

**LETTER OF PERMISSION PROCEDURE (LOP 2015-1) FOR
GRAVEL MINING AND EXCAVATION ACTIVITIES WITHIN
HUMBOLDT COUNTY**

Interested parties are hereby notified that, in accordance with Title 33 CFR 325.2(e), published in the Federal Register, November 13, 1986, the U.S. Army Corps of Engineers, San Francisco District (Corps) has adopted a Letter of Permission (LOP) procedure for the authorization of work described herein.

The purpose of the LOP procedure (LOP 2015-1) is to streamline Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899 authorizations for gravel mining and extraction activities in Humboldt County that do not pose significant adverse individual or cumulative impacts.

The letters of permission (LOPs) to be issued under this procedure will contain special conditions intended to protect the environment and natural and cultural resources. In cases where the District Engineer (DE) considers it necessary, applications will be evaluated for individual permits.

SCOPE OF WORK:

Work authorized by LOP or modification letter under this procedure is limited to discharges of dredged or fill material associated with gravel mining activities in waters of the United States, including navigable waters of the United States, within Humboldt County, California. Activities that may be authorized under this procedure include, but are not limited to, sand and gravel extraction and work associated with these activities, such as temporary storage of gravel in a dry section of the stream, salmonid habitat improvement activities associated with the gravel extraction locations, and construction of road crossings. Impacts to waters of the United States, including wetlands, shall be avoided or minimized through the use of practicable alternatives. Reasonable compensation for unavoidable adverse impacts to waters of the United States will be required. Work that would have unmitigatable adverse impacts on the aquatic environment or would cause a substantial reduction in the extent of waters of the United States will not be authorized by LOP. The activities authorized under LOP 2015-1 shall be part of a single and complete project.

EVALUATION PROCEDURES:

Gravel operations at the locations listed in Appendix F are eligible for authorization under the LOP 2015-1. New applicants should apply for an individual permit for at least two years prior to being included in the LOP 2015-1. Prior to being included in the LOP 2015-1, the Corps will request a tiering letter from the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS), if necessary, before granting an LOP.

All continuing applicants shall submit complete applications, after consulting with the CHERT (County of Humboldt Extraction Review Team), to the Corps and NMFS for review to determine whether the excavation activity qualifies under the LOP 2015-1. CHERT will help identify areas of concern and locations for cross-section monitoring. If the activity qualifies under the LOP 2015-1, it will be granted an LOP for the duration of this procedure, pending annual confirmations by LOP modification letters. Each permittee must also submit annual monitoring data regarding extraction amounts, cross-sectional information, biological monitoring, and aerial photos in the event that extraction occurs on their respective sites.

Each spring, the Corps shall invite the U.S. Environmental Protection Agency (EPA), NMFS, USFWS, California Coastal Commission (CCC), California Department of Fish and Wildlife (CDFW), and the California Regional Water Quality Control Board (RWQCB) to an interagency evaluation and coordination meeting to review new applications and yearly compliance data of previously authorized activities.

Should an agency or member of the public object to continuing an activity under an existing authorization, based on evidence of non-compliance or evidence of more than minimal impacts, the Corps may suspend and/or revoke the existing authorization and require an individual permit unless the permittee can demonstrate compliance with the LOP. The permittee may also be required to reduce the future impacts of its operations to minimal impacts and mitigate for past non-compliance.

The general time line for the LOP 2015-1 is stated below. Biological monitoring dates and requirements are listed in Appendices C & D, respectively.

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| JAN 15 | Mitigation monitoring reports from previous year's extraction due to Corps, NMFS, CDFW, and CHERT. |
| FEB 1 | CHERT annual report that evaluates the past extractions. |
| FEB 28 | Biological monitoring data gathered in November or December submitted to the Corps, NMFS, CDFW, and CHERT. |
| SPRING | Gravel Week: the involved agencies are invited to meet to review permit applications and compliance. No specific date is established for the annual meeting.

Aerial orthographic photos to be taken.

Gravel extraction plans along with CHERT recommendations submitted to the Corps and NMFS at the earliest possible date and reviewed by the Corps in the order received. |
| JUN 1 | Earliest extraction. |

- JUN 30 Earliest construction of temporary channel crossings.
- OCT 1 Gravel stockpiled on river bars must be removed on a daily basis after October 1. Each day thereafter, extraction sites shall be groomed and graded to drain freely at the end of each working day. All channel crossings must be removed.
- OCT 15 Grading must be completed. All gravel extraction ceases on river bars, unless an approved river flow monitoring plan is enacted and a time extension granted.
- NOV 1 Revegetate mitigation areas. Post-extraction aerial photos are delivered to the Corps, CHERT, and NMFS.
- DEC 15 Post-extraction cross section data, volume calculations, aerial photos, brief narratives of extraction activity for the season and biological monitoring data submitted to Corps, NMFS and CHERT, except biological monitoring data gathered in November and December.

TERMS OF LOP 2015-1:

Projects authorized under this procedure are subject to the following terms. The terms on gravel extraction for this procedure have been expanded relative to those in the original LOP 96-1 to reflect new information and concerns. They also require closer coordination between the Corps, NMFS, and CHERT in project review and approval. The Corps has the right to add or modify terms as appropriate. Modifications to excavation procedures may be made to increase fisheries and wildlife habitat with Corps approval.

1. All applicants shall use the CHERT process for annual review and recommendations.

CHERT is a critical part of this LOP procedure. In addition to making recommendations to the operators, CHERT also provides the Corps and NMFS with a summary of its rationale supporting the preferred alternative. Gravel extraction proposals shall include a summary of the rationale supporting how the CHERT recommendation does not increase channel braiding and promotes channel confinement, and does not increase the risk of adult salmonid stranding or decrease riffle and redd stability.

2. Minimum head of bar buffer

The upstream end of the bar (head of bar) shall not be mined or otherwise altered by the proposed action. The minimum head of the bar shall be defined as that portion of the bar that extends from at least the upper third of the bar to the upstream end of the bar that is exposed at summer low flow. Therefore, the upstream one-third portion of the bar as

exposed at summer low flow is provided as the minimum head of bar buffer. The intent of the head of bar buffer is to provide protection of the natural stream flow steering effect provided by an undisturbed bar.

Some alternative extraction techniques, such as longer and much narrower skims adjacent to the low flow channel, have specific geomorphic objectives that may require extraction on a portion of the head of bar buffer. Variances to the minimum head of bar buffer may be considered on a case-by-case basis, if the proposed alternative provides equal or greater protection. NMFS will inform the Corps and CHERT if a proposed variance does not comply with the terms of the Incidental Take Statement. The specific nature of the proposed variance must be described, along with sufficient biological, hydrological, and sediment transport rationale to support the recommended alternative. For example, any modification in the default head-of-bar buffer dimensions should, at a minimum, provide for protection of the adjacent cross-over riffle, by limiting extraction to the area downstream of the riffle. In addition, NMFS may impose special requirements, including additional monitoring on approved variances to the minimum head of bar buffer, to insure there is no take beyond what is allowed in the Incidental Take Statement of the biological opinion.

