayed until after September 15, or until after the known end of nesting there. These conditions are anticipated to further reduce the effects of the action on marbled murrelet.

Injury or Mortality

No marbled murrelet nesting habitat would be removed or degraded due to construction actions. Consequently, the likelihood that construction actions would result in direct mortality of murrelets, particularly to young or the loss of eggs is discountable.

Interrelated and Interdependent Activities

Regulations implementing the Act require the Service to consider the effect of activities which are interrelated and interdependent to the proposed action (50 CFR 402.02). The Act defines interrelated activities as those which are part of a larger action and depend upon the larger action for their justification, and interdependent activities as those projects which have no independent utility apart from the action that is under consideration. No interrelated or interdependent activities are associated with this project.

Summary

No marbled murrelet nesting habitat would be removed or degraded due to the proposed construction activities. From July 10 through September 15 of each construction year, marbled murrelets associated with a maximum of approximately 64.7 acres of occupied nesting habitat may be subject to disturbance due to construction activities. The likelihood that these activities would result in direct mortality of murrelets, particularly to young or the loss of eggs is discountable.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur within the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

The California Department of Fish and Game (CDFG) has listed the marbled murrelet as endangered in California. Logging of surrounding private lands can exacerbate the previously described adverse effects, however, logging on private land is currently reviewed by the CDFG to ensure that no take of marbled murrelets will occur. The majority of private forest land is used for timber production, and very little murrelet habitat remains on these lands.

CONCLUSION

After reviewing the current status of the marbled murrelet, the environmental baseline for the action area, the effects of implementing the proposed replacement of 274 deteriorated culverts on SRs 128 and 253 in Mendocino County, and its cumulative effects, it is the Service's biological opinion that the proposed action, as implemented, is not likely to jeopardize the continued existence of the marbled murrelet. The Service reached the non-jeopardy conclusion based on the following factors:

1. The proposed action will not remove or degrade any suitable marbled murrelet nesting habitat.
2. Nesting marbled murrelets associated with a maximum of approximately 64.7 acres of occupied habitat may be subject to auditory and visual disturbance for 10 or fewer days in the later portion of one breeding season. Due to several site-specific considerations, the

actual acreage subject to disturbance is likely to be less than this estimated maximum. The Service considers this to be a relatively small, short-term disturbance that is not expected to substantially influence future habitat use or suitability.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act, prohibit the take of endangered and threatened species, respectively, without a special exemption. Take is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is defined as take that is incidental to and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under that Act provided that such taking is in compliance with this Incidental Take Statement.

Any Reasonable and Prudent Measures described below are non-discretionary, and must be undertaken by the FHWA so that it becomes a binding condition of any grant or permit issued to the applicant, as appropriate, for the exemption in section 7(o)(2) to apply. FHWA has a continuing duty to regulate the activity covered by this incidental take statement. If FHWA (1) fails to assume and implement the terms and conditions or (2) fails to require the applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, FHWA must report the progress of the action and its impact on the species to the Service as specified in the Incidental Take Statement [50 CFR §402.12(I)(3)].

AMOUNT OR EXTENT OF INCIDENTAL TAKE

The Service anticipates that an undetermined number of marbled murrelets could be taken as a result of this proposed action. The incidental take is expected to in the form of harassment from project related noise due to the use of construction equipment near suitable nesting habitat during the breeding season. Incidental take of marbled murrelets will be difficult to quantify for the following reasons: 1) harassment is difficult to determine; 2) murrelets occur in habitat that makes detection difficult; 3) murrelets are behaviorally secretive; and 4) project-specific surveys of suitable marbled murrelet habitat have not been conducted.

Because the precise number of marbled murrelets that could be taken cannot be determined, anticipated take is best measured in terms of the number of acres of suitable habitat wherein

nesting murrelets are subject to auditory and visual disturbance as a result of the proposed action. Therefore, the Service authorizes incidental take in the form of loss of marbled murrelet reproduction associated with 64.7 acres of suitable nesting habitat during a single breeding season in the years 2005-2010. Incidental take is anticipated to be in the form of potential harassment as a result of disturbance associated with the use of construction equipment during the period July 10 to September 15 of one breeding season per site.

EFFECT OF THE TAKE

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the marbled murrelet.

REASONABLE AND PRUDENT MEASURES

The Service finds that reasonable and prudent measures are not necessary or appropriate to minimize the impacts of incidental take on the marbled murrelet.

Measures designed to minimize impacts on the marbled murrelet that might otherwise have resulted from implementation of the proposed construction activities were discussed and agreed to during the initial stages of informal consultation. Caltrans accepted these measures and incorporated them into the project design. These measures are listed in the project description above.

TERMS AND CONDITIONS

The Service considers the measures provided in the project description sufficient to minimize take of marbled murrelets; therefore, no terms and conditions are necessary.

MONITORING REQUIREMENTS

In order to monitor the impacts of incidental take, FHWA must monitor the progress of the action and its impacts on the marbled murrelet as specified below:

Within 3 months following completion of the proposed action, Caltrans shall prepare a written report to the Service's Arcata Fish and Wildlife Office on 1) the actual dates of construction, and 2) the number of sites requiring the use of jack-and-bore techniques, at the 70 culvert sites between Post Mile 0.18 and 12.12 on SR.

REPORTING REQUIREMENTS

Upon locating a dead or injured marbled murrelet, initial notification must be made to the Service's Division of Law Enforcement in Chico, California at (530) 342-8724 and Michael Long, Field Supervisor, Arcata Fish and Wildlife Office at (707) 822-7201 immediately, and in writing within three (3) working days. Notification must include the date, time, and location of

the carcass; cause of death or injury, if known; and any other pertinent information. Care must be taken in handling injured animals to ensure effective treatment and care, and in handling dead specimens to preserve biological material in the best possible state for later analysis of cause of death. The finder has the responsibility to ensure that evidence intrinsic to the specimen is not unnecessarily disturbed, unless to remove it from the path of further harm or destruction. Should any treated listed species survive, the Service should be contacted regarding the disposition of the animal. In the case of take or suspected take of marbled murrelets not exempted in this biological opinion, the Arcata Fish and Wildlife Office and the Division of Law Enforcement shall be notified within 24 hours.

COORDINATION OF INCIDENTAL TAKE WITH OTHER LAWS

The Service will not refer the incidental take of any migratory bird or bald eagle for prosecution under the Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. §§ 703-712), of the Bald and Golden Eagle Protection Act of 1940, as amended (16 U.S.C. §§ 668-668d), if such take is in compliance with the terms and conditions (including amount and/or number) specified herein.

CONSERVATION RECOMMENDATIONS

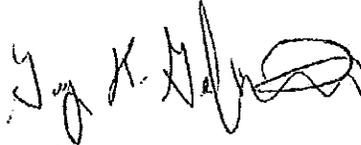
Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. No conservation recommendations are recommended for this project.

REINITIATION NOTICE

This concludes formal consultation on the action outlined in your May 7, 2004, request. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this opinion; or (4) a new species is listed or critical habitat is designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

Please contact staff biologist Ray Bosch at (707) 822-7201 should you have further questions regarding this consultation.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael M. Long". The signature is stylized and somewhat cursive, with a large loop at the end.

(For) Michael M. Long
Field Supervisor

cc:
Caltrans District 1, Eureka, California (Attn: Lena Ashley)
Caltrans District 1, Eureka (Attn: Peter Lewendal)
FHWA, Sacramento (Attn: Lanh Phan)

LITERATURE CITED

- Becker, B. H., S. R. Beissinger, and H. R. Carter. 1997. At-sea density monitoring of marbled murrelets in central California: methodological considerations. *Condor* 99:743-755.
- Bednarz, J. C. and T. J. Hayden. 1988. The Los Medanos Cooperative Raptor Research and Management Program. Final Report 1985-1987. Report for Department of Energy; USDI Bureau of Land Management; University of New Mexico. 112 pp.
- Beissinger, S. B. 1995. Population trends of the marbled murrelet projected from demographic analyses. In: C.J. Ralph, G.L. Hunt, M.G. Raphael, and J. F. Piatt, technical editors, *Ecology and Conservation of the Marbled Murrelet*. Gen. Tech. Rept. PSW-GTR-152. Albany, California: Pacific Southwest Experiment Station, Forest Service. 420 pp.
- Beissinger, S. B. and N. Nur. 1997. Population trends of the marbled murrelet projected from demographic analyses. In: U.S. Fish and Wildlife Service. Recovery plan for the threatened marbled murrelet (*Brachyramphus marmoratus*) in Washington, Oregon, and California. Portland, Oregon. 203 pp.
- Beissinger, S. B. and M. Z. Peery. 2003. Range-wide analysis of juvenile ratios from marbled murrelet monitoring programs: implications for demographic analyses. Report submitted to U.S. Fish and Wildlife Service, Arcata, California.
- Bentivoglio, N., J. Baldwin, P. G. R. Jodice, D. E. Mack, T. Max, S. Miller, S. K. Nelson, K. Ostrom, C. J. Ralph, M. Raphael, C. Strong, C. Thompson, and R. Wilk. 2002. Northwest Forest Plan Marbled Murrelet Effectiveness Monitoring 2000 Annual Report. U.S. Department of Interior, Fish and Wildlife Service; U.S. Department of Agriculture, Pacific Northwest Research Station and Pacific Southwest Research Station; Oregon State University, Wildlife Cooperative Research Unit; Crescent Coastal Research; and Washington Department of Fish and Wildlife. April 2002. 73 pp.
- Bortolotti, G. R., J. M. Gerrard, P. N. Gerrard, and D. W. A. Whitfield. 1984. Minimizing investigator-induced disturbance to nesting bald eagles. In: J. M. Gerrard and T. M. Ingram, editors. *The Bald Eagle in Canada*. Proc. Bald Eagle Days, Winnipeg. Pages 85-103.
- Bradley, R. W. 2002. Breeding ecology of radio-marked marbled murrelets (*Brachyramphus marmoratus*) in Desolation Sound, British Columbia. Master of Science. Simon Fraser University, Burnaby, Canada.
- Burger, A. E. and D. M. Fry. 1993. Effects of oil pollution on seabirds in the northeast Pacific. In: Vermeer, K.; K. T. Briggs; K. H. Morgan; and D. Siegel-Causey, editors. *The status, ecology, and conservation of marine birds of the North Pacific*. Canadian Wildlife Service Special Publication. Ottawa, Canada. Pp. 254-263.

- Carncy, J. M., and W. J. Sydeman. 1999. A review of human disturbance effects on nesting colonial waterbirds. *Waterbirds* 22:68-79.
- Chalfoun, A. D., F. R. Thompson III, and M. J. Ratnaswamy. 2002. Nest Predators and fragmentation: a review and meta-analysis. *Conservation Biology* 16(2):306-318.
- Drent, R. 1972. The natural history of incubation. In: D. S. Farner, editor. *Breeding Biology of Bird*. Washington, D.C. National Academy of Science. Pages 262-311.
- Evans Mack, D. M., W. P. Ritchie, S. K. Nelson, E. Kuo-Harrison, P. Harrison, and T. E. Hamer, compilers. 2003. Methods for surveying marbled murrelets in forests: a revised protocol for land management and research. Marbled Murrelet Technical Committee, Pacific Seabird Group. January 2, 2003. 76 pp.
- Ford, R. G., G. K. Himes Boor, and J. C. Ward. 2001. Final Report: Seabird mortality resulting from the M/V New Carissa oil spill incident, February and March 1999.
- Frid, A., and L. Dill. 2002. Human-caused disturbance stimuli as a form of predation risk. *Conservation Ecology* 6(1)11.
- Fyfe, R. W. and R. R. Olendorff. 1976. Minimizing the dangers of nesting studies to raptors and other sensitive species. *Can. Wildl. Serv. Occas. Paper* 23. 17pp.
- Hamer, T. E., and S. K. Nelson. 1995. Characteristics of marbled murrelet nest trees and nesting stands. In: C.J. Ralph, G.L. Hunt, M.G. Raphael, and J.F. Piatt (Tech. eds.), *Ecology and Conservation of the Marbled Murrelet*. Gen. Tech. Rept. PSW-GTR-152. Albany, California: Pacific Southwest Experiment Station, Forest Service, U.S. Dept. of Agriculture; 420 pp.
- Hamer, T. E., S. K. Nelson, and T. I. Mohagen II. 2002. Nesting chronology of the marbled murrelet in North America. Final report submitted to U.S. Fish and Wildlife Service, Portland, Oregon.
- Hebert, P. N. and R. T. Golightly. 2003. Breeding biology and human-caused disturbance to nesting of marbled murrelets (*Brachyramphus marmoratus*) in northern California. Progress report 2002. Progress report submitted to U.S. Fish and Wildlife Service, Arcata, California.
- Hebert, P. N., R. T. Golightly, H. R. Carter, and D. L. Orthmeyer. 2003a. The breeding biology of marbled murrelets nesting in Redwood National and State Parks, California. In: Hebert, P. N. and R. T. Golightly. Breeding biology and human-caused disturbance to nesting of marbled murrelets (*Brachyramphus marmoratus*) in northern California. Progress report 2002. Progress report submitted to U.S. Fish and Wildlife Service, Arcata, California.

- Hebert, P. N., R. T. Golightly, H. R. Carter, and D. L. Orthmeyer. 2003b. At-sea distribution and movements of nesting and non-nesting marbled murrelets in northern California. In: Hebert, P. N. and R. T. Golightly. Breeding biology and human-caused disturbance to nesting of marbled murrelets (*Brachyramphus marmoratus*) in northern California. Progress report 2002. Progress report submitted to U.S. Fish and Wildlife Service, Arcata, California.
- Huff, M., P. Jodice, J. Baldwin, S. Miller, R. Young, K. Ostrom, C. J. Ralph, M. G. Raphael, C. Strong, C. Thompson, and G. Falxa. 2003. Marbled murrelet effectiveness monitoring. Northwest Forest Plan 2002 Annual Summary Report (version 2). U.S. Department of Interior, U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station, Pacific Southwest Research Station, Oregon State University, Crescent Coastal Research, Washington Department of Fish and Wildlife. September 2003. 27 pp.
- Jodice, P. G. R., J. Baldwin, D. Mack, T. Max, S. Miller, K. Nelson, K. Ostrom, C. J. Ralph, M. Raphael, C. Strong, C. Thompson, and R. Wilk. 2002. Marbled Murrelet Effectiveness Monitoring, Northwest Forest Plan, 2001 Annual Summary Report. U.S. Department of Interior; U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station and Pacific Southwest Research Station; Oregon State University; Crescent Coastal Research, Washington Department of Fish and Wildlife. March 2002. 18 pp.
- Knight, R. L. and S. K. Knight Skagen. 1988. Effects of recreational disturbance on birds of prey: a review. In: R.L. Glinski et al., technical editors. Proceedings of the Southwest Raptor Management Symposium and Workshop. National Wildlife Federation Washington, D.C. Pages 355-359.
- Luginbuhl, J. M. 2003. Patch and landscape factors affecting marbled murrelet nest predation in coastal Oregon. Doctorate of Science (draft). University of Washington, Seattle, WA.
- Marshall, D. B. 1988. Status of the marbled murrelet in North America: with special emphasis on populations in California, Oregon, and Washington. Biological Report 88(30) USDI Fish and Wildlife Service, Portland, OR. 19pp.
- Marzluff, J. M., M. G. Raphael, J. E. Bradley, J. M. Luginbuhl, and D. E. Varland. 1999. Diverse communities of nest predators: implications for murrelet breeding success. *Pacific Seabirds Conference* 26(1):40.
- Marzluff, J. M., J. G. Raphael, and R. Sallabanks. 2000. Understanding the effects of forest management on avian species. *Wildlife Society Bulletin* 28:1132-1143.
- Marzluff, J. M. and F. A. Neatherlin. In review. Population responses of three North American corvids to human settlement and recreation: causes, consequences, and challenges for human managers. University of Washington, Seattle. 51pp.