3. The minimum skim floor elevation shall be at least the water surface elevation of the 35% exceedence flow.

The minimum skim floor elevation shall be the elevation of the water surface at the 35% exceedence flow for each site, on an annual basis. Instructions for determining, marking and reporting the water surface elevation of the 35% exceedence flow are available from NMFS. See the contact information in the Submittals section beginning on page 12.

Additionally, the water surface elevation of the 35% exceedence flow shall be marked on the gravel bar and indicated on the cross section survey data. Reference the “Monitoring Cross-Sections” portion of Appendix C (attached) for more detail.

To aid compliance with these setbacks, the area of extraction shall be clearly flagged, painted, or staked. Excavated material shall be skimmed off the surface. Other methods of excavation, such as trenching, may be approved by the Corps, however, these alternative designs will be discussed with other resource agencies (e.g., NMFS, CDFW) and CHERT prior to submitting the extraction plans in the spring.

4. Temporary channel crossings.

a. *Design and construction:* The location, construction and removal of all temporary channel crossings must be reviewed by CHERT, NMFS and CDFW for conformance with these guidelines and described in the CHERT recommendation. Crossings will be designed and installed to minimize turbidity, biological impacts and geomorphic impacts from bridge construction, bridge use and bridge removal. Factors to consider include habitat quality, channel width, length of available bridges, required bridge width, water

depth and velocity, amount of fine sediment in the native gravel and the availability of washed rock.

- Main channels must be spanned to the maximum length practicable using either a flatcar or bridge span. Filling of secondary channels or tributaries not authorized. Appropriate culverts may be approved for use in secondary channels on a case-by-case basis.
 - Heavy equipment passes across the wetted channel during temporary channel crossing construction and removal will be kept to an absolute minimum and described in the CHERT recommendation. Heavy equipment passes shall be limited to two passes per bridge construction and two passes per removal.
 - Native gravel can be used for bridge approaches and abutments if the bridge will completely span the wetted channel, and the abutment materials are removed and regraded onto approved sites upon bridge removal.
 - Use of brow logs, concrete blocks, concrete K-rails or other suitable materials shall be used in abutments to minimize the amount of sediment required for abutments or approach ramps.
 - If encroachment into the low flow channel is necessary to span the wetted channel, then approach ramps shall be constructed using techniques that will reduce the input of fine sediment into the channel. These techniques could include a base of washed rock or cobbles on the access side of the stream. The base shall extend from the bed of the stream to six inches above the water surface at construction time. This base can be topped with native gravel. Alternatively, if washed rock is not readily available, native gravel used in wetted approaches and abutments may be lined with filter fabric and surrounded with K-rails. Other methods that would provide equal or superior protection from turbidity impacts may be suggested by the operator and presented for review and recommendation by CHERT, CDFW and NMFS. Other methods may be approved if they meet the objective of minimizing sediment delivery to the low-flow channel.
 - Upon bridge and or secondary channel crossings removal, the original channel configuration shall be restored to the fullest extent feasible prior to seasonal high flow inundation.
- b. *Timing:* Temporary crossings shall be placed after June 30 only. All crossings and associated fills must be removed after excavation ceases, but prior to October 1. The Corps shall provide NMFS a copy of any request for a time extension for bridge construction or removal for its review before the time extension may be authorized by the Corps, due to the sensitivity of working directly within the wetted channel. It is not expected that extensions will be granted if California Coastal Chinook (CC Chinook) salmon adults have entered the extraction reach.

c. *Location:* Bridge locations shall avoid known spawning areas. The middle of riffles may provide the best location for temporary crossings since the bridge may be able to span the entire wetted channel. Where bridges are not able to span the entire wetted channel, the crossing location shall be determined on a site-specific basis. The proposed location, and rationale used to determine how the crossing location minimizes effects to salmonids, shall be included in the CHERT recommendation. Haul roads shall follow the shortest route possible while avoiding sensitive areas such as riparian vegetation. If excessive compaction is identified, the roads shall be scarified after extraction is complete.

5. Storage and stockpiles

Temporary storage of excavated material may occur on the gravel bar, but must be removed by October 1. Temporary stockpiling of gravel on bars that are on rivers listed under the Wild and Scenic Rivers Act (see Appendix B) may occur during the active work week, Monday through Friday, but must be removed before Saturday of each weekend.

In order to minimize the turbidity associated with excavating wet sediment, all wet excavated sediment must be stockpiled on the gravel bar away from the low flow channel and allowed to drain prior to hauling across the temporary channel crossing.

6. Vegetation and wetlands

All native riparian woody vegetation and wetlands must be avoided to the maximum extent possible. Any native riparian vegetation or wetland that is to be disturbed must be clearly identified by mapping. Native woody vegetation that is part of a contiguous 1/8-acre complex or is at least 2 inches diameter at breast height (dbh) that is disturbed must be mitigated. Impacts to other woody vegetation must be described and submitted to the Corps, CDFW, and CHERT with the gravel extraction plans. These impacts may require mitigation at the discretion of the Corps. Impacted areas that must be mapped consist of riparian vegetation that have driplines within 25 feet of excavation activities (excavation, stockpiling, parking, etc.) or wetlands, which are filled, excavated or drained. Mitigation for impacts to woody vegetation shall not be required for pre-existing haul roads, stockpile areas and facilities (see discussion under Required Mitigation). Woody invasive plant species removal may be conducted.

7. Structure setbacks

Gravel removal must remain a minimum distance of 500 feet from any structure (i.e. bridge, water intake, dam, etc.) in the river. For bridges, the minimum setback distance is the length of the bridge or 500 feet, whichever is greater. Gravel removal may encroach within this setback if written approval is given by owners of these structures and approved by the Corps. A copy of written approvals shall be provided to the Corps.

8. Regrading

The project area must be regraded, if necessary, before the water levels rise in the rainy season. Grading must be completed by October 15 each year or by the end of an approved time extension. Regrading includes filling in depressions, grading the construction/excavation site according to the approved configuration, leaving the area in a free-draining configuration (no depressions and sloping toward the low flow channel), and removing all temporary fills from the project area. Regrading may not be necessary if extraction operations leave the extraction area free of depressions and temporary fills and meet the approved mining configuration.

9. Timing of extraction

Unless the operator's LOP is specifically modified, gravel extraction shall cease by October 15 each year. Regrading, if necessary, shall be completed prior to October 15 each year. Requests for a time extension will be reviewed on a case-by-case basis. The applicant, however, must have regraded the site before an extension can be authorized. Requests for an extension must include an approved CDFW Lake or Streambed Alteration Agreement (LSAA) time extension. The Corps will coordinate with CHERT and NMFS before a decision is made on the time extension. Also note water crossing timing terms described above.

10. Wild and Scenic Rivers

Sections of the Eel, Klamath, Trinity, and Van Duzen rivers in Humboldt County are designated recreational and scenic. For a list of these recreational and scenic river sections see Appendix B. Temporary stockpiling of gravel on bars that are on rivers listed under the Wild and Scenic Rivers Act (see Appendix B) may occur during the active work week, Monday through Friday, but must be removed before Saturday of each weekend.

11. Endangered Species

All applicants shall submit, as part of the application, a written assessment by a qualified biologist describing the potential effects of the project on federally threatened, endangered, or proposed species under the Endangered Species Act. This assessment shall include, at a minimum, an account of habitat suitability within a 0.25 mile radius of the project site, and pertinent sighting information from available sources including, but not limited to, wildlife sighting databases maintained by CDFW and USFWS.

There is a potential for gravel operations on the lower Eel River to affect, but not likely adversely affect western Yellow-billed Cuckoo and designated critical habitat. Appendix E contains requirements necessary to assure the extraction activities (including pre-season surveys) are not likely to adversely affect the western Yellow-billed Cuckoo.

There is a potential for gravel operations downstream of the confluence of the Eel River and the Van Duzen River to adversely affect the western snowy plover. Appendix E contains requirements necessary to assure the extraction activities (including pre-season surveys) are not likely to adversely affect the western snowy plover.

Appendix E contains the Incidental Take Statement from the Biological Opinion from USFWS, dated September 3, 2015. The reasonable and prudent measures section and terms and conditions of the Biological Conditions contain restrictions which are mandatory conditions of the LOP 2015-1.

There is a potential for operations anywhere in the rivers and streams of Humboldt County to adversely affect SONCC coho salmon, CC Chinook salmon and NC steelhead, which are Federally-listed threatened Evolutional Significant Units (species). Appendix M contains the Incidental Take Statement from the Biological Opinion from NMFS, dated August 27, 2015. The reasonable and prudent measures section and terms and conditions of the Biological Conditions contain restrictions which are mandatory conditions of the LOP 2015-1.

12. Habitat Enhancement and Protection

The actions authorized by this LOP are expected to include certain activities at gravel extraction sites, during extraction seasons, that will enhance habitat for salmonids and other riverine species. The specific details of such habitat enhancement activities shall be determined during, and follow, the same multiagency pre-extraction design review process that is used for gravel extraction operations. Many of the habitat enhancement activities shall be consistent in scope, size and cost impact as restoration activities that have occurred in the past under LOP 2009-1. These activities included, but were not limited to, trenching designed to improve salmon migration, alcove construction, placement of edge water large woody debris, and construction of wetland pits to improve aquatic and riparian habitat. Some habitat enhancement activities will be new to this LOP, including, but not limited to, riparian planting and strategic placement of large wood and boulders in the stream. Please see Appendix A and the appendices specific to the river reaches for typical habitat improvement activities.

Large woody debris (LWD) in the wetted channel and on floodplains and terraces is an important component of aquatic and riparian habitat. However, it is common practice for LWD to be gathered by local residents for firewood and other uses. To reduce the adverse effects of this longstanding practice LWD that is left on gravel bars in an extraction area be covered with gravel to deter poaching and educational signage noting the importance of LWD for salmonids shall be placed at access roads owned, controlled, or utilized by the gravel operators. In addition, in order to protect LWD deposited on mined gravel bars, all access roads owned or controlled by commercial gravel operators shall be gated and locked to reduce access; the County shall be exempt from this requirement. Operators should consult with NMFS for suggestions on the wording and design of signs.

13. General Conditions

1. The Department of the Army relies in part on the information provided by the permittee. If, subsequent to issuing this permit, such information proves to be false, incomplete, or inaccurate, this permit may be modified, suspended, or revoked, in whole or in part.
2. Permittees whose projects are authorized by this procedure shall comply with all terms and conditions herein. Failure to abide by such conditions invalidates the authorization and may result in a violation of the law, requiring restoration of the site or other remedial action.
3. An LOP should not be considered as an approval of the design features of any authorized project or an implication that such is considered adequate for the purpose intended. A Department of the Army permit merely expresses the consent of the Federal Government to the proposed work insofar as public rights are concerned. This permit does not authorize any damage to private property, invasion of private rights, or any infringement of federal, state or local laws or regulations. Nor does it relieve the permittee from the requirement to obtain a local permit from the jurisdiction within which the project is located and to address all non-encroachment restrictions within a floodway of such local jurisdiction as identified by the Federal Emergency Management Agency.
4. This LOP procedure may be modified or suspended in whole or in part if it is determined that the individual or cumulative impacts of work that would be authorized using this procedure are contrary to the public interest. The authorization for individual projects may also be summarily modified, suspended, or revoked, in whole or in part, upon a finding by the District Engineer that immediate suspension of the project would be in the public interest.
5. Any modification, suspension or revocation of the District Engineer's authorization shall not be the basis for any claim for damages against the United States.
6. This permit does not authorize the interference with any existing or proposed Federal project, and the permittee shall not be entitled to compensation for damage or injury to the structures or activities authorized herein which may result from existing or future operations undertaken by the United States in the public interest.
7. No attempt shall be made by the permittee to prevent the full and free public use of all navigable waters of the United States, at or adjacent to the project authorized herein.
8. There shall be no unreasonable interference with navigation by the existence or use of the permanent and temporary structures authorized herein.

9. The permittee shall make every reasonable effort to conduct the activities authorized herein in a manner that will minimize any adverse impact of the work on water quality, fish and wildlife, and the natural environment, including adverse impacts to migratory waterfowl breeding areas, spawning areas, and riparian areas.
10. The permittee shall allow the District Engineer and his authorized representative(s) to make periodic inspections at any time deemed necessary to assure that the activity being performed under this authorization is in accordance with the terms and conditions prescribed herein.
11. The impact of activities authorized by LOP using this procedure on cultural resources listed, or eligible for listing, in the National Register of Historic Places (NRHP), shall be taken into account by the U.S. Army Corps of Engineers (Corps) prior to the initiation of work. If previously unknown cultural resources are encountered during work authorized by this permit, the San Francisco District shall be notified and the sites avoided until the Corps can assess their eligibility for listing in the NRHP. Sites determined to be eligible for listing in the NRHP shall require consultation between the Corps and the State Historic Preservation Office and/or the Advisory Council on Historic Places. Cultural resources include prehistoric and historic archeological sites, and areas or structures of cultural interest which occur in the permit area.
12. All temporary fills within waters of the U.S. shall be removed in their entirety.
13. All extraction activities in the vicinity of federal projects shall be coordinated for required setback distances with the Corps office prior to granting a permit.
14. Heavy equipment working in wetlands shall be placed on mats, or other measures shall be taken to minimize disturbances to soil.
15. No authorization will be granted under this LOP procedure for any activity that is likely to jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Endangered Species Act, or that is likely to destroy or adversely modify the critical habitat of such species. Permittees shall notify the District Engineer if any listed species, proposed species or critical habitat might be affected by, or is in the vicinity of, the project, and shall not begin work until notified by the District Engineer that the requirements of the Endangered Species Act have been satisfied and that the activity is authorized.
16. The project shall not significantly disrupt the movement of those species of aquatic life indigenous to the water body or those species that normally migrate through the project area.

14. Special Conditions

Additional special conditions may be added to individual LOPs on a case-by-case basis to minimize adverse impacts to the aquatic ecosystem and to the scenic and recreational values of the river reaches listed in the Wild and Scenic Rivers Act. Modifications to excavation procedures may be made to increase fisheries and wildlife habitat with Corps approval.