- Meyer, C. B., S. L. Miller, and C. J. Ralph. 2002. Multi-scale landscape and seascape patterns associated with marbled murrelet nesting areas on the U.S. west coast. *Landscape Ecology* 17:95-115.
- Meyer, C. B., and S. L. Miller. 2002. Use of fragmented landscapes by marbled murrelets for nesting in southern Oregon. *Conservation Biology* 16(3):755-766.
- Miller, S. G., R. L. Knight, and C. K. Miller. 1998. Influences of recreational trails on breeding bird communities. *Ecological Applications* 8: 162-169.
- National Research Council. 1995. *Science and the Endangered Species Act*. National Academy Press, Washington, D.C. 271 pp.
- Nelson, S. K. 1997. Marbled murrelet (*Brachyramphus marmoratus*). In: Poole, A. and F. Gill, editors. *The Birds of North America*. Number 276. The Academy of Natural Sciences. Philadelphia, PA, and the American Ornithologist's Union, Washington, D.C. 32pp.
- Nelson, S. K. and T. E. Hamer. 1995a. Nest success and the effects of predation on marbled murrelets. In: C. J. Ralph, G. L. Hunt, M. G. Raphael, and J. F. Piatt, technical editors. *Ecology and Conservation of the Marbled Murrelet*. Gen. Tech. Rept. PSW-GTR-152. Albany, California: Pacific Southwest Experiment Station, Forest Service, U.S. Dept. of Agriculture; 420 pp.
- Nelson, S. K., and T. E. Hamer. 1995b. Nesting biology and behavior of the marbled murrelet. In: C. J. Ralph, G. L. Hunt, M. G. Raphael, and J. F. Piatt, technical editors. *Ecology and Conservation of the Marbled Murrelet*. Gen. Tech. Rept. PSW-GTR-152. Albany, California: Pacific Southwest Experiment Station, Forest Service, U.S. Dept. of Agriculture; 420 pp.
- Nelson, S. K., and A. K. Wilson. 2002. Marbled murrelet habitat characteristics on state lands in western Oregon. Final report, Oregon Cooperative Fish and Wildlife Research Unit, Oregon State University, Department of Fisheries and Wildlife, Corvallis. 151pp.
- Payton, P. W. C. 1994. The effect of edge on avian nest success: how strong is the evidence? *Conservation Biology* 8(1):17-26.
- Peery, Z., S. R. Beissinger, B. Becker, and S. Newman. 2002. Marbled murrelet (*Brachyramphus marmoratus*) demography in central California: 2001 progress report. Unpublished report, 21pp.
- _____. 2003. Marbled murrelet (*Brachyramphus marmoratus*) demography in central California: 2002 progress report. Preliminary draft unpublished report.
- Peery, D. A. 1995. Status of forest habitat of the marbled murrelet. In: C.J. Ralph, G.L. Hunt, M.G. Raphael, and J.F. Piatt, technical editors. *Ecology and Conservation of the Marbled*

- Murrelet. Gen. Tech. Rept. PSW-GTR-152. Albany, California: Pacific Southwest Experiment Station, Forest Service, U.S. Dept. of Agriculture; 420 pp.
- Ralph, C. J., G. L. Hunt, Jr., M. G. Raphael, and J. F. Piatt, technical editors. 1995a. Ecology and conservation of the marbled murrelet. Gen. Tech. Rep. PSW-GTR-152. Albany, California.: Pacific Southwest Experiment Research Station, Forest Service, U.S. Department of Agriculture; 420 pp.
- Ralph, C. J., G. L. Hunt, Jr., M. G. Raphael, and J. F. Piatt. 1995b. Ecology and conservation of the marbled murrelet in North America: An overview. In: C. J. Ralph, G. L. Hunt, M. G. Raphael, and J. F. Piatt, technical editors. Ecology and Conservation of the Marbled Murrelet. Gen. Tech. Rept. PSW-GTR-152. Albany, California: Pacific Southwest Experiment Station, Forest Service, U.S. Dept. of Agriculture; 420 pp.
- Raphael, M. G., D. E. Evans Mack, and B. A. Cooper. 2002. Landscape-scale relationships between abundance of marbled murrelets and distribution of nesting habitat. *Condor* 104:331-342.
- Redwood National and State Parks. 2003. A conservation strategy for managing threatened and endangered species in Redwood National and State Parks. 116 pp.
- Strong, C. 2004. Marbled murrelet abundance and reproductive indices in or during 2003. Final report submitted to U.S. Fish and Wildlife Service, Portland, Oregon.
- Swenson, J. E. 1979. Factors affecting status and reproduction of ospreys in Yellowstone National Park. *Journal of Wildlife Management* 43:595-601.
- USDA Forest Service and USDI Bureau of Land Management. 1994a. Final supplemental environmental impact statement on management of habitat for late-successional and old-growth forest related species within the range of the northern spotted owl. Portland, Oregon. 2 vols. and appendices.
- _____. 1994b. Record of decision for amendments to Forest Service and Bureau of Land Management planning documents within the range of the northern spotted owl; standards and guidelines for management of habitat for late-successional and old-growth forest related species within the range of the northern spotted owl. Portland, Oregon.
- USDI Fish and Wildlife Service. 1992. Endangered and threatened wildlife and plants; Determination of threatened status for the Washington, Oregon, and California population of the marbled murrelet. Final rule. Fish and Wildlife Service. *Federal Register* 191:45328-45337. October 1, 1992.

- _____. 1996. Endangered and threatened wildlife and plants; Final designation of critical habitat for the marbled murrelet; final rule. Fish and Wildlife Service. Federal Register 102:26256-26320.
- _____. 1997. Recovery plan for the threatened marbled murrelet (*Brachyramphus marmoratus*) in Washington, Oregon, and California. Portland, Oregon. 203 pp.
- _____. 1998. Biological opinion for Quinalt North Boundary Area unit management plan. Quinalt Indian Nation. January 28, 1998.
- _____. 2003. Current estimates of marbled murrelet in 2003. Compiled for the 5-year review. Portland, Oregon.
- _____. 2004. Biological opinion for the Confederated Tribes of Siletz Indians. February 2004.
- USDI Fish and Wildlife Service and USDC National Marine Fisheries Service. 1998. Final Consultation Handbook--Procedures for Conducting Consultation and Conference Activities Under Section 7 of the Endangered Species Act.
- _____. 1999. Biological and conference opinions regarding issuance of an incidental take permit to the Pacific Lumber Company, Scotia Pacific Company LLC and Salmon Creek Corporation. February 24, 1999.
- Waterhouse, F. L., R. Bradley, J. Markila, F. Cooke, and L. Lougheed. 2002. Use of airphotos to identify, describe, and manage forest structure of marbled murrelet nesting habitat at a coastal British Columbia site. Research Section, Vancouver Forest Region, BC Ministry of Forests. Nanaimo, BC. Technical Report TR-016. 20pp.
- White, C. M. and T. L. Thurow. 1985. Reproduction of ferruginous hawks exposed to controlled disturbance. *Condor* 87:14-22.



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

REPLY TO
ATTENTION OF:

NOV - 5 2012

Regulatory Division

SUBJECT: File Number 2009-00447N

Ms. Sharon Stacey
California Department of Transportation (Caltrans), District 1
North Region Environmental Planning
1031 Butte Street, MS 30
Redding, California 96001

Dear Ms. Stacey:

Enclosed is your signed copy of a Department of the Army (DA) Regional General Permit (RGP) to rehabilitate and/or replace approximately deteriorated culverts in Mendocino County, California.

Should you have any questions regarding this matter, please call Paula Gill of our Regulatory Division at 415-503-6776 or by email at Paula.C.Gill@usace.army.mil. Please address all correspondence to the Regulatory Division and refer to the File Number at the head of this letter. If you would like to provide comments on our permit review process, please complete the Customer Survey Form available online at <http://per2.nwp.usace.army.mil/survey.html>.

Sincerely,

John M. Baker

W John Baker, P.E.
Lieutenant Colonel, U.S. Army
Commander and District Engineer

Enclosure

Copies Furnished (w/encl 1 only):

US EPA, San Francisco, CA
US FWS, Arcata, CA
US NMFS, Arcata, CA
CA CC, Eureka, CA



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

FEB 26 2016

Regulatory Division

SUBJECT: File Number 2009-00447N

Ms. Dana York
California Department of Transportation (Caltrans), District 1
P.O. Box 3700
Eureka, California 95502

Dear Ms. York:

This letter is written in response to your submittal of December 22, 2015 concerning Department of the Army authorization to rehabilitate 22 drainage systems as the last of Phase III of the SR 128/253 Culvert Rehabilitation Project. This portion of the project is located along State Route (SR) 128, between Post Miles 30.1 and 48.4, in Mendocino County, California (38.992°N and 123.354°W; Townships 12N-13N, Ranges 11W-14W).

This last portion of Phase III of the SR 128/253 Culvert Rehabilitation Project includes work within U.S. Army Corps of Engineers' jurisdiction estimated to permanently impact 0.001 acre (60.59 square feet) of wetlands and temporarily impact an additional 0.003 acre (145.15 square feet) of wetlands during construction. The work will also permanently impact 0.012 acre (536.57 square feet) of other waters of the U.S. and temporarily impact another 0.0041 acre (1,777.24 square feet) of other waters of the U.S.

Based on a review of the information you submitted, your project qualifies for authorization under Department of the Army Regional Permit (RGP) #16 for *Rehabilitation or Replacement of Culverts in Mendocino County*, pursuant to Section 404 of the Clean Water Act, 33 U.S.C. Section 1344 (enclosure 1). All work shall be completed in accordance with the plans and drawings in 41 sheets, titled "Corps File No. 2009-00447N" and dated January 13, 2016 (enclosure 2). A Preliminary JD has been completed for each culvert location. Preliminary JDs 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. Preliminary JDs are advisory in nature and may not be appealed.

Special Condition 3 of RGP #16 requires that compensatory mitigation for unavoidable impacts to wetlands and waters of the U.S. shall occur through the creation, restoration, riparian planting, or enhancement of the appropriate tributaries and/or wetlands within the watershed where impacts are proposed to occur. The mitigation and monitoring plan titled "*Seaside Beach Roadside Repair (EA 47490), Anchor Bay Drainage Repair (EA 44650), SR 128/253 Culvert Rehabilitation, (EA's 37812, 37813, 37814, 37816, 37817), and Men 20 Left-Turn Shoulder Widening (EA 29200) Off-site Wetland Mitigation at California State Parks, Inglebrook Fen-Ten Mile Dunes Natural Preserve, Mitigation and Monitoring Plan*" dated April 2013 has been

approved to provide compensatory mitigation for the permanent fill of 0.007 acre of wetland through creation of 0.007 acre of seasonal wetland. Performance standards are outlined on page 20 of the above referenced plan. The five-year monitoring program shall be implemented as outlined in the Ten Mile Dune Mitigation Plan. Annual monitoring reports shall be submitted to the Corps by November 31 of each year. The Anderson Valley Elementary School (AVES)/ Con Creek mitigation project which includes re-vegetation and invasive weed control within 0.33 acre of riparian area associated with Con Creek has been approved to provide compensatory mitigation for the permanent fill of 0.17 acre of other waters of the U.S. The AVES mitigation shall be considered successful when 1) 75% relative cover of native plant species and 2) 50% viable planting establishment with at least 5 different native species present is obtained at the conclusion of the 5-year period. Annual monitoring reports for both mitigation projects shall be submitted to the Corps by November 31 of each year.

Special Condition 5 of RGP #16 stipulates that project authorization under the RGP 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 federal lead agency for this project, Caltrans initiated consultation with the United States Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) to address project related impacts to list species, pursuant to Section 7(a) of the Endangered Species Act of 1973, as amended, 16 U.S.C. Section 1531 *et seq.* The U.S. Fish and Wildlife Service (USFWS) BO dated April 15, 2005, USFWS Informal Consultation letter dated October 6, 2004, National Marine Fisheries Service (NMFS) BOs dated January 4, 2005 and January 10, 2007 contain mandatory terms and conditions to implement the reasonable and prudent measures that are associated with "incidental take" that is also specified in the BOs. Your authorization under this Corps permit is conditional upon your compliance with all of the mandatory terms and conditions associated with incidental take authorized by the attached BOs, whose terms and conditions are incorporated by reference in this permit. Failure to comply with the terms and conditions associated with incidental take of the BOs, where a 'take' of the listed species occurs, would constitute an unauthorized take and it would also constitute non-compliance with this Corps permit. The USFWS and NMFS are the appropriate authorities to determine compliance with the terms and conditions of their BOs and with the ESA.

Special condition # 14 requires Caltrans to restore temporarily impacted areas post construction. Caltrans shall implement its re-vegetation plan titled "*State Route 128/253 Culvert Rehabilitation Project (Phase III) 01-MEN-128-PM 2.81/48.44 (EA 01-37813, 37814 and 01-37817)*" and dated December 2015. A five-year management and monitoring program will be implemented as outlined in the above mentioned plan. Annual monitoring reports shall be submitted to the Corps by February 1 of each year.

The project must be in compliance with the all permit conditions cited in RGP #16 for the authorization to remain valid. Non-compliance with any condition could result in the

suspension, modification or revocation of the authorization for your project, thereby requiring you to obtain a Nationwide or Individual Permit from the Corps.

This authorization will not be effective until you have obtained a Section 401 water quality certification from the North Coast Regional Water Quality Control Board (RWQCB) for this portion of Phase III of the project on SR 128, between post miles 30.14 and 48.44. If the RWQCB fails to act on a valid request for certification within two months after receipt of a complete application, the Corps will presume a waiver of water quality certification has been obtained. You shall submit a copy of the certification to the Corps prior to the commencement of work.

You may refer any questions on this matter to Daniel Breen of my Regulatory staff by telephone at 415-503-6769 or by e-mail at Daniel.B.Breen@usace.army.mil. All correspondence should be addressed to the Regulatory Division, North Branch, referencing the file number at the head of this letter. If you would like to provide comments on our permit review process, please complete the Customer Survey Form available online at <http://www.spn.usace.army.mil/Missions/Regulatory.aspx>.

Sincerely,



Aaron O. Allen, Ph. D
Acting Chief, Regulatory Division

Enclosures

Copies furnished:

US EPA, San Francisco, CA
US FWS, Arcata, CA
US NMFS, Arcata, CA
CA CC, Eureka, CA
CD DFW, Redding, CA
CA RWQCB, Santa Rosa, CA

CA DFG, Redding, CA
CA RWQCB, Santa Rosa, CA

**DEPARTMENT OF THE ARMY REGIONAL GENERAL PERMIT 16
FOR THE REHABILITATION OR REPLACEMENT OF CULVERTS
IN MENDOCINO COUNTY**

PERMITTEE: Ms. Sharon Stacey, California Department of Transportation (Caltrans)

PERMIT NO.: 2009-00447N

ISSUING OFFICE: San Francisco District

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate District or Division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below:

PROJECT DESCRIPTION:

This Regional General Permit (RGP) authorizes the rehabilitation and/or replacement of deteriorated culverts and installation of standard drainage inlet and outlet structures located in Mendocino County. Culvert sizes will range from 18" to 6' by 12' box culverts. Some drainage work will be completed at inlets and outlets, and minor vegetation removal may be performed to improve water flow. Minor grading may also be performed at various locations when deemed necessary to prevent water buildup at inlets and/or outlets. Either half-width construction or jacking construction methods will be utilized. Some specific designs may call for modifying the ends of the culvert with a headwall, a flared end section, an inlet structure, or a downdrain. Rock slope protection, rock energy dissipaters, and rock weirs may also be commonly required. Temporary flow diversions on perennial streams would also be required. Authorization also includes off-pavement work pads for construction at inlets and outlets that cannot be reached with equipment from the road. Typically, work shall be completed in accordance with the plans and drawings titled, "USACE File #2009-00447N, State Routes 128 and 253 Culvert Replacement, March 28, 2012, Figures 1 to 4."

Impacts to wetlands and waters of the U.S. associated with each culvert replacement will vary depending on specific site conditions associated with each culvert replacement. The maximum authorized discharge of fill material into wetlands and waters of the U.S. is 0.05 acre or 50 linear feet of permanent fill (i.e. placement of hardscape material beyond the existing culvert) for an individual culvert replacement. Over the 5-year authorization period, no more than 1.0 acre of permanent impact to wetlands and waters of the U.S. associated with culvert replacements will be authorized. Activities required for culvert replacement that would not constitute placement of fill or a permanent impact (e.g. dewatering, culvert replacement) will be limited to 300 linear feet of work within a water of the U.S., this includes the length of the culvert and additional upstream and downstream associated work.

PROJECT LOCATION: Mendocino County, California

PERMIT CONDITIONS:

GENERAL CONDITIONS:

1. The time limit for completing the work authorized ends on June 15, 2017.
2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and State coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.
4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.
5. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.
6. You understand and agree that, if future operations by the United States require the removal, relocation or other alteration of the structure or work authorized herein, 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, you 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.

SPECIAL CONDITIONS:

1. Two annual reports are required. The first annual report (advanced notice) will contain a work plan for the coming year. This report shall be submitted prior to April 15 of each year. Along with other information this advanced notice will include work locations, any proposed off-pavement work pad locations and size, estimates of impact to jurisdictional wetlands and/or to other Waters of the U.S. (in mapped format), construction methods, and proposed work timeframes. Specific project drawings for each culvert replacement including any required rock slope protection, any culvert modifications, or grading plans shall be provided. Additionally, a Wetland Delineation Report prepared in accordance with the Corps of Engineers' 1987 Wetland Delineation Manual and the appropriate Regional Supplement for the project study area for proposed culvert repair locations shall be provided. The proposed compensatory mitigation plan for impacts associated with the upcoming year shall be provided with the advanced notice completed in accordance with "*Compensatory Mitigation for Losses of Aquatic Resources; Final Rule*," 33 C.F.R. pt. 332, published on April 10, 2008.

Included with the advanced notice, Caltrans shall demonstrate compliance with Section 7 of the Endangered Species Act (ESA) of 1973 as amended, 16 U.S.C. §§ 1531-1544, and Section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation, Management Act (EFH), 16 U.S.C. § 1855(b)(4)(B), and Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, 16 U.S.C. §§ 470-470. Caltrans shall provide all relevant documentation summarizing 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 (for Section 106 compliance). Additionally, copy of the Regional Water Quality Control Board (RWQCB) 401 Certification and the California Coastal Commission (CCC) Consistency Determination for the proposed culvert replacements shall also be provided, if available.

The second annual report would summarize work completed in the previous year and will provide a running summary of mitigation efforts, including post-construction monitoring outlined in special condition 13. The second annual report shall be submitted prior to December 1 of each year.

2. After review of the Advanced Notice the Corps will provide specific written authorization of rehabilitation and/or replacement of deteriorated culverts. Within this written authorization the Corps will also approve the proposed compensatory mitigation plan. Approval of the Advanced Notice shall be contingent on appropriately proposed compensation for anticipated impacts, demonstration of successful implementation and reporting in accordance with any previously approved mitigation plan, and compliance with all federal and state regulatory requirements (ESA, EFH, NHPA, RWQCB, and CCC).

3. Compensatory mitigation for unavoidable impacts to wetlands and Waters of the U.S. shall occur through creation, restoration, riparian planting, or enhancement of the appropriate tributaries and/or wetlands within the watershed where impacts are proposed to occur. Compensatory mitigation may also be provided through the purchase of credits at a Corps approved mitigation bank. Your responsibility to complete the required compensatory mitigation upon approval of Advanced Notice and associated compensatory mitigation plans will not be considered fulfilled until you have demonstrated mitigation success and have received written verification from the U.S. Army Corps of Engineers.
4. You shall not begin work on any individual culvert replacement until specific written authorization is provided by USACE upon review of the advanced notice.
5. No activity is authorized under this RGP 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 RGP which "may affect" a listed species or critical habitat, unless Section 7 consultation addressing the effects of the proposed activity has been completed. The Corps will review the documentation provided demonstrating compliance with the Section 7 consultation and determine whether it is sufficient to address ESA compliance for the RGP activity, or whether additional ESA consultation is necessary. Authorization of an activity by this RGP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., a Biological Opinion with "incidental take" provisions, etc.) from the United States Fish and Wildlife Service (USFWS) or the National Marine Fisheries Service (NMFS). Upon approval of the advanced notice Caltrans shall comply with the mandatory terms and conditions associated with incidental take. Failure to comply with the terms and conditions for incidental take, where a 'take' of a federally-listed species occurs, would constitute an unauthorized take and non-compliance with the RGP authorization. The USFWS and or NMFS are, however, the authoritative federal agency for determining compliance with the incidental take statement and for initiating appropriate enforcement actions or penalties under the ESA.
6. If the USFWS and/or NMFS concurred with the determination that the project was not likely to adversely affect listed species and designated critical premised on project work restrictions then these work restrictions shall be implemented to ensure unauthorized incidental take of species and loss of critical habitat does not occur.
7. 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).
8. Work will be conducted during the dry season (June 15 to October 15) to minimize potential impacts to any wet or running watercourses, when feasible. If work is occurring in a perennial creek or outside of the dry season then the waterway shall be de-watered.
9. Off-pavement work pads shall also be located outside of USACE jurisdictional wetlands and waters of the U.S.
10. Prior to any culvert rehabilitation a Section 401 water quality certification from the North Coast, Regional Water Quality Control Board shall be provided specifically authorizing the proposed culvert replacement.
11. Prior to any work on a culvert located within the jurisdiction of the California Coastal Commission, concurrence that the work will comply with California's Coastal Zone Management Act must be provided.
12. No fill shall be placed below the ordinary high water mark of the Navarro River, Rancheria Creek, Big River, Eel River, Gualala River including South Fork Gualala River, Mattole River, Russian River to ensure these rivers on the Nationwide Rivers Inventory are not adversely affected by project implementation.

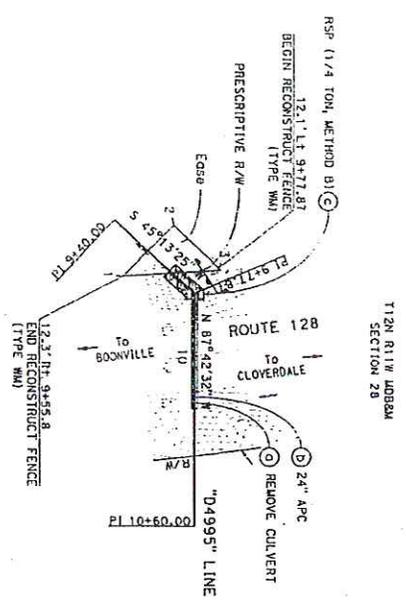
13. The area immediately upstream and downstream of each culvert replacement shall be monitored post-construction at years 1, 3, and 5 to qualitatively assess channel conditions surrounding the work area. Photographs and a brief summary of conditions shall be provided with the annual summary of completed work. Any finding of channel instability (e.g. migrating headcuts, RSP failure, or bank erosion) shall be documented and remediation measures shall be proposed and submitted to USACE for review. After receiving approval from USACE, the proposed measures shall be implemented.
14. Application of compost blankets for erosion control will be implemented concurrently with project construction. All other revegetation activities will begin the fall after completion of culvert construction. If areas do not revegetate by the first year of post-construction monitoring (described in special condition 11 above), the Corps may require further monitoring, re-vegetation, and/or off-site mitigation.

FURTHER INFORMATION:

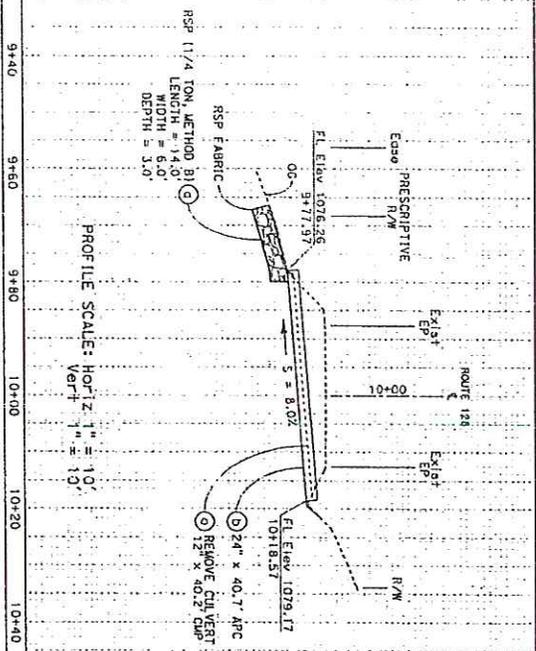
1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:
 - (x) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. Section 403).
 - (x) Section 404 of the Clean Water Act (33 U.S.C. Section 1344).
 - () Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. Section 1413).
2. Limits of this authorization:
 - a. This permit does not obviate the need to obtain other Federal, State, or local authorizations required by law.
 - b. This permit does not grant any property rights or exclusive privileges.
 - c. This permit does not authorize any injury to the property or rights of others.
 - d. This permit does not authorize interference with any existing or proposed Federal project.
3. Limits of Federal Liability: In issuing this permit, the Federal Government does not assume any liability for the following:
 - a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.
 - b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.
 - c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.
 - d. Design or construction deficiencies associated with the permitted work.
 - e. Damage claims associated with any future modification, suspension, or revocation of this permit.
4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.
5. Reevaluation of Permit Decision: This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

1. This drawing is made to show the location of the proposed drainage system.
 2. It is not intended to show the details of the construction of the drainage system.
 3. It is not intended to show the details of the construction of the drainage system.

Station	Offset
9+52.61	12.33' R/L
9+52.46	12.68' L/L
9+77.67	12.11' L/L



DRAINAGE SYSTEM 6
 ROUTE 128
 PM 49.95
 PLAN SCALE: 1" = 20'



DRAINAGE PLAN AND PROFILE
 SCALE AS SHOWN
TYPICAL CULVERT REPLACEMENT

DATE: 12/11/12
 DRAWN BY: J. L. BROWN

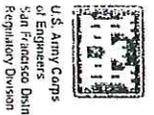
RELATIVE URBAN SCALE



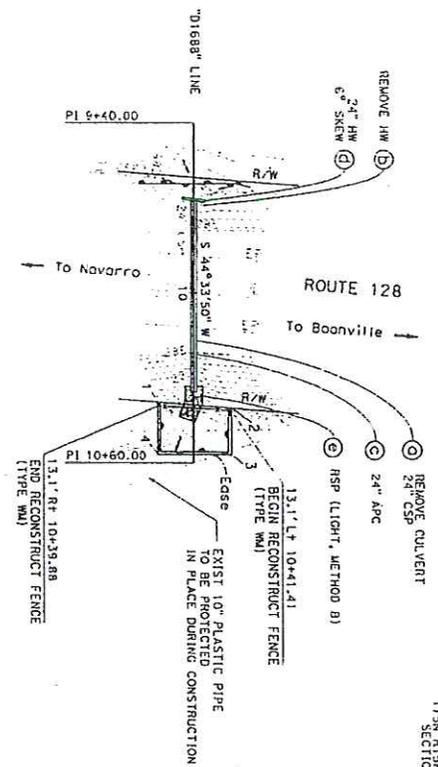
DATE	01	MO	12	YEAR	2012
PROJECT	STATE ROUTES 128 AND 253				
CONTRACT	128-253				
SECTION	SECTION 28				
DATE	12/11/12				
BY	J. L. BROWN				
CHECKED	[Signature]				
APPROVED	[Signature]				

REGISTERED CIVIL ENGINEER
 STATE OF CALIFORNIA
 LICENSE NO. 45523
 EXPIRES 12/31/13

USACE File #2009-00417N
 State Routes 128 and 253
 Culvert Replacement
 March 28, 2012
 Figure 1 of 4



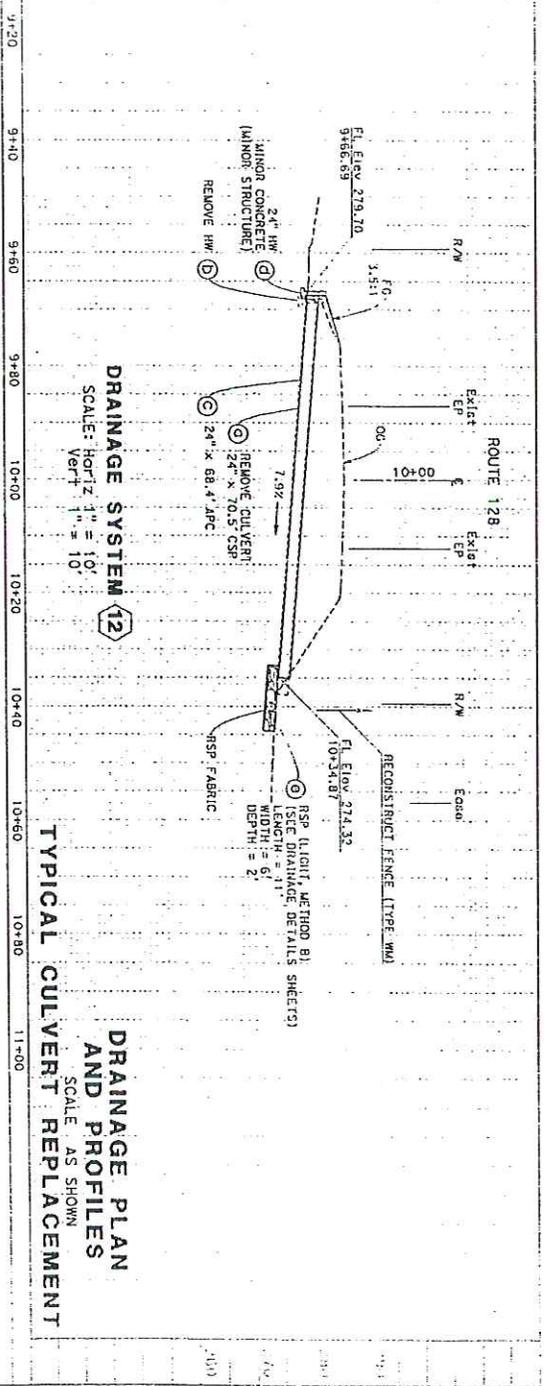
1. The proposed location of the water control structure will be as shown on the plan view. The structure will be constructed in accordance with the specifications for such structures as shown on the drawings. The structure will be constructed in accordance with the specifications for such structures as shown on the drawings.