In addition to terms discussed above, projects authorized by LOP are subject to the general conditions contained in Appendix A and any special conditions that may be added.

AUTHORIZATIONS FROM OTHER AGENCIES:

The permittee is responsible for obtaining any and all additional federal, state, tribal, or local permits that may be required, which include, but are not limited to:

1. **STATE WATER QUALITY CERTIFICATION:** In order for an operator's LOP to be valid, he/she must obtain a water quality certification pursuant to Section 401 of the Clean Water Act from the North Coast Regional Water Quality Control Board (RWQCB). For operations within the boundaries of a federally recognized Indian Reservation, see #5 below.

The state of California has adopted general National Pollution Discharge Elimination System (NPDES) permits to cover those mining activities which must obtain permits to discharge stormwater associated with industrial activity - as defined in 40 CFR Section 122.26(b)(14). For information about NPDES requirements, applicants can contact the RWQCB, North Coast Region, at 5550 Skylane Boulevard, Suite A, Santa Rosa, California 95403.

2. When an entity substantially changes or uses any material from the bed, channel or bank or any river, stream or lake such as sand and gravel, the permittee must obtain a Lake or Streambed Alteration Agreement (LSAA) from the CDFW (Fish and Game Code Section 1602), except as a general rule when project proponent is a federally recognized tribal entity (see #5 below). The permittee can contact CDFW at California Department of Fish and Wildlife, 619 Second Street, Eureka, California 95501.

3. All gravel and mining operations must either be permitted by or exempted by the California Department of Conservation Division of Mines and Geology's Lead Agency (Lead Agency), except for work within the boundaries of a Federally recognized Indian Reservation (see #5 below). The Lead Agency for Humboldt County is: Humboldt County Department of Community Services, 3015 H Street, Eureka, California 95501. Failure to provide proof of a conditional use permit, vested rights or exemption letter will preclude use of the LOP 2015-1.

4. Sand and gravel extraction and other development activities located within the Coastal Zone may require a Coastal Development Permit and a Coastal Zone Management Act Consistency Concurrence from either the California Coastal Commission (CCC) located at 45 Fremont Street, Suite 2000, San Francisco, California 94105-2219, or the County of Humboldt Planning and Building Department located at 3015 H Street, Eureka, California 95501.
5. Activities within the boundaries of a federally recognized Indian Reservation need to obtain a water quality certification from the U.S. Environmental Protection Agency (EPA) or from the Indian Reservation (if it is authorized by the EPA to grant water quality certifications). In addition, there may be other permits required by the Indian Reservation that are not listed here. The applicant shall contact the appropriate Indian Reservation for more information.
6. Activities that occur below the mean high water mark on tidal waterways and below the ordinary high water mark on non-tidal waterways may have to obtain easements from or pay fees to the California State Lands Commission (SLC). The SLC can be contacted at 100 Howe Avenue, Suite 100 South, Sacramento, California 95825-8202, or reached at (916) 574-1800.
7. U.S. Coast Guard (USCG) is the Federal agency with permitting authority and regulatory jurisdiction for bridges, pursuant to the General Bridge Act. The USCG will provide the applicant with a USCG jurisdictional determination and directions for additional bridge permitting issues, if any. The USCG can be contacted at Commander, Eleventh Coast Guard District, Bridge Section, Bldg. 50-3, Coast Guard Island, Alameda, CA, 94501-5100, or by telephone at (510) 437-3514.

APPLICATION PROCEDURES:

All new projects (see “Terms of LOP 2015-1” on page 3) must submit a notice of intent to mine gravel to the Corps, Eureka Field Office, by February 1 of that year. Before mining, a pre-extraction report (mining proposal) must be submitted that contains the information described below. Following completion of extraction, a post-extraction report must be submitted (also described below). Copies of all pre- and post-extraction information, including cross sections, aerial photos, and other information shall be provided to the Corps, NMFS, and CHERT at about the same time. Once the pre-extraction report has been submitted, a site review will be scheduled for all Class A operations. A mutually agreeable date shall be scheduled between CHERT, the Corps and NMFS for site reviews, or a five working day notice of when the site review is scheduled to occur shall be provided to NMFS.

At the discretion of the operator, a preliminary site review may be requested to discuss preferred mining alternatives before a pre-extraction report is prepared. This can often save costs of unnecessary surveying and plan preparation, as well as time, by narrowing the scope of mining design alternatives to one that is likely to meet the requirements set

forth herein. Should operators desire a preliminary review, a mutually agreeable date shall be scheduled between CHERT, the Corps and NMFS for site reviews, or a five working day notice of when the site review is scheduled to occur shall be provided to NMFS.

In all cases an application for authorization of work under LOP 2015-1 must include a written description of the project, proposed work schedule, the address and telephone number of a point of contact who can be reached during working hours, an 8.5 by 11 inch vicinity map, and an 8.5 by 11 inch site or location map showing all the boundaries of all proposed work (maps and figures can also be on 11 by 17 inch paper). The information may be submitted on an Application for Department of the Army Permit form (ENG Form 4345) or in any other form which will clearly supply the information in a concise manner. In general, projects that remove more than 250,000 cubic yards per year will not be considered eligible for authorization under this procedure. Projects will also be considered in relation to other extraction operations.

Project submittal must include a description of the project and at least the following information, unless modified by the Corps, on a yearly basis if gravel is to be extracted. If the year is succeeding an extraction year then monitoring cross-sections must also be completed and submitted:

I. A pre-extraction report shall be submitted to the Corps, CHERT, CDFW and NMFS at least two weeks prior to excavation. Pre-extraction reports shall include:

A. Cross-section Surveys: Monitoring and Extraction cross-section surveys shall be prepared according to Appendix C (attached), unless modified by CHERT and approved by the Corps and NMFS. Each year an extraction is planned spring surveys shall be submitted to CHERT for review (monitoring cross-sections only if no planned extraction for that year, but extraction occurred the prior year). Applicants shall submit gravel extraction plans meeting CHERT recommendations to the Corps for approval prior to commencing gravel extraction operations;

B. A Lake or Streambed Alteration Agreement (LSAA) and extension to the LSAA signed by CDFW, or a Riparian Protection and Surface Mining Permit signed by a Federally recognized Indian Reservation. Permits may be obtained concurrently with the Corps permit;

C. A pre-extraction vertical aerial photo of the location. Photos shall be taken the spring of each year and shall include the entire project reach (extraction zone reach of the project site and immediate upstream and downstream reaches within one half length of the extraction zone reach of the project, as measured along the thalweg (the bottom of the low-flow channel). Pre-extraction photos must be vertical photos at a scale of 1:6000 and shall illustrate proposed extraction activities as described in Appendix C;

D. A mitigation report containing the mapped areas that are impacted (riparian vegetation and wetlands) and the mitigation proposed to minimize these impacts;

E. For new projects, the applicant must submit to the Corps and the consulting regulatory agencies participating in the spring meetings, by February 1 of the initial gravel mining year, copies of the environmental documentation required by the Lead Agency when requesting a conditional use permit, vested right or exemption. The Corps may also require additional information.