DRAINAGE SYSTEM 12
 ROUTE 128
 PM 16.88
 SCALE: 1" = 20'

POINT	STATION	OFFSET
1	10+36.48	13.12' RT
2	10+40.54	13.12' LT
3	10+56.94	13.12' LT
4	10+55.94	13.12' RT

DATE	01 MAR 12	SCALE	1" = 20'
PROJECT	STATE ROUTE 128 AND 253 CULVERT REPLACEMENT		
DESIGNED BY	[Signature]		
CHECKED BY	[Signature]		
APPROVED BY	[Signature]		



DRAINAGE SYSTEM 12
 SCALE: Horiz 1" = 10'
 Vert 1" = 10'

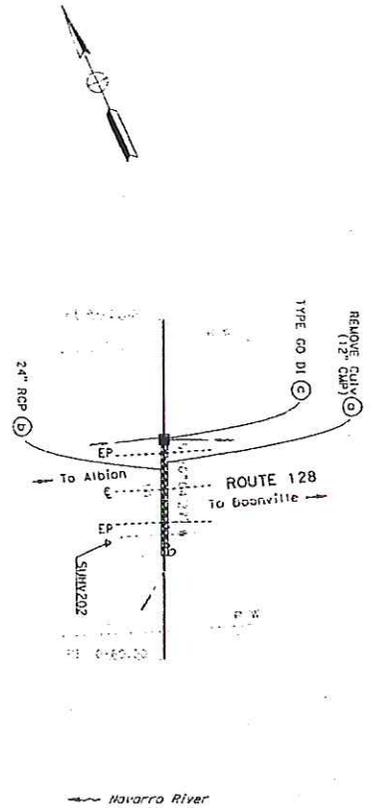
TYPICAL CULVERT REPLACEMENT
 SCALE AS SHOWN
DRAINAGE PLAN AND PROFILES

RELATIVE BENCHMARK SCALE
 IS IN FEET

USACE File # 2009-40447N
 State Routes 128 and 253
 Culvert Replacement
 March 28, 2012
 Figure 2 of 4



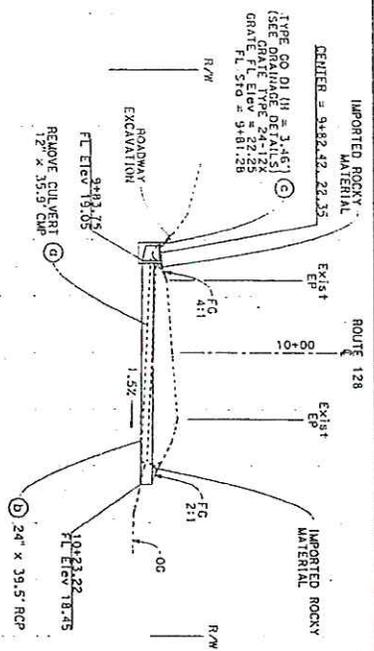
U.S. Army Corps of Engineers
 San Francisco District
 Regulatory Division



DRAINAGE SYSTEM NO. 5

ROUTE 128
PM 00.59

SCALE: 1" = 20'



PROFILE

SCALE: 1" = 10'

TYPICAL CULVERT REPLACEMENT

DRAINAGE PLAN AND PROFILE

SCALE AS SHOWN



Dist	County	ROUTE	POST MILE	DATE
01	Mon	128	VEN	

REGISTERED CIVIL ENGINEER J.A. [Signature]

PLANS APPROVAL DATE: [Date]

FOR STATE OF CALIFORNIA BY [Signature]

DATE: [Date]

PROJECT: [Project Name]

CONTRACT NO. [Contract Number]

SCALE: [Scale]

FIGURE NO. [Figure Number]

USACE File #20090447N
State Routes 128 and 253
Culvert Replacement
March 28, 2012
Figure 3 of 4

U.S. Army Corps
of Engineers
San Francisco District
Regulatory Division

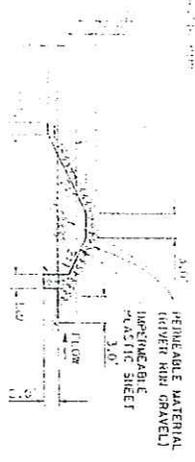
ANCHOR OUTLET IN PLACE
 EXISTING CREEK BED
 CONSTRUCTION ACTIVITIES
 EXISTING CREEK BANK
 PUMP
 TEMPORARY DAM
 FLEXIBLE PLASTIC PIPE
 (SEE NOTE 3)

TEMPORARY CREEK DIVERSION SYSTEM
 PLAN

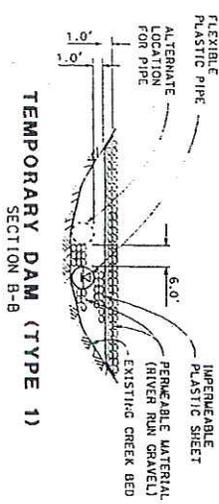
DRAINAGE SYSTEM No.	LOCATION
23	PU
31	20.15
41	27.54
44	36.63
48	39.88

HYDROLOGIC SUMMARY

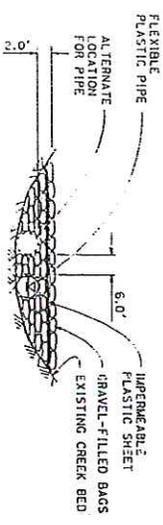
PERMEABLE MATERIAL (RIVER RUN GRAVEL)
 IMPERMEABLE PLASTIC SHEET
 3.0'



TEMPORARY DAM (TYPE 1)
 SECTION A-A



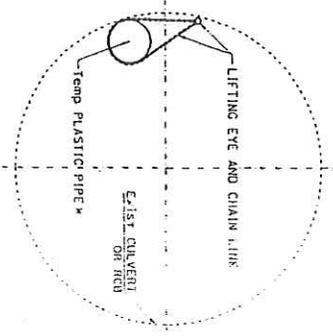
TEMPORARY DAM (TYPE 1)
 SECTION B-B



TEMPORARY DAM (TYPE 2)
 SECTION B-B

TEMPORARY DAM (TYPE 2)
 SECTION A-A

THIS PLAN ACCURATE FOR TEMPORARY WATER POLLUTION CONTROL WORK ONLY
 REDUCED TO 1/8" = 1'-0" SCALE



TYPICAL SECTION
 Temp PLASTIC PIPE
 INSTALLED IN CSP/RCB

DRAINAGE SYSTEM No.	LOCATION
23	PU
31	20.15
41	27.54
44	36.63
48	39.88

TEMPORARY WATER POLLUTION CONTROL DETAILS
 (TEMPORARY CREEK DIVERSION SYSTEM)
 TYPICAL STREAM DIVERSION
 NO. SCALE

REGISTRATION STATE: CALIFORNIA
 REGISTERED CIVIL ENGINEER: [Name]
 LICENSE NO.: [Number]
 EXPIRES: [Date]
 SEAL

USACE File #290940447N
 State Routes 128 and 253
 Culvert Replacement
 March 28, 2012
 Figure 4 of 4

U.S. Army Corps of Engineers
 San Francisco District
 Regulatory Division

North Coast Regional Water Quality Control Board

March 25, 2016

**In the Matter of
Water Quality Certification**

for the

**State Route 128/253 Culvert Rehabilitation Project (Phase III, Part 2)
38.991, -123.3538 to 38.875, -123.1058¹
WDID No. 1B15162WNME, ECM PIN CW-820346
Caltrans EA No. 01-37813, EFIS No. 01-0000-0134**

APPLICANT: California Department of Transportation
RECEIVING WATERS: Russian River & North Fork Navarro River
HYDROLOGIC AREA: Mendocino Coast, Navarro River, Sub-area 113.50
Mendocino Coast, Middle Russian River, Sub-area 114.24
COUNTY: Mendocino
FILE NAME: CDOT MEN-128-PM 30.14-48.44 State Route 128/253 Culvert
Rehabilitation Project (Phase III, Part 2)

FINDINGS BY THE EXECUTIVE OFFICER:

1. On December 22, 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, section 401, Water Quality Certification (certification) for activities related to the proposed Highway 128/253 Culvert Rehabilitation Project Phase III (Part 2), (Project).

¹ WGS84 datum

2. **Public Notice:** The Regional Water Board provided public notice of the application pursuant to title 23, California Code of Regulations, section 3858 on February 9, 2016, and posted information describing the Project on the Regional Water Board’s website. No comments were received.
3. **Receiving Waters:** The proposed Project will cause disturbances to tributaries of the Russian River and Navarro River. (Middle Russian River, Sub-Area 114.24 and Navarro River, Sub-Area 113.50).
4. **Project Description:** The purpose of the Project is to rehabilitate 22 deteriorated culverts that Caltrans has determined to have reached life expectancy, thus preventing highway damage from potential culvert failure. The Project area is on Route 128 (MEN 128) between Post Miles (PM) 30.14 and 48.44 in Mendocino County.

Work will be conducted on drainage systems at the following SR 128 Post-Miles:

30.14	30.57	31.03	31.09	31.26	35.42	35.48
35.94	38.77	40.52	40.75	41.12	41.35	42.81
43.16	44.85	46.66	47.52	47.71	47.97	48.3
48.44						

DS – 1 PM 30.14

The existing upstream 18” x 21.1’ corrugated metal pipe (CMP) downdrain and concrete headwall, concrete drainage inlet, and 18” x 40.2’ CMP culvert will be removed and replaced by trench cut and cover with a new 24” concrete headwall, 24” x 21.1’ alternative pipe downdrain, concrete open-grated inlet with hot mix asphalt (HMA) apron and dike, and 24” x 49.7’ alternative pipe culvert (APC) with a 24” concrete headwall at the outlet. Imported rocky material will be used to recontour the slope above the outlet.

DS – 2 PM 30.57

The existing 18” x 48.5’ CMP culvert will be removed by trench cut and cover, along with the existing inlet headwall, and replaced with a 24” x 55.1’ APC and straight 24” concrete headwalls at both the inlet and outlet. Imported rocky material will be used to recontour the slope above both the inlet and outlet, and minor concrete backfill will be placed atop 30’ of the middle of the culvert length.

DS – 3 PM 31.03

The existing 18” x 55.2’ CMP culvert and 18” x 29.5’ CMP downdrain will be replaced with a 24” x 55.3’ APC by trench cut and cover, along with a new 24 x 30.2’ AP downdrain and anchor assembly. Approximately 44 cubic yards of rock slope protection (RSP) will be installed at the outlet.

DS - 4 PM 31.09

The existing 15" x 54.0' CMP culvert and concrete inlet headwall will be replaced with a 24" x 54.0' APC by trench cut and cover. A new straight 24" concrete headwall will be installed at the inlet, and imported rocky material will be used to recontour the slope above the culvert inlet.

DS - 5 PM 31.26

Two end pieces (7.5'- and 3.5'-long sections) of the existing 18" x 86' CMP culvert will be removed and the remaining 72.5' section abandoned in place. A new 24" x 65.1' APC and 24" concrete straight inlet headwall will be installed above the abandoned culvert by trench cut and cover, along with a 24" x 20.3' alternative pipe outlet downdrain. Imported rocky material will be used to backfill the old inlet area, as well as to recontour the slope above the new APC culvert inlet. Approximately 6.2 cubic yards of RSP will be installed at the downdrain outlet.

DS - 6 PM 35.42

The existing 18" x 40' CMP and inlet structure will be removed by trench cut and cover and replaced with a 24" x 45.4' APC and an open-grated concrete draining inlet. An existing gabion basket wall will be protected in place at the inlet, and an HMA apron and dike will be installed at the inlet and minor concrete backfill will be placed above the culvert at the inlet side.

DS - 7 PM 35.48

The existing 18" x 37.3' CMP culvert and concrete inlet structure will be replaced with a 24" x 44' APC by trench cut and cover, and a new concrete double- open-grated drainage inlet will be installed along with a HMA apron and dike. Imported rocky material will be used to recontour the slope above the outlet.

DS - 8 PM 35.94

The existing 18" x 40.7' CMP and inlet structure will be removed and the replaced with a 24" x 51.1' APC by trench cut and cover, along with a new steel open metal pipe (OMP) drainage inlet and metal flared-end section at the outlet. Imported rocky material will be used to recontour the slope above the outlet.

DS - 9 PM 38.77

The existing 18" x 35.4' CMP will be replaced with a new 24' x 38.6' APC using trench cut and cover, along with a concrete open-grated drainage inlet and HMA apron and dike. Existing concrete scour protection will be replaced by concrete-and-RSP at the inlet channel. Minor concrete backfill will be placed atop the center portion of the new culvert, and imported rocky material will be used to recontour the slope above the outlet.

DS - 10 PM 40.52

Using trench cut and cover, the existing 18" x 41.0' CMP culvert will be replaced with a 24" x 46.0' APC, and the existing inlet headwall with a new 24" concrete straight headwall. Imported rocky material will be used to recontour the slopes at both the inlet and outlet.

DS - 11 PM 40.75

The existing 18" x 39.0' CMP culvert and inlet headwall will be removed and replaced with a 24" x 39.8' APC and new 24" concrete straight inlet headwall. About 13 feet of concrete backfill will be installed from the inlet side of the culvert, and imported rocky material will be used to recontour the slopes above both the inlet and outlet ends. An existing 4" fiber optic cable, encased in 6 inches of concrete, runs below the culvert alignment.

DS - 12 PM 41.12

The existing 18" x 40.6' CMP culvert will be replaced with a 24" x 45.5' APC by trench cut and cover, and the existing concrete headwall will be removed and a new 24" concrete straight inlet headwall installed. Approximately 12 cubic yards of RSP will be placed in the roadside drainage ditch leading to the culvert inlet, and imported rocky material will be used to contour the slope above the inlet. An existing 4" fiber optic cable, encased in 6 inches of concrete, runs below the culvert alignment.

DS - 13 PM 41.35

The existing 18" x 41.6' CMP culvert will be replaced with a 24" x 47.8' APC by trench cut and cover, and the existing inlet concrete headwall removed. A new 24" concrete straight headwall will be installed, and imported rocky material will be used to recontour the slope above the inlet. Approximately 6 cubic yards of RSP will be placed at the outlet.

DS - 14 PM 42.81

A new 24" x 76.5' APC will be installed where the previous pipe was lost during construction of a driveway. Imported rocky material will be used to recontour the slope at the outlet side.

DS - 15 PM 43.16

The existing 18" x 58.4' CMP and headwall will be replaced with a 24" x 59.6' APC using trench cut and cover construction, and a new straight 24" concrete headwall installed at the inlet. About 27' of concrete backfill will be placed atop the culvert from the inlet side, and imported rocky material will be used to recontour the slope above the both the inlet outlet. Additionally, an existing 4" fiber optic cable encased in 6 inches of concrete below the culvert alignment will be protected in place.

DS - 16 PM 44.85

The existing 18" x 32.9' CMP culvert will be removed using trench cut and cover and replaced with a 24" x 34.2' APC. A drainage inlet will be installed, as well as a 2" x 39.0' plastic supply pipe housed within a 6" x 38.0' CMP. Approximately 13' of minor concrete backfill will be installed above the culvert from the inlet side, and 4.5 cubic yards of RSP installed at the outlet. Additionally, a 4" fiber optic cable housed within 6" of concrete will be protected in place.

DS - 17 PM 46.66

The existing 18" x 45.8' CMP culvert and 12" x 18.9' downdrain will be replaced with a 24" x 46.0' APC and 24" x 24.4' AP downdrain by trench cut and cover. An HMA dike and paved gutter flare will be placed to direct surface and roadside drainage flows into a new 12" x 24.7' downdrain assembly. Approximately 15' of minor concrete backfill will be placed atop the culvert from inlet side, and imported rocky material used to recontour the slope on the outlet side. 6.2 cubic yards of RSP will be installed at the confluence of the culvert and downdrain outlets. An existing 4" fiber optic cable encased in 6" of concrete will be protected in place.

DS - 18 PM 47.52

The existing 18" x 51.9' CMP culvert will be removed via trench cut and cover, along with the exiting inlet concrete headwall, and replaced with a 24" x 58.1' APC and new straight 24" concrete inlet headwall. Imported rocky material will be used to recontour the slope at the outlet, and 6.2 cubic yards of RSP will be installed at the culvert outlet. An existing 4" fiber optic cable, encased in 6" of concrete, runs beneath the culvert alignment.

DS - 19 PM 47.71

The existing 18" x 57.6' CMP culvert will be removed by trench cut and cover and replaced with a new 24" x 62.2' APC and straight 24" concrete headwall. Approximately 17' of minor concrete backfill will be placed atop the culvert from the inlet side, and imported rocky material will be used to recontour the slope at the outlet. Approximately 6.2 cubic yards of RSP will be installed at the culvert outlet. An existing 4" fiber optic cable encased in 6" of concrete will be protected in place.

DS - 20 PM 47.97

The existing 18" x 40.4' CMP culvert will be replaced by trench cut and cover with a 24" x 42.8' APC. A sloped 24" concrete headwall will be installed at the outlet end of the culvert, and approximately 12' of minor concrete backfill will be placed atop the culvert from the inlet side.

DS - 21 PM 48.30

The existing 18" x 40.2' CMP will be replaced using trench cut and cover with a 24" x 44.8' APC. Imported rocky material will be used to recontour the slope above the

outlet, and approximately 12' of minor concrete backfill will be placed atop the culvert from the inlet side.

DS - 22 PM 48.44

The existing 18" x 50.7' CMP will be replaced using trench cut and cover with a new 24" x 52.6' APC. A steel pipe drainage inlet will also be installed, and imported rocky material will be used to recontour the slope above the outlet. An existing 4" fiber optic cable, encased in 6" of concrete, runs beneath the culvert alignment.

5. **Construction Timing:** The Project is expected to be completed within approximately 66 working days. The Project is proposed to begin on July 1, 2016, and be completed on September 1, 2016.
6. **Project Impacts:** The proposed Project will result in approximately 412.8 linear feet (0.012 acres) of permanent impacts to jurisdictional waters due to disturbance during construction. The proposed Project will result in approximately 1,359.9 linear feet (0.04 acres) of temporary impacts to jurisdictional waters due to the new drainage system being installed. The Project will also result in approximately 0.001 acres of permanent impacts and 0.003 acres of temporary impacts to wetlands due to disturbance during construction.
7. **Mitigation for Project Impacts:** Caltrans shall mitigate for permanent impacts by providing 0.36 acres of restored wetlands and 0.17 acres of restored waters of the state at MacKerricher State Park, immediately north of Fort Bragg. Mitigation shall be completed consistent with the April 2013, Inglebrook Fen-Ten Mile Dune Natural Preserve Mitigation and Monitoring Plan, prepared by Caltrans.
8. **Post-Construction Storm Water:** Post-construction storm water treatment is not required because Project implementation will result in less than 5,000 square feet of added or reworked impervious area.
9. **Disturbed Soil Area:** Project implementation will result in less than one acre of disturbed soil area. Caltrans shall utilize appropriate erosion control, sediment control, and site management Best Management Practices to prevent discharge of pollutants during construction.
10. **Utility Relocations:** Utility relocations affecting jurisdictional waters are not proposed for this Project.
11. **Other Agency Actions:** Caltrans has requested U.S. Army Corps of Engineers authorization to perform the project under Regional General Permit no. 2009-00447N, pursuant to CWA, section 404. Caltrans has also submitted a section 1600 Notification of Lake or Streambed Alteration to the California Department of Fish and Wildlife. Caltrans received a Biological Opinion (AFWO-10B0003-10F0090) from the National

Marine Fisheries Service (NMFS) on January 4, 2005, that determined the Project is not likely to adversely affect listed salmonid species. Caltrans reinitiated consultation with NMFS in 2006 after a change in the listing status of Central California Coast coho salmon as well as designation of critical habitat for Northern California steelhead and Central California Coast steelhead. In a January 10, 2007 letter, NMFS maintained that the original Biological Opinion and incidental take statement remained valid.

12. **CEQA Compliance:** On June 6, 2005, Caltrans signed a Notice of Determination approving a Mitigated Negative Declaration for the Project (State Clearinghouse No. 2015021063) in order to comply with the California Environmental Quality Act.
13. **Total Maximum Daily Load:** The Navarro River is identified as impaired for sediment and temperature under the Clean Water Act Section 303(d) list. Erosion is identified as a contributing source to sediment impairment. Caltrans will utilize appropriate erosion control, sediment control, and site management BMPs to control pollutants during construction, and drainage improvements will result in a net reduction in sediment contributions. Accordingly, this certification does not certify any activities that would contribute to Eel River sediment or temperature impairment.
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. Order No. 2003-0017-DWQ can be found here: http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2003/wqo/wqo2003-0017.pdf.

Receiving Water:	Russian River & North Fork Navarro River	
Filled and/or Excavated Areas:	Permanent – jurisdictional waters	412.8 linear feet (0.012 acres)
	Temporary – jurisdictional waters	1,359.9 linear feet (0.04 acres)
Latitude/Longitude:	38.991, -123.3538 to 38.875, -123.1058	
Certification Expiration:	March 25, 2021	

Accordingly, based on its independent review of the record, the Regional Water Board certifies that the State Route 128/253 Culvert Rehabilitation Project (Phase III, Part 2) (WDID No. 1B15162WNME), 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 their 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 as related to this Water Quality Certification.

Project-Specific Conditions

1. Caltrans shall restore 0.36 acres of wetlands and 0.17 acres of waters of the state at the Inglenook Fen – Ten Mile Dunes Preserve as part of the California State Parks MacKerricher State Park Dune Rehabilitation Project, as seen in the *Mitigation and Monitoring Plan*, dated April 13.

Project-Specific Conditions Requiring Reports

2. 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.
3. Caltrans shall implement the proposed *State Route 128/253 Culvert Rehabilitation Project (Phase III, Part 2) Revegetation Plan*, dated December 2015 (Plan). Caltrans shall submit years 1, 2, 3, 4, and 5 monitoring reports, no later than January 31 following the respective monitoring year. The monitoring reports shall include photos, plant counts, and success criteria for survival counts.

Standard Conditions

4. 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)

5. 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 certification, and Caltrans may be subject to Regional Water Board enforcement actions.
6. All conditions required by this certification 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 certification in the bid contract for this Project.
7. 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.
8. 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.
9. 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

Standard Conditions (continued)

- type and quantity of waste and may include, but not be limited to, property owner 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.
10. 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.
11. 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.
12. 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;
13. Caltrans shall not use leaking vehicles or equipment within State waters or riparian areas.
14. 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)

15. Work in flowing or standing surface waters, unless otherwise proposed in the project description and approved by the Regional Water Board, is prohibited.
16. 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.
17. 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.
18. This certification does not authorize drafting of surface waters.
19. Caltrans shall provide access to the Project construction site upon request by Regional Water Board staff.
20. 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.
21. 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)

22. 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.
23. 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.
24. 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.
25. 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.
26. 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.
27. 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 \$10,794. The Regional Water Board received \$10,794 from Caltrans on December 2, 2015.
28. 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.
29. Caltrans shall notify the Regional Water Board upon Project construction completion to

Standard Conditions (continued)

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 certification.

30. 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.
31. 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.
32. 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.
33. 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 following email address: NorthCoast@waterboards.ca.gov.

The successor-in-interest shall e-mail the Regional Water Board Executive Officer at: NorthCoast@waterboards.ca.gov to request authorization to discharge dredged or fill

Standard Conditions (continued)

material under this certification. The request must contain the following:

- i) Effective date of ownership change;
- ii) Requesting entity's full legal name;
- iii) The state of incorporation, if a corporation;
- iv) The address and phone number of contact person; and
- v) A description of any changes to the project or confirmation that the successor-in-interest intends to implement the project as described in this certification.

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

- i) The discharge being limited to and all proposed mitigation being completed in strict compliance with Caltrans's Project description and CEQA documentation, as approved herein; and
- vi) 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.

35. 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 certification 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 certification, and Caltrans may be subject to Regional Water Board enforcement actions.

36. The authorization of this certification for any dredge and fill activities expires on March 25, 2021. Conditions and monitoring requirements outlined in this certification are not subject to the expiration date outlined above, and remain in full effect and are enforceable.

Condition 2 and 3 are requirements for information and reports. 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 certification, 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, Brandon Stevens at (707) 576-2377, or via e-mail, at Brandon.Stevens@waterboards.ca.gov, if you have any questions.

Matthias St. John
Executive Officer

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

cc: Holly Costa, U.S. Army Corps of Engineers Holly.N.Costa@usace.army.mil
JoAnn Loehr, California Department of Fish and Wildlife JoAnn.Loehr@wildlife.ca.gov
State Water Resources Control Board Stateboard401@waterboards.ca.gov
Environmental Protection Agency, Region 9 R9-WTR8-Mailbox@epa.gov
Hilary Sundeen, Caltrans Hilary.Sundeen@dot.ca.gov

Project No. S8875-06-140
June 29, 2007

Mr. Mark Melani
California Department of Transportation – District 3
Environmental Engineering Office
703 B Street
P.O. Box 911
Marysville, California 95901

Subject: STATE ROUTE 128 AND 253, POST MILE 0.0/50.1 AND 0.0/17.15
MENDOCINO COUNTY, CALIFORNIA
CONTRACT NO. 03A0937
TASK ORDER NO. 140, EA 01-378101
NATURALLY OCCURRING ASBESTOS SURVEY REPORT

Dear Mr. Melani:

In accordance with California Department of Transportation (Caltrans) Contract No. 03A0937, Task Order Number 140, and Expenditure Authorization 01-378101, we have performed naturally occurring asbestos (NOA) survey services of the subject highway corridors. The highway corridors consist of Caltrans right-of-way along State Routes 128 and 253 in Mendocino County, California. The accompanying report summarizes the services performed including a geological reconnaissance, the collection of 172 samples, and asbestos analyses to assess whether NOA is present.

The contents of this report reflect the views of the author, who is 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.

David W. Bieber, PGP, CEG, CHG
Senior Geologist

Ian M. Stevenson, PG
Project Geologist

IMS:DWB:jaj

(5 + 2CD) Addressee

TABLE OF CONTENTS

NATURALLY OCCURRING ASBESTOS SURVEY REPORT Page

- 1.0 INTRODUCTION..... 1
 - 1.1 Project Description and Proposed Improvements..... 1
 - 1.2 General Objectives..... 1
- 2.0 BACKGROUND..... 2
 - 2.1 Previous Caltrans Assessments in the Highway Corridor 2
 - 2.2 Regulatory Framework 2
- 3.0 SCOPE OF SERVICES 3
 - 3.1 Pre-field Activities..... 3
 - 3.2 Field Activities..... 4
- 4.0 INVESTIGATIVE METHODS 4
 - 4.1 Traffic Control 6
 - 4.2 Quality Assurance/Quality Control Procedures..... 6
 - 4.3 Laboratory Analyses 6
- 5.0 FIELD OBSERVATIONS AND INVESTIGATIVE RESULTS 7
 - 5.1 Geology..... 7
 - 5.2 Laboratory Results..... 8
 - 5.3 Review of Laboratory QA/QC Results 8
 - 5.4 Summary of Additional EA and DAF-specific Geology and Laboratory Results..... 9
- 6.0 CONCLUSIONS AND RECOMMENDATIONS..... 15
 - 6.1 Summary of Additional EA and DAF-specific Recommendations 15
 - 6.2 NOA-containing Soil Management 19
 - 6.3 Asbestos Risk to Human Health 20
- 7.0 REPORT LIMITATIONS..... 21

FIGURES

- 1. Vicinity Map
- 2-1 through 2-17. Site Plans

TABLES

- 1. Summary of Analytical Results and Recommendations for Additional EAs and/or DAFs within the Survey Corridor
- 2. Summary of Boring Coordinates and Asbestos Analytical Results by Sample Number
- 3. Summary of Areas by Post Mile Interval Requiring Site-specific Investigation or Asbestos Dust Control

APPENDICES

- A. IT January 28, 2002 Preliminary Site Investigation of Naturally Occurring Asbestos Report
- B. Laboratory Reports and Chain-of-custody Documentation
- C. Task Orders Nos. 39, 138, and 142 Data Tables

NATURALLY OCCURRING ASBESTOS SURVEY REPORT

1.0 INTRODUCTION

This Naturally Occurring Asbestos (NOA) Survey Report was prepared under California Department of Transportation (Caltrans) Contract No. 03A0937, Task Order (TO) No. 140, and Expenditure Authorization (EA) 01-378101. The highway corridors include 261 culvert locations specifically identified in EA 01-378101 and 23 additional locations within the corridor investigated under this EA, but identified for improvement, maintenance, or repair under other EAs and/or Damage Assessment Forms (DAFs). The other EAs and DAFs within the corridors are summarized in the Summary of Analytical Results and Recommendations for Additional EAs and/or DAFs Within the Survey Corridor, Table 1.

1.1 Project Description and Proposed Improvements

The highway corridors consist of Caltrans right-of-way along State Route (SR) 128 in Mendocino County from the Sonoma/Mendocino County line to Highway 1 (PM 0.0 to 50.1), and SR-253 from the intersection with Highway 101 to the intersection with SR-128 (PM 0.0 to 17.15) in Mendocino County, California. The approximate project location is depicted on the attached Vicinity Map, Figure 1. The highway corridors are depicted on the Site Plans, Figures 2-1 through 2-17. Caltrans intends to replace 261 culverts along SR-128 and SR-253, perform ongoing landslide removal and mitigation, and perform other maintenance, repair, and roadway improvement activities in the highway corridor.

1.2 General Objectives

Geologic mapping by the California Geologic Survey (CGS) depicts ultramafic rock formations within portions of the highway corridors, the alteration of which can lead to the formation of NOA minerals. The purpose of the scope of services outlined in TO No. 140 was to evaluate whether potentially NOA-containing soil or rock are present within the highway corridors. Culvert replacement, landslide removal and mitigation, general maintenance, and other Caltrans activities will require the disturbance of possible NOA-containing soil or rock. If not managed, disturbance of NOA during construction and maintenance activities may potentially pose an inhalation risk to the health of construction personnel.

Information regarding NOA content will be used to determine where within the highway corridors Caltrans construction and maintenance activities will need to comply with California Air Resources Board (CARB) and Mendocino County Air Quality Management District (MAQMD) regulations governing activities with the potential to disturb NOA-containing soil and/or rock. The investigative results will also be used by Caltrans to inform maintenance personnel and construction contractors if NOA-containing soil and/or rock are present within the project boundaries for health, safety and

disposal purposes. Accordingly, Caltrans has requested this survey to provide data regarding the presence of NOA-containing soil or rock within the roadway corridor limits.