II. A post-extraction report shall be submitted to the Corps, CHERT, and NMFS by December 15 of each year. Post-extraction reports shall include:

A. A post-extraction survey, which shall be conducted following cessation of extraction and before alteration of the extraction area by flow following fall rains, preferably before October 15. Post-extraction reports shall include the amount and dimensions of material excavated from each area mined and a written summary of extraction activities. See Appendix C for post-extraction requirements;

B. Vertical aerial photo coverage of the project reach. Photo coverage shall be taken in the low-flow periods and be at a scale no larger than 1:6000. Photos shall be taken from a fixed or vertical oriented (i.e. belly-mounted) camera. Stereoscopic photo coverage shall be taken in late September or early (first week) October;

C. The results of required biological monitoring information, as described in Appendix D (attached), are due by December 15 each year extraction occur and by February 28 for data gathered in November and December.

REQUIRED MITIGATION:

Each permittee shall mitigate impacts to wetlands and riparian zones in the following manner: avoidance of the impact, minimization of the impact, rectifying the impact, reducing or eliminating the impact over time, and finally compensating for impacts. For all unavoidable impacts, a mitigation plan shall be submitted with applications for all projects that will adversely affect wetlands and riparian vegetation. Mitigation must consider the area, age and type of the vegetation removed or adversely impacted. All vegetative mitigation must be planted between November 1 and February 28 of the year following excavation and must have an approved survival rate over three growing seasons. Failure to obtain a three-year survival rate shall require replanting. Annual reports depicting the survival of vegetation shall be due by December 31 each year for three growing seasons after planting year.

SITE VISITS:

Site visits will be conducted before and after gravel extraction operations at all locations. Additional site visits can be made upon request by the operator or when otherwise deemed necessary by the Corps, NMFS, CHERT, or other participating agencies. Pre-extraction visits will be done as part of the review and approval process. Post-extraction visits will be as soon as possible following completion of operations **and** prior to site inundation by rising river stages in the fall. To help ensure this occurs in a timely manner, project owners must notify the Corps, NMFS, CDFW and CHERT by email, phone, or fax within two business days of project completion. The Corps will provide an operational checklist (please see the sample operational checklist form at Appendix N) to the operator outlining the habitat improvement goals for the specific river reach, and the procedures that occur during the extraction season.

SUBMITTALS:

Project submittals (pre-extraction and post-extraction) should be mailed to the following agency representatives (note that you may also be required to mail submittals to other agencies, such as Humboldt County, CDFG, CCC, SLC, USFWS, etc.):

U.S. Army Corps of Engineers
Regulatory Branch, Eureka Field Office
601 Startare Drive, Slip 14,
Eureka, California 95501
Attention: Ms. Cameron Purchio

National Marine Fisheries Service
Arcata Field Office
1655 Heindon Road
Arcata, CA 95521
Attention: Mr. Matt Goldsworthy

Mr. Randy Klein, CHERT
1360 Stromberg Ave.
Arcata, CA 95521

If you have any questions you can telephone the Corps's San Francisco Office at (415) 503-6775 or send an email to: James.C.Mazza@usace.army.mil.

Work may not proceed until the District Engineer has issued an LOP authorization letter. For projects which have obtained the LOP, the activity may not begin each year until a confirmation letter (Letter of Modification, or MOD) has been issued by the Corps. The Corps will attach the NMFS Incidental Take Statement (ITS) to all LOPs issued under this procedure to aid in compliance with terms and conditions by the applicants.

It is the applicant's responsibility to insure that the authorized project meets the terms and conditions set forth herein. Failure to abide by them will constitute a violation of the Clean Water Act and/or the Rivers and Harbors Act of 1899.

The Corps is responsible for determining compliance with the LOP 2015-1. The Corps may take actions to rectify projects that are not in compliance. These actions may include, but are not limited to, the following:


- A. Permit revocation.
- B. Permit suspension.
- C. Project and habitat site restoration.
- D. Reduction of authorized gravel extraction amounts per year.

No authorization will be granted under a LOP for any excavation or grading that is for the primary purpose of river engineering, channel or river capture, channel realignment or for a project that is likely to result in the above, unless approved by the Corps. Projects outside the scope of this LOP 2015-1 will be considered for authorization by individual permit.

This permit shall become effective on the date of the signature of the District Engineer, or his authorized representative, and will automatically expire on **December 31, 2024**, unless the permit is modified, revoked, or extended before that date. Activities authorized under this permit that have commenced (i.e. are under operation), or are under contract to commence in reliance on this permit, will remain authorized provided the activity is completed within twelve months of the expiration, modification, or revocation of the permit, unless discretionary authority has been exercised by the Corps on a case-by-case basis to modify, suspend, or revoke the authorization. Prior to expiration, a public notice seeking public comment will be reissued within ten years from the date of signature of this procedure. The public notice will supply a summary of past actions and may also seek reauthorization of this LOP procedure.

BY AUTHORITY OF THE SECRETARY OF THE ARMY:
FOR THE DISTRICT ENGINEER:

18 Sep 2015
Date



John C. Morrow
Lieutenant Colonel, US Army
District Engineer

APPENDIX A
Salmon Habitat Improvement Activities

The actions authorized by this LOP are expected to include certain activities at project areas, during extraction seasons, that will enhance habitat for salmonids and other riverine species. The specific details of such habitat enhancement activities shall be determined during, and follow, the same multiagency pre-extraction design review process that is used for gravel extraction operations. Many of the habitat enhancement activities shall be consistent in scope, size and cost impact as restoration activities that have occurred in the past under LOP 2009-1. These activities included, but were not limited to, trenching designed to improve salmon migration, alcove construction, placement of edge water large woody debris, and construction of wetland pits to improve aquatic and riparian habitat. Some habitat enhancement activities will be new to this LOP, including, but not limited to, riparian planting and strategic placement of large wood and boulders in the stream. More typical enhancement activities include restricted vehicular access, fish trenches, and alcove or wetland creation.

APPENDIX B
Humboldt County's
CALIFORNIA 2a(ii) Wild and Scenic River
River Descriptions/Agency Responsibility

River	Segments	Mileage	Agency	Designation
Eel	NF-Soldier Basin to Forest Boundary(FB)	15	USFS(SRNF)	Recreational
	NF-FB to confluence w/ Mainstem (includes Round Valley Indian Reservation lands)	16	NPS	Recreational
	MF-Headwaters to FB(Confluence with Black Butte Ck and MF Eel.)	18	USFS(MNF)	Recreational
	Main Stem-(legal description) to southern BLM boundary	13 +/-	NPS	Recreational
	Main Stem-South BLM boundary to confluence w/ Outlet Creek	13	BLM	Recreational
	Main Stem-Confluence of Outlet Creek to Mouth	?	NPS	Recreational
	SF-Headwaters (Section 4 Ck) to Confluence w/ Rattlesnake Ck adjacent to Hwy 101 (Leggett)	17	BLM	Recreational
	SF-Confluence w/ Rattlesnake Ck to Main Stem	50	NPS	Recreational
Van Duzen	Powerline above Little Larabee Ck to confluence with Eel.	?	NPS	Recreational
	Dinsmore bridge to powerline crossing above Little Larabee Ck.	?	NPS	Scenic

Trinity	Mainstem- Lewiston Lake to FB/ confluence with NF Trinity R.	17	BLM	Recreation
	Mainstem – East FB to W. FB (Shasta Trinity NF)	33.2	USFS (STNF)	Recreation
	Mainstem –East FB to W FB (6 Rivers)	15	USFS (SRNF)	Recreation
	Mainstem – FB, Crossing Yurok land to Hoopa Indian land	1	NPS	Scenic
	Mainstem- Hoopa Indian land to confluence w/ Klamath R.	2	NPS	Scenic
	New River –Headwaters to confluence w/ mainstem Trinity R.	21	USFS (STNF)	Recreation
	SF – Hum. Co. line to Todd Ranch in Sec 18, T5N	?	USFS (SRNF)	Wild
	SF- Todd Ranch to confluence w/ mainstem Trinity R.	?	USFS (SRNF)	Scenic
	NF Trinity- Headwaters to Mainstem	15	USFS (STNF)	Recreation

SRNF = Six Rivers Nat. Forest ; STNF = Shasta Trinity; ? = uncertain River Mile;
NF= North Fork; FB= Forest (USFS) Boundary; SF= South Fork; MF=Middle Fork

*Please note that the above table only documents the presence of and classification of W&S rivers in Humboldt County and does not identify gravel extraction locations on the W&S rivers. In emails dated September 3, 2015 and September 11, 2015, Mr. Stephen Bowes of the National Park Service (NPS) and Ms. Julia Everta of the Six Rivers National Forest (USFS), respectively, completed the consistency determinations under the W&S Rivers Act concerning gravel extraction under the LOP 2015-1. The agencies did not provide any additional conditions on the LOP 2015-1 aside from recommending the Corps should comply with the requirements provided in the NMFS' incidental take statement of the NMFS 2015 BO. The NPS and USFS believe that the LOP 2015-1 will not have a direct and adverse effect on the outstandingly remarkable values for which the rivers were designated if there is compliance with the NMFS 2015 BO.

APPENDIX C MONITORING AND SUBMITTAL PREPARATION GUIDELINES

Ground surveys and aerial photography provide the primary basis for physical monitoring of extraction areas. They are also essential for project planning, proposal preparation, field reviews, project modification, and compliance verification. Although technological advancements in recent years have lowered the costs and increased the accuracy of digital terrain modeling (DTM), the more conventional cross section surveys are still in common use by Humboldt County's mining industry. Consequently, the guidelines below focus on conventional cross section surveys. However, use of DTM-based monitoring information is encouraged and should provide much of the same information (e.g., elevations of the water surface, top of silt band, etc.) discussed below.

The physical monitoring program relies on two types of cross sectional measurements: Monitoring Cross Sections and Extraction Zone Cross Sections. *Monitoring cross-sections* are permanent, monumented cross sections whose purpose is to document yearly and long-term changes in river channel elevation and morphology at extraction sites and adjacent reaches. They also aid in extraction planning, field reviews, and, in some cases, estimation of volumes extracted. *Extraction zone cross-sections* (both pre- and post-extraction) are temporary, seasonal cross-sections used for the planning of an extraction, for estimation of the actual volume extracted, and for evaluating compliance with approved gravel extraction plans.

Monitoring Cross-Sections

Monitoring cross-sections shall be measured the year-of, and once during the year following any mining activity. For example, if extraction is planned to take place in 2015, then monitoring cross-sections are required for 2015 and 2016. Monitoring cross sections are required at least once every 5-years for all bars, whether they are mined or not. Most monitoring cross-sections have already been established in previous years. Requirements for establishment of monitoring cross-sections are discussed in the *Establishing Monitoring Cross Sections* section below.

Requirements for Monitoring Cross-Sections

1. All survey data must be referenced to State Plane (FIPS 0401) coordinate system, and the 1983 North American Datum (NAD) and 1988 North American Vertical Datum (NAVD88). Cross-sections must be resurveyed from the same endpoints each year. The endpoints should be located at or above the 100-year flood water surface elevation unless another flood level is agreed upon by agencies and CHERT and far enough from the river's edge to remain consistent from year to year.
2. Previous years topography that clearly has not changed over the year may be used in the upper elevations of the cross section but the current year's survey must include those portions of each cross-section inundated or affected by the previous winter's highest flow. Plots must include accurate representations of all ground topography between endpoints and clearly label where older (previous survey) data are used. This is included as a cost saving measure for areas where it is clear that no scour or deposition has occurred since the previous survey.
3. If flow conditions make below-water portions of the cross section unsafe to survey prior to the site visit, those sections may be completed as soon as flow conditions allow and must be included in the final monitoring submittal for the year.
4. Maximum distance between any two elevation points along a cross-section shall be 50 feet, including the wetted channel portion. Exception: if ground

outside wetted channel is essentially smooth and rises less than 0.5 feet for a distance of 100-feet, distance between points can be increased to 100 feet. All obvious breaks in slope must still be included in order to collect accurate topography that is representative of site conditions.

5. All gravel bars must have monitoring cross sections re-surveyed at a minimum of every 5-years.
6. During years in which gravel extraction is planned, stake or spray paint (using non-toxic paint) the following points on the ground in each cross-section at time of survey:
 - a. Water's edge on at least one side of the river; or both sides of the river if it is feasible. If this is not practicable, stake at 10 feet offset from water's edge. Position the stake to be included in the survey.
 - b. The water surface near the 35% exceedence level along the main channel and along overflow channels containing the 35% flow. The actual 35% flow elevation should be calculated using the data sheets provided at the time of extraction design. See Table 1 for a list of flows at the 35% level.
 - c. Top of the silt band if visible.
7. Where discernible, the elevation and position of high-water marks for previous winter's flow (floodmarks, debris lines, swept or raked vegetation, etc) should be identified on the cross-sections.
8. Water discharge at time of survey (from nearest USGS gage) to be shown in legend.
9. Re-survey all monitoring cross-sections which overlap an extraction area immediately following extraction, before flows or rain affect the zone. Only resurvey through those portions of the cross-section altered by extraction, temporary stockpiles, road construction, or other types of ground disturbance. See Figure 1.
10. Cross-section plots and worksheets should denote the position and elevation (to the nearest 0.1 foot) of the following points:
 - a. End points.
 - b. The top of the silt band adjacent to the low flow channel, if visible.
 - c. The corrected 35% flow exceedence water surface elevation (during years planned for extraction).
 - d. Existing Water surface elevation at time of survey.
 - e. Edge of woody or riparian vegetation stands.
 - f. Any other features useful for field orientation and review.
11. Cross-sections at all sites shall be plotted at the same vertical and horizontal scales (Horizontal 1-inch = 100-feet; Vertical 1-inch = 10-feet).