2.0 BACKGROUND

The highway corridors consist of the Caltrans right-of-way along State Route 128 from the Sonoma/Mendocino County line to Highway 1 (PM 0.0 to 50.1), and SR-253 from the intersection with Highway 101 to the intersection with SR-128 (PM 0.0 to 17.15) in Mendocino County, California. Caltrans requested geologic assessment and sampling of the highway corridors to characterize it with regards to the likelihood that NOA is present.

2.1 Previous Caltrans Assessments in the Highway Corridor

We identified three areas within the highway corridors that we had previously investigated on this contract under other TOs:

- SR-253 from PM 1.1 to 1.3, investigated under TO No. 39;
- SR-128 at PMs 50.5 and 50.88, investigated under TO No. 138; and
- The vicinity of the SR-253 Anderson Creek Bridge at approximate PM 0.5, investigated under TO No. 142.

After issuance of this TO, we determined that the 264 culvert locations listed in EA 01-378101 were previously investigated by IT Corporation under expired Caltrans Contract 43A0078, Task Order No. 01-378100-ZF, and the results issued in a January 28, 2002, report titled Preliminary Site Investigation of Naturally Occurring Asbestos (IT Report). A copy of the IT Report is presented in Appendix A.

2.2 Regulatory Framework

The CARB has mitigation practices for construction, grading, quarrying, and surface mining operations that may disturb natural occurrences of asbestos outlined in the Airborne Toxic Control Measure (ATCM) in Title 17 California Code of Regulations (CCR), Section 93105 (ATCM 93105). NOA potentially poses a health hazard when it becomes an airborne particulate. Maintenance and construction activities within the roadway corridor could disturb NOA-containing rock and soil where present, thereby potentially creating an airborne asbestos hazard. Mitigation practices can reduce the risk of exposure to asbestos-containing dust. The primary mitigation practice used for controlling exposure to potentially asbestos-containing dust is the implementation of engineering controls including wetting the materials being disturbed. If engineering controls do not adequately control exposure to potentially asbestos-containing dust, the use of personal protective equipment including wearing approved high efficiency particulate air filter equipped respirators is required during construction activities. Asbestos dust control methods similar to those in ATCM 93105 are outlined in

Title 17 CCR, Section 93106 (ATCM 93106) governing the control of airborne asbestos resulting from road surfacing applications. Using surfacing material with 0.25% or more asbestos material is not permitted and wetting of the material or the application of a surface sealant is recommended to minimize disturbance of the asbestos material. Onsite reuse or disposal of NOA-containing materials is allowed by ATCMs 93106 and 93105 if it is buried under at least 0.25 foot of material that does not contain NOA.

3.0 SCOPE OF SERVICES

The scope of services as requested by Caltrans in TO No. 140 included a geologic assessment of the highway corridors for potentially asbestos-bearing rocks, the collection of 172 soil and rock samples for asbestos analysis, and the preparation of this report.

3.1 Pre-field Activities

- Conducted a Task Order Meeting on April 26, 2007, to discuss the TO scope of services. Caltrans Quality Assurance (QA) Manager Mark Melani, Geocon Task Order Manager David Bieber, and Geocon field supervisor Ian Stevenson were present at the meeting. The purpose of the Task Order Meeting was to identify and discuss the project boundaries and conditions.
- Reviewed existing geological maps and studies of the site and surrounding areas for information on the potential presence of NOA.
- Reviewed the IT Report and determined that their samples were analyzed by EMSL Analytical Inc. (EMSL), our primary asbestos laboratory subcontractor. The samples identified in the IT Report were reportedly analyzed by polarized light microscopy (PLM) using CARB Test Method 435 (CARB 435).
- Conducted a meeting with MAQMD representatives to discuss project scope and sampling procedures. Christopher Brown of MAQMD and Geocon field supervisor Ian Stevenson were present at the meeting. Geocon Task Order Manager Dave Bieber was present via conference call.
- Performed a preliminary geologic reconnaissance of the highway corridors on April 26, 2007, to identify areas where ultramafic rock and/or serpentine are present; areas where the local geology is not indicative of an environment where NOA, ultramafic rock, and/or serpentine are likely to be present; and areas where geological ambiguities require the characterization of the area with regards to the potential presence of NOA, ultramafic rock and/or serpentine.
- Retained the services of Lane Safety Company Inc. (LSC), a Caltrans-approved traffic control subcontractor, to provide traffic control services.
- Retained the services of EMSL, a Caltrans-approved and California-certified analytical laboratory, to perform asbestos analyses of samples.
- Retained the services of Forensic Analytical Inc. (FAI), a Caltrans-approved and California-certified analytical laboratory, to perform duplicate asbestos analyses of randomly selected samples for quality control (QC) purposes.

- Prepared a *Health and Safety Plan* dated April 11, 2007, to provide guidelines on the use of personal protective equipment and the health and safety procedures implemented during the field activities.
- Prepared a *Workplan* dated May 4, 2007, which was submitted to Caltrans and the MAQMD. The *Workplan* describes the requested scope of services and quality assurance/quality control (QA/QC) sampling and laboratory procedures.
- Met with and coordinated sampling activities with MAQMD staff. Coordination included inclusion of MAQMD requested QA measures and sample distribution criteria into the NOA survey.

3.2 Field Activities

A preliminary geological reconnaissance was performed on April 26, 2007, by David Bieber, a California Certified Engineering Geologist (CEG No. 2092) and Ian Stevenson, a California Professional Geologist (PG No. 8203), each of whom have specialized experience in the assessment of NOA.

The NOA survey was performed from May 14 to 24, 2007, by Geocon field supervisor Ian Stevenson and field geologist Jaime Nichols. The NOA survey included additional geological reconnaissance and the collection of 172 samples for asbestos analysis. The sample locations were selected in the field by the Geocon field supervisor. The locations of the samples were determined using a global positioning system (GPS) capable of providing a horizontal position with a minimum error of 9.8 feet (ft). The approximate boring locations are depicted on the Site Plans. Details of the field activities are presented in the following sections.

4.0 INVESTIGATIVE METHODS

We performed a preliminary geological reconnaissance of the highway corridors to identify areas where NOA minerals may occur. Field observations of note from the preliminary geologic reconnaissance are presented for the following locations:

SR-128 and SR-253 Preliminary NOA Survey –Field Observations

State Route	Approximate Post Mile	Observation
128	50.1 to 48.9	Intermittent outcrops containing possible ultramafic and serpentine rocks
128	48.93	Approximate 10-foot-wide vein of possible ultramafic material
128	47.61	Approximate 10-foot-wide vein of possible ultramafic material
128	45.8	Colluvium containing scattered greenstone
128	39.63	Slide debris containing possible blocks of serpentine
128	37.15	Possible serpentine outcrop
128	36.95	Possible serpentine outcrop

State Route	Approximate Post Mile	Observation
128	36.85	Possible serpentine outcrop
128	35.48 to 35.07	Slide debris, source geology unknown
128	33.83	Possible serpentine outcrop
128	33.41 to 32.4	Serpentine outcrop
128	31.45	Serpentine outcrop
128	31.0 to 30.75	Possible serpentine outcrop
128	30.43 to 30.06	Possible serpentine outcrop
128	30.06 to 19.0	Alluvial fill, sparse outcrops
128	7.75	Possible ultramafic material
253	0.0 to 1.4	Scattered outcrops of serpentine
253	2.0 to 2.36	Possible serpentine outcrop
253	4.35 to 4.45	Possible serpentine outcrop
253	6.71	Possible serpentine outcrop
253	7.0	Possible serpentine outcrop
253	8.0	Possible serpentine outcrop
253	8.62	Possible serpentine outcrop
253	8.84	Area of shearing and deformation
253	8.6 to 9.0	Area of shearing and deformation
253	12.8 to 13.0	Area of shearing and deformation

Ian Stevenson conducted additional NOA assessment and sampling of the rocks and soil within the highway corridors. We collected a total of 172 samples for this TO (87 samples along SR-128 and 85 samples along SR-253) for laboratory analysis. Samples were collected from areas where the observed geology did not allow us to conclusively assess the location for the presence of NOA; areas where conditions were conducive to the formation of or likely to contain NOA containing materials; and from areas with geology not conducive to the formation of NOA. As decided in conferral with MAQMD personnel, sample locations were more prevalent in areas where the geology was difficult to visually assess with regards to the likely absence or presence of NOA. The approximate sample locations are presented on the Site Plans, Figures 2-1 through 2-17.

The samples were collected from hand-auger borings, as rock chip samples, or as surface samples. Hand-auger borings were advanced to an average depth of one foot to collect soil samples. Rock chip samples were collected using a rock hammer to remove approximately one quart of material. Surface samples were collected using an adz to collect approximately one quart of loose soil and rock debris.

Each sample was placed into a one quart resealable plastic bag. Loose samples were homogenized within their sample bags after collection. Each sample was marked with an identification number that included the TO and sample number, the date, and the time collected. The samples were delivered to the labs for asbestos analysis under chain-of-custody (COC) protocol.

4.1 Traffic Control

LSC provided lane and shoulder closure using Caltrans procedures during field sampling activities.

4.2 Quality Assurance/Quality Control Procedures

QA/QC procedures were performed during the field exploration activities. These procedures included decontamination of sampling equipment before each sample was collected and providing COC documentation for each sample submitted to the laboratories. Sampling equipment was cleansed between each sample by washing the equipment with an Alconox[®] solution followed by a double rinse with deionized water. The decontamination water was disposed of in the Caltrans right-of-way away from storm drains and more than 50 ft from surface water bodies.

At the request of the MAQMD, approximately 10% of the samples were split and one of the two splits sent to FAI under COC protocol for duplicate analysis to evaluate analytical data quality.

4.3 Laboratory Analyses

Samples were submitted to EMSL and FAI for asbestos fiber analysis by CARB 435 on a five-day turn-around-time (TAT) basis. The CARB 435 preparation includes milling the sample to a -200 mesh size which also homogenizes the sample. Samples were analyzed as follows:

- One hundred and seventy-two samples were analyzed by EMSL using CARB 435 with PLM. The analytical sensitivity of the PLM analysis was 0.25% by area.
- Twenty-two of the samples submitted to EMSL for PLM analysis were also analyzed for asbestos by the transmission electron microscopy method, EPA Test Method 600/R-93/116 (TEM), also referred to as the qualitative bulk fiber analysis "Point Count" Method. Caltrans requested a maximum lower detection limit for the TEM analysis of 0.25%; the analytical sensitivity of the TEM analysis was 0.01% by weight.
- Eighteen samples were split prior to being sent to EMSL, and the portion not analyzed by EMSL was analyzed by FAI by CARB 435 using PLM. The analytical sensitivity of the FAI PLM analysis was 0.25% by area.

Prior to submitting the samples to the laboratories, the COC documentation was reviewed for accuracy and completeness. Reproductions of the laboratory reports and COC documentation are presented in Appendix B.

5.0 FIELD OBSERVATIONS AND INVESTIGATIVE RESULTS

5.1 Geology

We reviewed the following documents prior to beginning the field work to gather information regarding the potential presence of NOA within the highway corridors:

- IT Report;
- CGS 1982 *Geologic Map of the Santa Rosa Quadrangle* (Santa Rosa Sheet);
- CGS 1960 *Geologic Map of California, Ukiah Sheet* (Ukiah Sheet);
- CGS 2000 *General Location Guide for Ultramafic Rocks in California, Areas More Likely to Contain Naturally Occurring Asbestos* (Ultramafic Map); and
- MAQMD mapping of *Areas That May Contain Naturally Occurring Asbestos* (MAQMD NOA Map).

The depicted geologic materials within the highway corridors as shown on the Santa Rosa and Ukiah Sheets consists of Quaternary alluvium, Quaternary terrace, Pleistocene marine and terrace, Pliocene-Pleistocene non marine, Cretaceous-Tertiary Coastal Belt Franciscan, Undivided Cretaceous marine, Jurassic-Cretaceous Franciscan Formation, and Jurassic ultrabasic/ultramafic rocks of the Coast Range Ophiolite. The areas more likely to contain NOA depicted on the Ultramafic Map and the MAQMD NOA Map generally correspond with areas on the Santa Rosa and Ukiah Sheets mapped as Jurassic ultrabasic/ultramafic rock. The IT Report did not contain descriptions of the geologic materials encountered at the culvert locations.

Dave Bieber and Ian Stevenson performed a reconnaissance-level NOA assessment of the lithology of outcrops visible within the Caltrans right-of-way. Ian Stevenson performed a follow-up NOA assessment to better define the distribution of geologic material types in the highway corridors. The observed geology is consistent with that depicted on the Santa Rosa and Ukiah Sheets. Visible outcrops within the highway corridors consist of fill, alluvium and terrace deposits, sandstones, conglomerate, shale, siltstone, metavolcanics, blueschist, greenstone, chert, serpentinite. The most commonly represented lithology within the highway corridors is sandstone.

5.1.1 SR-128

Geologic materials mapped along SR-128 from PM 0.0 to PM 50.15, as depicted on the Santa Rosa and Ukiah Sheets include Quaternary landslide deposits, Quaternary alluvial deposits, Quaternary terrace deposits, Plio-Pleistocene marine units, Paleocene Coastal Belt Franciscan, Jurassic-Cretaceous Franciscan Complex mélange, Jurassic-Cretaceous Franciscan Complex greenstone, and Jurassic ultramafic rocks. Observed geology along SR-128 from PM 0.0 to 50.15 includes Quaternary landslide

deposits, Quaternary alluvial deposits, Quaternary terrace deposits, and sandstone, siltstone, shale, chert, greenstone, metavolcanics, blueschist, chlorite/talc schist, and serpentinite of the Franciscan Complex. The observed geology is consistent with that depicted on the Santa Rosa and Ukiah Sheets.

5.1.2 SR-253

Geologic materials mapped along SR-253 from PM 0.0 to PM 17.15, as depicted on the Santa Rosa and Ukiah Sheets include Quaternary landslide deposits, Quaternary alluvial deposits, Quaternary terrace deposits, Cretaceous undivided marine units, Jurassic-Cretaceous Franciscan Complex mélange and metavolcanics, and Jurassic ultramafic rocks. Observed geology along SR-253 from PM 0.0 to 17.15 includes Quaternary landslide deposits, Quaternary alluvial deposits, Quaternary terrace deposits, and sandstone, shale, chert, green schist, talc schist, and serpentinite of the Franciscan Complex. The observed geology is consistent with that depicted on the Santa Rosa and Ukiah Sheets.

5.2 Laboratory Results

Thirty-four of the 172 samples submitted to EMSL for asbestos analysis were reported to contain asbestos by the PLM method. Of the 34 samples analyzed by PLM, 22 were found to contain asbestos at or above the CARB regulatory action limit of 0.25%, 13 along SR-128 and 9 along SR-253. Six samples submitted for analysis by the TEM method were reported to contain asbestos. The samples were reported to contain chrysotile asbestos at area percentages ranging from <0.25% to 5.25% by the PLM method and <0.01 to 15.53% asbestos by weight by TEM. A copy of the NOA laboratory reports and COC documentation are presented in Appendix B.