12. Cross-section plots shall be cut and stacked so that whole cross-sections can be placed on one page and be consistently presented each year.
13. Cross-sections shall be surveyed and drafted consistently so that the right bank (RB) of the river as you face downstream is at the right side of the drafted cross-section. Zero (0) distance in cross-sections shall be at the left bank (LB) endpoint as you face downstream.
14. Cross sections shall be plotted on gridded paper, where the grid logically corresponds to the scale at which the cross-section is plotted. We suggest a grid of 10 squares to the inch. Grid shall be visible in the reproduced paper copies provided to the agencies.
15. Cross sections shall have clearly labeled vertical and horizontal axes. Each cross section should have its own horizontal axis to facilitate measurement of distances (rather than a single set of axis labels at bottom of page). Each cross-section should have its origin on a heavy grid line.
16. Any endpoints lost due to changes to the bank shall be clearly noted along with the length and direction of change(s) on the cross section plots.

Establishing Monitoring Cross-Sections

1. Cross Section endpoints and benchmarks shall be established in accordance with the following specifications:
 - a. The endpoints should be located at or above the 100-year flood water surface elevation unless another flood level is agreed upon by agencies and CHERT.
 - b. Clearly monumented and labeled in the field and accurately located on current air photos and maps. A common color of flagging, or environmentally benign painting shall be used to mark cross-sections at all sites.
2. Cross-sections shall be oriented perpendicular to a hypothetical center line for the 'frequently scoured' river channel, and delineating the zone of frequent bedload movement (annual scour and deposition This zone is typically devoid of large trees and excludes floodplains and terraces.
3. If the radius of curvature is less than ten times larger than the average frequently scoured channel width of the project reach, the reach is considered a bend. If the radius of curvature is more than ten times larger than the average actively scoured channel width of the project reach, the reach is considered straight.
4. Cross-sections shall be no more than 400 feet apart on bends and 500 feet apart in straight reaches. If the length of the project reach is not evenly divisible by 400 or 500 feet, the number of cross-sections should be rounded to the next larger number. Longer distances between cross sections or abandonment and replacement of cross sections may be allowed on a case-by-case basis.

5. The first cross-section shall extend across the channel at the upstream limit of the project reach (entire project site); the last cross-section shall extend across the channel at the downstream limit of the project reach.

Extraction Zone Cross-Sections

The extraction zone is the total area that will be extracted and/or graded as a result of gravel extraction activities. Extraction zone cross-sections (pre- and post-extraction) are required the year of any proposed mining activity.

Number and Layout of Extraction Zone Cross-Sections

1. Extraction zone cross-sections shall be surveyed prior to extraction and resurveyed once extraction is complete using State Plane (FIPS 0401) coordinate system, and the 1983 North American Datum (NAD) and 1988 North American Vertical Datum (NAVD88).
2. A minimum of 5 equally-spaced extraction cross-sections shall be surveyed in each extraction zone including endpoints and end sections to enable a georeferenced extraction perimeter to be shown on the plan view photo submitted pre-extraction, and the actual extraction perimeter submitted annually in spreadsheet form. For sites where extractions are less than 300 linear feet in length, a minimum of 3 equally-spaced extraction cross-sections shall be surveyed in each extraction zone, in addition to endpoints and end sections to enable a georeferenced extraction perimeter to be shown on the plan view photo submitted pre-extraction, and the actual extraction perimeter submitted annually in spreadsheet form.
3. Cross-sections shall be oriented perpendicular to the long-axis of the extraction area.
4. Extraction zone cross-sections should be marked with temporary (seasonal) monuments at each end, such as stakes or rebar, which can be removed after extraction is complete.

Extraction Zone Cross-Sections (Before Mining – Pre-Extraction)

1. Pre-extraction zone cross-sections in the specified coordinate system are required before agency approval of the mining plan or Letter of Modification from the Corps.
2. Pre-extraction cross-section plots shall include the pre-mining cross-section data overlain onto the proposed mining configuration.
3. The proposed area of extraction should be lightly shaded or hatched. Should changes be required for project approval, pre-extraction cross sections shall be re-submitted with the approved mining configuration.

4. If the cross-section becomes inundated by late-spring high flows after the pre-extraction survey is completed, the inundated cross-section points must be resurveyed.
5. Survey at least several weeks prior to the desired beginning date of operations to allow sufficient time for the review and approval process.

Extraction Zone Cross-Sections (After Mining – Post-Extraction)

1. Post-extraction cross-sections are to be surveyed using the specified coordinate system immediately following mining, before flows or rain affect the zone. Operators relying on extensions need to ensure that the monitoring is completed prior to river rise.
2. Post-extraction zone cross-section plots shall include the post-mining cross-section data [solid line] overlain on the approved mining configuration [dashed line]. The actual area of extraction should be lightly shaded or hatched.
3. Total volume extracted should be computed, using double end area or computer generated digital terrain models. All measurements and calculations should be included in tabular form and verified by a California Licensed Land Surveyor or appropriately authorized engineer.
4. The perimeter of each extraction zone shall be geo-referenced and accurately depicted on the post-extraction aerial photo plan views and submitted digitally in the monitoring cross section Excel spreadsheets.
5. All information in this section shall be included in the Annual Data Submittal.

Site Visit Requirements

1. On the day of the site visit, a hard copy of the current year's monitoring cross sections is required (including the calculated 35% flow elevation). Portions of monitoring cross sections which were too deep to be surveyed may be skipped and be surveyed at a later date that same season.
2. On the day of the site visit, current year's aerial photos of the site are required unless flows remain higher than the 35% exceedence flow throughout June, in which case photos from the previous year may be used for preliminary planning.
3. The current year's monitoring cross-section overlain on the previous years (if any) monitoring cross-section. The area of the previous year's actual extraction (if any) should be lightly shaded or hatched (Figure 1).

(Pre) Extraction Plan Submittal Requirements

1. All pre-extraction site maps submitted for approval are to be prepared on a color, georeferenced (or ortho-rectified) aerial photo of good quality from current year. Site maps should show the entire project area, the proposed extraction area, and other pertinent features at a scale of approximately 1:6000 (1 in = 500 ft). This may require reduction or enlargement of original air photos. See Figure 2.
2. Calculated 35% flow exceedance marked on monitoring cross section plots. The 35% flow elevation shall be marked clearly and prominently on the monitoring and extraction cross section plots.
3. When submitting a final extraction plan to the agencies for their approval, ensure that there is a brief narrative detailing the mining being proposed, including: vegetation to be disturbed; location and description of temporary crossings and the desired flow each temporary crossing will be designed to pass; habitat improvement activities; justification and rationale for any deviation; and locations of stockpiles and haul roads.