5.3 Review of Laboratory QA/QC Results

Eighteen of the samples analyzed by EMSL by PLM were also analyzed by FAI by PLM. The results reported by EMSL and FAI are consistent. Eleven of the samples were not reported (NR) to contain asbestos by both EMSL and FAI. Seven of the samples analyzed were reported by EMSL to contain asbestos, while six of the samples were reported by FAI to contain asbestos. Five of the six samples analyzed by both labs and reported to contain asbestos were reported by EMSL to contain a higher percentage of asbestos than the samples analyzed by FAI. Differences in reported percent asbestos in six of the samples ranged from 0.25% to 2.5%, which is considered acceptable without further qualification given the variations in samples and laboratory-specific procedures. In one sample (TO140-NOA82) EMSL reported 11% chrysotile asbestos and FAI reported 1.75% chrysotile asbestos, a reported difference of 9.25%. Sample TO140-NOA82 was collected as an outcrop sample of serpentinite so the difference is likely due to the heterogeneous nature of the distribution of asbestiform crystals observed in most serpentinites.

5.4 Summary of Additional EA and DAF-specific Geology and Laboratory Results

The following sections provide geologic descriptions and laboratory results specific to the additional EAs and DAFs. Where applicable, we have also included the laboratory results reported in the IT Report and from our Caltrans investigations performed under TOs 39, 138, and 142. The laboratory results from TOs Nos. 39, 138, and 142 are also summarized in the Data Tables in Appendix C. The geology and laboratory results for the additional EA and DAF sites are summarized in Table 1

5.4.1 CSC-CT01-036 (SR-128 PM 0.82)

Geology in the vicinity of DAF CSC-CT01-036 is mapped as Quaternary alluvium and undivided Cretaceous marine rocks. Ultramafic rocks are mapped approximately 20 miles west of this location. The geologic materials observed at this location are alluvial deposits derived from sandstone. The observed geology is consistent with that depicted on the Ukiah Sheet. Geologic materials likely to contain NOA minerals were not observed at this location. We collected one sample on SR-128 at this location, which was reported as NR for asbestos.

5.4.2 CSC-CT01-160 (SR-128 PM 6.9)

Geology in the vicinity of DAF CSC-CT01-160 is mapped as Quaternary alluvium and undivided Cretaceous marine rocks. Ultramafic rocks are mapped approximately 19 miles west of this location. The geologic material observed was landslide debris made up primarily of shale. The observed bedrock geology is consistent with that depicted on the Ukiah Sheet. However, the landslide occurred after the Ukiah Sheet was published and thus is not depicted. Geologic materials likely to contain NOA minerals were not observed at this location. We collected one split sample on SR-128 at this location, which was reported as NR for asbestos by EMSL and FAI.

5.4.3 CSC-CT01-037 (SR-128 PM 15.9)

Geology in the vicinity of DAF CSC-CT01-037 is mapped as undivided Cretaceous marine rocks. Ultramafic rocks are mapped approximately 11 miles east northeast of this location. The geologic materials observed at this location are alluvial deposits likely derived from sandstone. The observed geology is consistent with that depicted on the Ukiah Sheet. Geologic materials likely to contain NOA minerals were not observed at this location. We collected two samples on SR-128 at this location, which were reported as NR for asbestos.

5.4.4 CSC-CT01-213 (SR-128 PM 31.08)

Geology in the vicinity of DAF CSC-CT01-213 is mapped as Franciscan Complex mélangé. Ultramafic rocks are mapped approximately 0.4 mile to the north and south of this location. The geologic materials observed in the vicinity of this location consist of alluvial and colluvial deposits

derived from sandstone. Outcrops of ultramafic rocks are mapped approximately 200 ft to the north and 1,700 ft to the south. The observed geology is consistent with that depicted on the Ukiah Sheet. Geologic materials likely to contain NOA minerals were observed within 200 ft of this location. We collected one sample on SR-128 at this location, which was reported as NR for asbestos. The IT Report contains results for two samples collected at PM 31.03 and PM 31.09, which were reported as NR for asbestos.

5.4.5 CSC-CT01-038 (SR-128 PM 31.5)

Geology in the vicinity of DAF CSC-CT01-038 is mapped as Franciscan Complex mélange. Ultramafic rocks are mapped approximately 0.6 mile to the north and 0.2 mile to the south. The geologic materials observed at this location consist of sandstone and alluvium. An outcrop of ultramafic rock was mapped approximately 200 ft to the north. The observed geology is consistent with that depicted on the Ukiah Sheet. Geologic materials likely to contain NOA minerals were observed upstream of and within 200 ft of this location. We collected samples on SR-128 at PM 31.45 and PM 31.5 to assess this location. The sample we collected at PM 31.45 was reported to contain 0.50% chrysotile asbestos and the one collected at 31.5 was reported as NR for asbestos.

5.4.6 EAs 01-476600 and 01-476601, CSC-CT01-039 (SR-128 PM 34.5-35.1)

Mapped geology in the vicinity of the EA 01-476600 and EA 01-476601 sites consist of Franciscan Complex units. Ultramafic rocks are mapped approximately 1.2 miles northwest of this location. Geologic materials observed consist of sandstone, older alluvial deposits, and slide debris. The observed geology is consistent with that depicted on the Santa Rosa Sheet. Geologic materials likely to contain NOA minerals were not observed at this location. We collected three samples on SR-128 at this location, one at PM 34.5 and two at PM 35.1, which was reported to be none detect for asbestos. One of the two samples we collected at PM 35.1 was a split sample analyzed by EMSL and FAI. The IT Report contains results for one sample collected on SR-128 at PM 34.71, which was reported as NR for asbestos.

5.4.7 CSC-CT01-161 (SR-128 PM 40.35 and 47.6)

Geology in the vicinity of the two locations for DAF CSC-CT01-161 is mapped as Quaternary landslide, Paleocene Coastal Belt Franciscan, Jurassic-Cretaceous Franciscan Complex mélange, and ultramafic rocks.

Geology observed at PM 40.35 consists of alluvium derived from sandstone. Ultramafic rocks are mapped approximately 2.3 miles to the northeast. The observed geology is consistent with that depicted on the Santa Rosa Sheet. Geologic materials likely to contain NOA minerals were not observed at PM 40.35. We collected one sample on SR-128 at PM 40.35, which was NR for asbestos.

The IT Report contains results for one sample collected on SR-128 at PM 40.35, which was reported as to be non-detect for asbestos.

Geology observed at PM 47.6 consists of sandstone bounding a landslide containing sandstone and serpentinite debris. Ultramafic rocks are mapped at this location and approximately 0.25 miles to the southeast. The observed geology is consistent with that depicted on the Santa Rosa Sheet. Geologic materials likely to contain NOA minerals were observed at the PM 47.6 site. We collected three samples on SR-128: at PM 47.62 reported as NR, at PM 47.64 reported to contain 0.75% chrysotile asbestos, and at PM 47.66 reported as NR for asbestos. The sample we collected at PM 47.66 was a split sample analyzed by EMSL and FAI. The IT Report contains results for two samples collected on SR-128 at PM 47.64 and PM 47.71 which were each reported to contain less than 0.25% chrysotile asbestos.

5.4.8 01-474101 (CSC-CT01-214, 215) (SR-128 PM 50.5-50.88) Investigated for TO 138

Geology mapped in the vicinity of the 01-474101 (CSC-CT01-214, 215) site consists of Jurassic-Cretaceous Franciscan Complex mélangé and Jurassic ultramafic rocks. Ultramafic rocks are mapped down slope of this location but were not observed during the site investigation. Geology observed includes fill, slide debris, and sandstone. The observed geology is consistent with that depicted on the Santa Rosa Sheet. Geologic materials likely to contain NOA minerals were not observed at this location. We collected one sample on SR-128 at this location for this TO, which was reported as NR for asbestos. We had previously collected six samples on SR-128 at this location as part of TO 138, which were reported as NR for asbestos. The IT Report contains results for two samples collected on SR-128, at PM 50.51 and PM 50.59, which were reported as NR for asbestos.

5.4.9 CSC-CT01-049, 52, and 165 (SR-253 PM 0.82-0.95)

Geology in the vicinity of the locations for DAFs CSC-CT01-049, CSC-CT01-052 and CSC-CT01-165 is mapped as Jurassic ultramafic rock and Paleocene Coastal Belt Franciscan. Geologic materials observed consist of serpentinite. The observed geology is consistent with that depicted on the Santa Rosa Sheet. Geologic materials likely to contain NOA minerals were observed at the DAF CSC-CT01-049, CSC-CT01-052 and CSC-CT01-165 locations. We collected one sample on SR-253 at PM 0.98, which was reported to contain 5.0% chrysotile asbestos. We collected seven samples less than 0.5 mile west of this location as part of TO 142, five of which were reported to contain NOA. The IT Report contains results for one sample collected on SR-253 at PM 0.99, which was reported to contain less than 0.25% asbestos.

5.4.10 EA 01-43270 (SR-253 PM 1.1-1.3) Investigated for TO 39

Geology mapped in the vicinity of EA 01-43270 includes undifferentiated Jurassic Franciscan Formation, which can include igneous, metamorphic and sedimentary rocks, Jurassic Franciscan volcanic and metavolcanic rocks, and Mesozoic ultrabasic intrusive rocks. Geology observed includes slide debris, greywacke, amphibolite, and serpentinite. The observed geology is consistent with that depicted on the Santa Rosa and Ukiah Sheets. Geologic materials likely to contain NOA minerals were observed at this location. We collected one sample on SR-253 at PM 1.1, which was reported to contain less than 0.25% chrysotile asbestos. We collected ten samples at this location as part of TO 39, two of which were reported to contain NOA at levels of 1.25% and 2.00% by PLM. One sample analyzed as part of TO 39 was reported to contain 4.84% chrysotile asbestos by TEM. The IT Report contains results for two samples collected on SR-253, at PM 1.06 and PM 1.38, which were reported as NR for asbestos.

5.4.11 EA 01-476101 (CSC-CT01-054, 166) (SR-253 PM 1.7-2.3)

Geology in the vicinity of the EA 01-476101 is mapped as undivided Cretaceous marine and Jurassic-Cretaceous Metavolcanics. Ultramafic rocks are mapped approximately 0.75 mile to the southwest. Geology observed includes sandstone, metavolcanics, serpentinite, and slide debris. Serpentinite was observed in the southern portion of EA 01-476101 in the road cut from PM 1.7 to approximate PM 1.83. The observed geology is consistent with that depicted on the Santa Rosa and Ukiah Sheets. Geologic materials likely to contain NOA minerals were observed at this location. We collected three samples on SR-253, at PM 1.80, at PM 1.81, and at PM 2.32 which were reported as NR for asbestos. The sample collected at PM 1.81 was analyzed by PLM and TEM. The IT Report contains results for two samples collected on SR-253, at PM 1.95 and PM 2.41, which were reported as NR for asbestos.

5.4.12 CSC-CT01-055 (SR-253 PM 3.3)

Geology in the vicinity of the CSC-CT01-055 site is mapped as undivided Cretaceous marine rocks. Ultramafic rocks are mapped approximately 3 miles to the northeast. Observed geology consists of sandstone. Ultramafic rocks were observed approximately 1.4 miles to the southwest. The observed geology is consistent with that depicted on the Ukiah Sheet. Geologic materials likely to contain NOA minerals were not observed at this location. We collected one split sample on SR-253 at PM 3.31, which was reported by EMSL and FAI as NR for asbestos. The IT Report contains results for a sample collected at PM 3.30, which was reported as NR for asbestos.

5.4.13 CSC-CT01-050 (SR-253 PM 5.44)

The mapped geology in the vicinity of the CSC-CT01-050 consists of undivided Cretaceous marine rocks. Ultramafic rocks are mapped approximately 2.5 miles southwest of this location. Observed

geology includes alluvial sediments and fill. The observed geology is consistent with that depicted on the Ukiah Sheet. Geologic materials likely to contain NOA minerals were not observed at this location. We collected one sample on SR-253 at PM 5.44, which was reported as NR for asbestos. The IT Report contains results for a sample collected at PM 5.44, which was reported as NR for asbestos.

5.4.14 CSC-CT01-051, 168 (SR-253 PM 7.51, 7.52)

The mapped geology in the vicinity of the CSC-CT01-051 and CSC-CT01-168 consists of undivided Cretaceous marine rocks. Ultramafic rocks are mapped approximately 2.0 miles northeast of these locations. Observed geology consists of sandstone. The observed geology is consistent with that depicted on the Ukiah Sheet. Geologic materials likely to contain NOA minerals were not observed at this location. We collected one sample on SR-253 at PM 7.51, which was reported as NR for asbestos. The IT Report contains results for a sample collected at PM 7.53, which was reported as NR for asbestos.

5.4.15 EA 01-476201 (CSC-CT01-169) (SR-253 PM 7.6 and 7.73)

The mapped geology in the vicinity of the EA 01-46201 consists of undivided Cretaceous marine rocks. Ultramafic rocks are mapped approximately 1.9 miles northeast of this location. Observed geology at the site consists of sandstone. The observed geology is consistent with that depicted on the Ukiah Sheet. Geologic materials likely to contain NOA minerals were not observed at this location. We collected two samples on SR-253, at PM 7.60 and PM 7.73, which were reported as NR for asbestos.

5.4.16 EA 01-476001 (CSC-CT01-170) (SR-253 PM 8.09)

The mapped geology in the vicinity of the EA 01-476001 consists of undivided Cretaceous marine rocks. Ultramafic rocks are mapped approximately 0.6 mile northeast of this location. Observed geology consists of sandstone. Ultramafic rocks were observed approximately 0.21 mile north of this location. The observed geology is consistent with that depicted on the Ukiah Sheet. Geologic materials likely to contain NOA minerals were not observed at this location. We collected two samples on SR-253 at PM 8.09, which were reported as NR for asbestos. The IT Report contains results for a sample collected at PM 8.11, which was reported as NR for asbestos.

5.4.17 EA 01-476001 (CSC-CT01-167) (SR-253 PM 9.21)

The mapped geology in the vicinity of the EA 01-476001 consists of undivided Cretaceous marine rocks. Ultramafic rocks are mapped approximately 0.4 mile east of this location. Observed geology consists of sandstone. Ultramafic rocks were observed approximately 0.1 mile southeast of this location. The observed geology is consistent with that depicted on the Ukiah Sheet. Geologic materials

likely to contain NOA minerals were not observed at this location. We collected one sample on SR-253 at PM 9.2, which was reported as NR for asbestos.

5.4.18 CSC-CT01-056 (SR-253 PM 9.64-9.65)

The mapped geology in the vicinity of the CSC-CT01-056 consists of undivided Cretaceous marine rocks. Ultramafic rocks are mapped approximately 0.2 mile east of this location. Observed geology includes sandstone, shale, conglomerate, serpentinite, and slide debris. Ultramafic rocks were observed at the location as blocks within slide debris and as clasts within the conglomerate. The observed geology is consistent with that depicted on the Santa Rosa and Ukiah Sheets. Geologic materials likely to contain NOA minerals were observed at this location. We collected four samples on SR-253, two each at PM 9.64 and PM 9.65. The samples collected at PM 9.65 were reported to contain chrysotile asbestos at <0.25% to 3.25%. One of the samples we collected at PM 9.65 was a split sample reported to contain 3.25% and 3.0% chrysotile asbestos by EMSL and FAI respectively. The IT Report contains results for a sample collected at PM 9.60, which was reported as NR for asbestos.

5.4.19 EA 01-476001 (CSC-CT01-171) (SR-253 PM 10.8)

The mapped geology in the vicinity of the EA 01-476001 consists of undivided Cretaceous marine rocks. Ultramafic rocks are mapped approximately 0.75 mile southwest of this location. Observed geology consists of sandstone and landslide deposits made primarily of sandstone and chlorite/talc schist. The observed geology is consistent with that depicted on the Santa Rosa and Ukiah Sheets. Talc schist is a geologic material requiring laboratory testing to assess whether it contains regulated amounts of NOA mineral. We collected two samples on SR-253, at PM 10.78 and PM 10.80, which were reported as NR for asbestos. The IT Report contains results for a sample collected at PM 10.68, which was reported as NR for asbestos.

5.4.20 CSC-CT01-053 (SR-253 PM 15.7-15.8)

The mapped geology in the vicinity of CSC-CT01-053 consists of Quaternary alluvium, Quaternary terrace deposits, and undivided Cretaceous marine rocks. Ultramafic rocks are mapped approximately 5 miles southwest of this location. Observed geology consists of Quaternary terrace deposits containing less than 10% ultramafic gravels. The observed geology is consistent with that depicted on the Santa Rosa and Ukiah Sheets. Geologic materials potentially containing trace levels of NOA minerals were observed at this location. We collected one sample on SR-253 at PM 15.7, which was reported as NR for asbestos.

6.0 CONCLUSIONS AND RECOMMENDATIONS

We collected 172 samples for this TO. Thirty-four of the samples we collected were reported by EMSL to contain asbestos by the PLM method, of which 22 were reported to contain asbestos at or above the CARB regulatory action limit of 0.25%, 13 along SR-128 and 9 along SR-253. Four samples analyzed by PLM and TEM were NR by PLM, but were reported to contain asbestos based on TEM. The samples were reported to contain chrysotile asbestos at area percentages ranging from <0.25% to 5.25% by the PLM method and <0.01 to 15.53% asbestos by weight by TEM. The samples reported to contain NOA are located in 21 areas: 14 along SR-128 and 7 along SR-253.

The analytical results for ten samples collected along SR-253 from PM 1.1 to 1.3 for TO No. 39, six samples collected along SR-128 at PMs 50.5 and 50.88 for TO No. 138, and eight samples collected in the vicinity of the SR-253 Anderson Creek Bridge at approximate PM 0.5 for TO No. 142 were used to supplement the results from this survey. Additionally, a total of 178 sample results were presented in the IT Report, which were also used to supplement our survey results.

Based on the 368 samples collected within the highway corridors and analyzed for this TO; for our TO Nos. 39, 138, and 142, and as presented in the IT Report, we have delineated 18 areas within the highway corridors where maintenance and/or construction operations will require compliance with ATCMs 93105 and/or 93106, and MAQMD asbestos dust control requirements including preparation of and implementation of the measures presented in an asbestos dust mitigation plan (ADMP). We have delineated an additional four areas where maintenance and/or construction activities will require compliance with ATCMs 93105 and 93106, and MAQMD asbestos dust control requirements unless a site-specific NOA survey is conducted that demonstrates that materials likely to contain NOA at regulated levels are not present. The 22 areas are described in the Summary of Areas by Post Mile Interval Requiring Site-specific Investigation or Asbestos Dust Control, Table 3, and are highlighted on Figures 2-1 to 2-17.

6.1 Summary of Additional EA and DAF-specific Recommendations

The recommendations pertaining to the additional EAs and DAFs are presented in the following sections and are summarized in Table 1

6.1.1 CSC-CT01-036 (SR-128 PM 0.82)

Asbestos was not reported in samples collected at the CSC-CT01-036 location at or above 0.25% using CARB 435 and PLM. Geologic materials likely to contain NOA minerals were not observed at this location. Therefore, materials excavated at this location can be reused or disposed of without restriction with regards to NOA.

6.1.2 CSC-CT01-160 (SR-128 PM 6.9)

Asbestos was not reported in samples collected at the CSC-CT01-160 location at or above 0.25% using CARB 435 and PLM. Geologic materials likely to contain NOA minerals were not observed. Therefore, materials excavated on this location can be reused or disposed of without restriction with regards to NOA.

6.1.3 CSC-CT01-037 (SR-128 PM 15.9)

Asbestos was not reported in samples collected at the CSC-CT01-037 location at or above 0.25% using CARB 435 and PLM. Geologic materials likely to contain NOA minerals were not observed. Therefore, materials excavated at this location can be reused or disposed of without restriction with regards to NOA.

6.1.4 CSC-CT01-213 (SR-128 PM 31.08)

Asbestos was not reported in samples collected at the CSC-CT01-213 location at or above 0.25% using CARB 435 and PLM. Geologic materials likely to contain NOA minerals were not observed. However, the location is within an area of ultramafic rocks and serpentine was observed in adjacent areas. Construction at this location has the potential to disturb materials containing NOA. The presence of serpentinite in the area requires the implementation of engineering controls to minimize the aerial dispersion of asbestos, as specified in ATCM 93105. However, material generated at this location can be reused onsite without restriction because it contains less than 0.25% asbestos, but is subject to notification procedures if it goes offsite to a non-Caltrans property.

6.1.5 CSC-CT01-038 (SR-128 PM 31.5)

Asbestos was reported in samples collected at the CSC-CT01-038 location at an average of 0.25% based on analysis of the two samples collected at this location. Construction and/or maintenance activities, including material reuse and/or disposal, will require compliance with ATCMs 93105 and 93106, and MAQMD asbestos dust control requirements because of the reported presence of asbestos.

Asbestos was not reported at CSC-CT01-038 at or above 0.25% using CARB 435 and PLM. However, this location is within an area of ultramafic rocks. Construction at this location will likely disturb materials with the potential to contain NOA minerals. The presence of serpentinite in the area requires the implementation of engineering controls to minimize the aerial dispersion of asbestos, as specified in ATCM 93105. However, material generated at this location can be reused onsite without restriction because it contains less than 0.25% asbestos, but is subject to notification procedures if it goes offsite to a non-Caltrans property.

6.1.6 EAs 01-476600 and 01-476601, CSC-CT01-039 (SR-128 PM 34.5-35.1)

Asbestos was not reported in samples collected at the EA 01-476600 and EA 01-476601, CSC-CT01-039 location at or above 0.25% using CARB 435 and PLM. Geologic materials likely to contain NOA minerals were not observed at this location. Therefore, materials excavated at this location can be reused or disposed of without restriction with regards to NOA.

6.1.7 CSC-CT01-161 (SR-128 PM 40.35 and 47.6)

Asbestos was not reported in samples collected at PM 40.35 at or above 0.25% using CARB 435 and PLM. Geologic materials likely to contain NOA minerals were not observed at PM 40.35. Therefore, materials excavated on this location can be reused or disposed of without restriction with regards to NOA.

Asbestos was reported in samples collected at PM 47.6 at an average of less than 0.25% based on the three samples collected at this PM, and ultramafic rocks were observed at PM 47.6. Material generated at this location can be reused onsite without restriction because it contains less than 0.25% asbestos, but is subject to notification procedures if it goes offsite to a non-Caltrans property. However, construction or maintenance activities will require compliance with ATCMs 93105 and 93106, and MAQMD asbestos dust control requirements because of the presence of ultramafic rocks.

6.1.8 01-474101 (CSC-CT01-214, 215) (SR-128 PM 50.5-50.88) Investigated for TO 138

Ultramafic rocks are mapped down slope of this location but were not observed during the field investigation. Geology observed at this location includes fill, slide debris, and sandstone. Asbestos was not reported in samples collected at the 01-474101 (CSC-CT01-214, 215) location at or above 0.25% using CARB 435 and PLM. Geologic materials likely to contain NOA minerals were not observed. Therefore, materials excavated at this location can be reused or disposed of without restriction with regards to NOA.

6.1.9 CSC-CT01-049, 52, and 165 (SR-253 PM 0.82-0.95)

Serpentine was observed on portions of, and within the vicinity of, the locations for DAFs CSC-CT01-049, CSC-CT01-052 and CSC-CT01-165. Asbestos was reported at regulated levels in samples collected at this location. Construction and/or maintenance activities, including material reuse and/or disposal, will require compliance with ATCMs 93105 and 93106, and MAQMD asbestos dust control requirements because of the serpentine observed and the reported presence of asbestos. Materials at this location can not be used for surfacing applications as specified in ATCM 93106. Excess materials removed from this location must contain a warning regarding the asbestos content. Asbestos containing materials may be reused on site as long as they are capped with a minimum of 0.25 ft of material containing < 0.25% asbestos.

6.1.10 EA 01-43270 (SR-253 PM 1.1-1.3) Investigated for TO 39

Serpentine was observed on the EA 01-43279 location. Asbestos was reported at regulated levels in samples collected at this location. Construction and/or maintenance activities at this location, including material reuse and/or disposal, will require compliance with ATCMs 93105 and 93106, and MAQMD asbestos dust control requirements because of the serpentine observed and the reported presence of asbestos.

6.1.11 EA 01-476101 (CSC-CT01-054, 166) (SR-253 PM 1.7-2.3)

Serpentinite was observed in the southern portion of this location in the road cut from PM 1.7 to approximate PM 1.83, but the samples analyzed from this location were not reported to contain asbestos. Material generated at this location can be reused or disposed of without restriction because it contains less than 0.25% asbestos. However, construction or maintenance activities from PM 1.7 to approximate PM 1.83 will require compliance with ATCMs 93105 and 93106, and MAQMD asbestos dust control requirements because of the presence of serpentine rocks.

6.1.12 CSC-CT01-055 (SR-253 PM 3.3)

Asbestos was not reported in samples collected at the CSC-CT01-055 location at or above 0.25% using CARB 435 and PLM. Geologic materials likely to contain NOA minerals were not observed. Therefore, materials excavated at this location can be reused or disposed of without restriction with regards to NOA.

6.1.13 CSC-CT01-050 (SR-253 PM 5.44)

Asbestos was not reported in samples collected at the CSC-CT01-050 location at or above 0.25% using CARB 435 and PLM. Geologic materials likely to contain NOA minerals were not observed. Therefore, materials excavated at this location can be reused or disposed of without restriction with regards to NOA.

6.1.14 CSC-CT01-051, 168 (SR-253 PM 7.51, 7.52)

Asbestos was not reported in samples collected at the CSC-CT01-051 location at or above 0.25% using CARB 435 and PLM. Geologic materials likely to contain NOA minerals were not observed. Therefore, materials excavated at this location can be reused or disposed of without restriction with regards to NOA.

6.1.15 EA 01-476201 (CSC-CT01-169) (SR-253 PM 7.6 & 7.75)

Asbestos was not reported in samples collected at the EA 01-476201 (CSC-CT01-169) location at or above 0.25% using CARB 435 and PLM. Geologic materials likely to contain NOA minerals were not

observed. Therefore, materials excavated at this location can be reused or disposed of without restriction with regards to NOA.

6.1.16 EA 01-476001 (CSC-CT01-170) (SR-253 PM 8.09)

Asbestos was not reported in samples collected at the EA 01-476001 (CSC-CT01-170) location at or above 0.25% using CARB 435 and PLM. Geologic materials likely to contain NOA minerals were not observed. Therefore, materials excavated at this location can be reused or disposed of without restriction with regards to NOA.

6.1.17 EA 01-476001 (CSC-CT01-167) (SR-253 PM 9.21)

Asbestos was not reported in samples collected at the EA 01-476001 (CSC-CT01-167) location at or above 0.25% using CARB 435 and PLM. Geologic materials likely to contain NOA minerals were not observed. Therefore, materials excavated at this location can be reused or disposed of without restriction with regards to NOA.

6.1.18 CSC-CT01-056 (SR-253 PM 9.64-9.65)

Ultramafic rocks were observed at the CSC-CT01-056 as blocks within slide debris and as clasts within the conglomerate. The average asbestos content in the samples from the site is approximately 1.11%. Construction and/or maintenance activities at this location, including material reuse and/or disposal, will require compliance with ATCMs 93105 and 93106, and MAQMD asbestos dust control requirements because of the serpentine observed and the reported presence of asbestos.

6.1.19 EA 01-476001 (CSC-CT01-171) (SR-253 PM 10.78-10.8)

Asbestos was not reported in samples collected at the EA 01-476001 (CSC-CT01-171) location at or above 0.25% using CARB 435 and PLM. Geologic materials likely to contain NOA minerals were not observed. Therefore, materials excavated at this location can be reused or disposed of without restriction with regards to NOA.

6.1.20 CSC-CT01-053 (SR-253 PM 15.7-15.8)

Asbestos was not reported in samples collected at the CSC-CT01-053 location at or above 0.25% using CARB 435 and PLM. Geologic materials likely to contain NOA minerals were not observed. Therefore, materials excavated at this location can be reused or disposed of without restriction with regards to NOA.

6.2 NOA-containing Soil Management

NOA is a State of California regulated substance, and is reported in areas of the highway corridors surveyed at or exceeding the CARB regulatory threshold of 0.25%. Though asbestos was reported to

be present at regulated levels in some areas, the asbestos content does not render the asbestos-containing materials unsuitable for reuse within the Caltrans project boundaries. However, construction/maintenance activities involving these asbestos-containing materials may fall under regulatory jurisdiction of the California Division of the Occupational Safety and Health Administration (Cal-OSHA) under CCR Title 8 Section 5208. Mitigation measures during construction/maintenance activities should be utilized to minimize releases of NOA to air (dust control) and surface waters (stormwater discharge). If reused within the Caltrans right-of-way, the material from areas where asbestos was reported to be present at regulated levels can not be used in such a way as to fall under the definition of surfacing material. NOA-containing material must be covered by at least 0.25 foot of material that does not contain NOA and should ideally be placed in base of the deepest fills.

We recommend that soil excavated from areas delineated on Table 3 be stockpiled and resampled to characterize them with regards to NOA content unless the soil is going to be used onsite as fill, and will be covered by hardscape or at least 3 inches of soil that does not contain asbestos at or above 0.25%. Stockpiled soil that does not contain asbestos at or above 0.25% can be used onsite as cover or disposed of offsite without restriction. Under ATCM 93105, offsite disposal of the material from areas where asbestos was reported to be present at regulated levels requires asbestos content notification. Facility-specific landfill acceptance criteria should be determined for asbestos-containing soil materials.

6.3 Asbestos Risk to Human Health

Currently, regulatory exposure limits and health hazard data are not available for NOA in soils. 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 (NIOSH) as potential occupational carcinogens. Prudence is recommended, therefore, in dealing with soils 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 Title 8 Section 5208 of the CCR, disturbance of asbestos-containing materials requires wet working methods and possible respiratory protection and air monitoring. The CARB has established protocols outlined in Title 17, Section 93105 for the implementation of worker health, safety and monitoring plans for excavation, grading and transport of NOA-containing soils. The excavation contractor should consult Title 17, Section 93105 and contact Cal-OSHA to establish the appropriate regulatory protocol and actions necessary for excavation and/or disturbance of asbestos-containing soils.

7.0 REPORT LIMITATIONS

This report has been prepared exclusively for Caltrans. The information contained herein is only valid as of the date of the report and will require an update to reflect additional information obtained.

This report is not a comprehensive site characterization and should not be construed as such. The findings as presented in this report are predicated on the results of the limited sampling and laboratory testing performed. In addition, the information obtained is not intended to address potential impacts related to sources other than those specified herein. Therefore, the report should be deemed conclusive with respect to only the information obtained. We make no warranty, express or implied, with respect to the content of this report or any subsequent reports, correspondence or consultation. Geocon strived to perform the services summarized herein in accordance with the local standard of care in the geographic region at the time the services were rendered.