Annual Data Submittal Requirements (Post-Extraction)

1. Cross-sections, maps, and associated calculations (such as extraction volumes and surface areas) must be prepared by or under the direction of a State of California Licensed Land Surveyor or an authorized Professional Engineer and certified as to content and accuracy.
2. All plan view monitoring and extraction cross sections will be shown on the georeferenced spring aerial photos in the specified scale and coordinate system. If a site is adjacent to another actively mined site, the two sites must be georeferenced and join seamlessly within the channel and floodplain. This may require coordination between applicants (or their consultants) with adjacent sites to ensure that the georeferenced photos line up correctly. See the guidance on aerial photos in the *Requirements for Aerial Photos* section. If photos are received that are not georeferenced accurately enough to line up with adjacent sites, corrections will be required by the operator whose photos are not properly georeferenced.
3. The horizontal limits (perimeter) of the actual extraction areas shall be georeferenced and included with the post-extraction submittal in electronic form, along with cross section as described above. Only the current year air photos shall be used for post-extraction submittals.
4. By December 15 of each year, all hard copies of post-extraction plots, volume calculations, aerial photos, brief narratives, and all other requirements (except for the electronic formats from Item 2 above) shall be provided to the CHERT, NMFS, CDFW, and the Corps. The brief narrative should be 1-2 pages and

contain the following: (1) dates of any pre-extraction surveys and results (snowy plover, etc); (2) the beginning and end dates of gravel extraction; (3) the dates of bridge installation and removal; (4) detail on how the gravel extraction deviated in any way from the pre-extraction plan, including volumetric differences; (5) reasoning or explanation of sites that were over or under extracted; and (6) details of any biological enhancement activities.

5. By January 15 of each year, the previous years' electronic files with the Monitoring Cross-Sections shall be provided to the CHERT, NMFS, CDFW, and the Corps in the standardized reporting MS Excel spreadsheet. The data (PNEZD and Date of Capture) should be grouped by cross-section and organized from L bank to R bank. Header information shall be included with each cross section file that indicates the date of survey, cross section number, mining site, and river. The 35% water surface elevation calculations will be included on the excel sheets with each cross section data. Other relevant information (e.g., lost/re-established endpoints, etc.) shall also be included. Files shall be submitted in CD-ROM or other common media. A 'Read Me' text file may also be included if explanation of other issues is necessary (See Figure 3, Figure 4 and figure 5).

Requirements for Aerial Photos

1. Photos should be taken when flows are below 35% exceedance.
2. Photos should extend one-half a meander upstream and downstream from each mined site.
3. Only the current year photo shall be used for the post extraction submittal.
4. Air photos shall be geo-referenced to the *State Plane (FIPS 0401) coordinate system, and the 1983 North American Datum (NAD)*.

Table 1. 35% Exceedence Flow Level by River Gauge Station.

USGS Stream Gauge	Flow Exceeded 35% of Time (in cfs)
Mad River near Arcata	900
Lower Eel at Scotia	3800
Van Duzen near Bridgeville	500
South Fork Eel near Miranda	900
Trinity River at Hoopa	4700
Mattole River near Petrolia	670

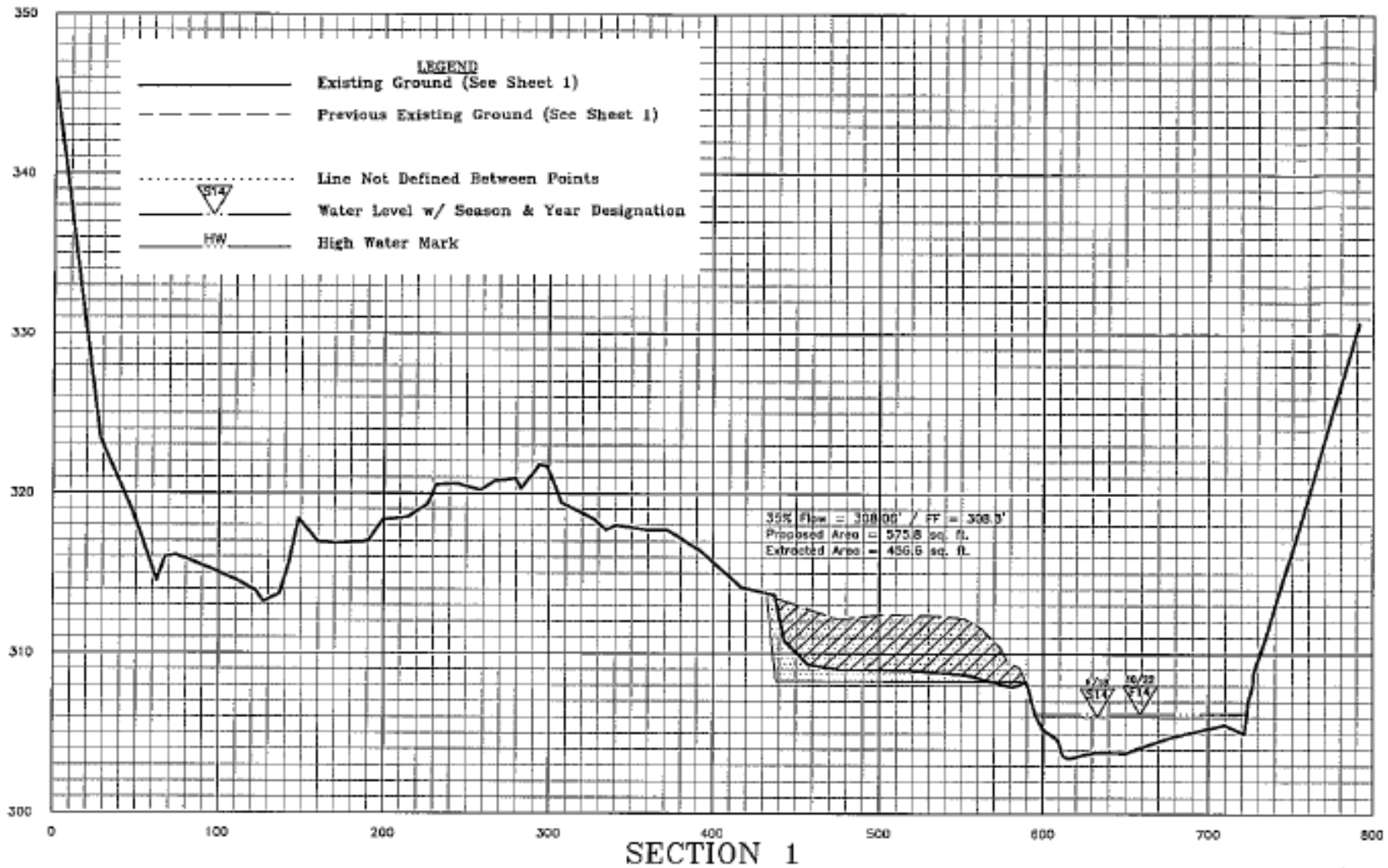


FIGURE 1: Example *monitoring cross-section* with an extraction area resurveyed post-extraction and WSE s marked (showing approved vs actual extraction).



SCALE-H:	1" = 500'
SCALE-V:	
DRAWN BY:	P.K.
REVISED:	
FLOW EEL =	1030 CFS
VAN DUZEN =	155 CFS

HAUCK BAR, EEL RIVER	
2011 SITE PLAN	
GRAVEL EXTRACTION	
PHOTO DATE: JULY 07, 2011	

FIGURE 2: Example pre-extraction aerial photo w/ extraction zone cross sections delineated.

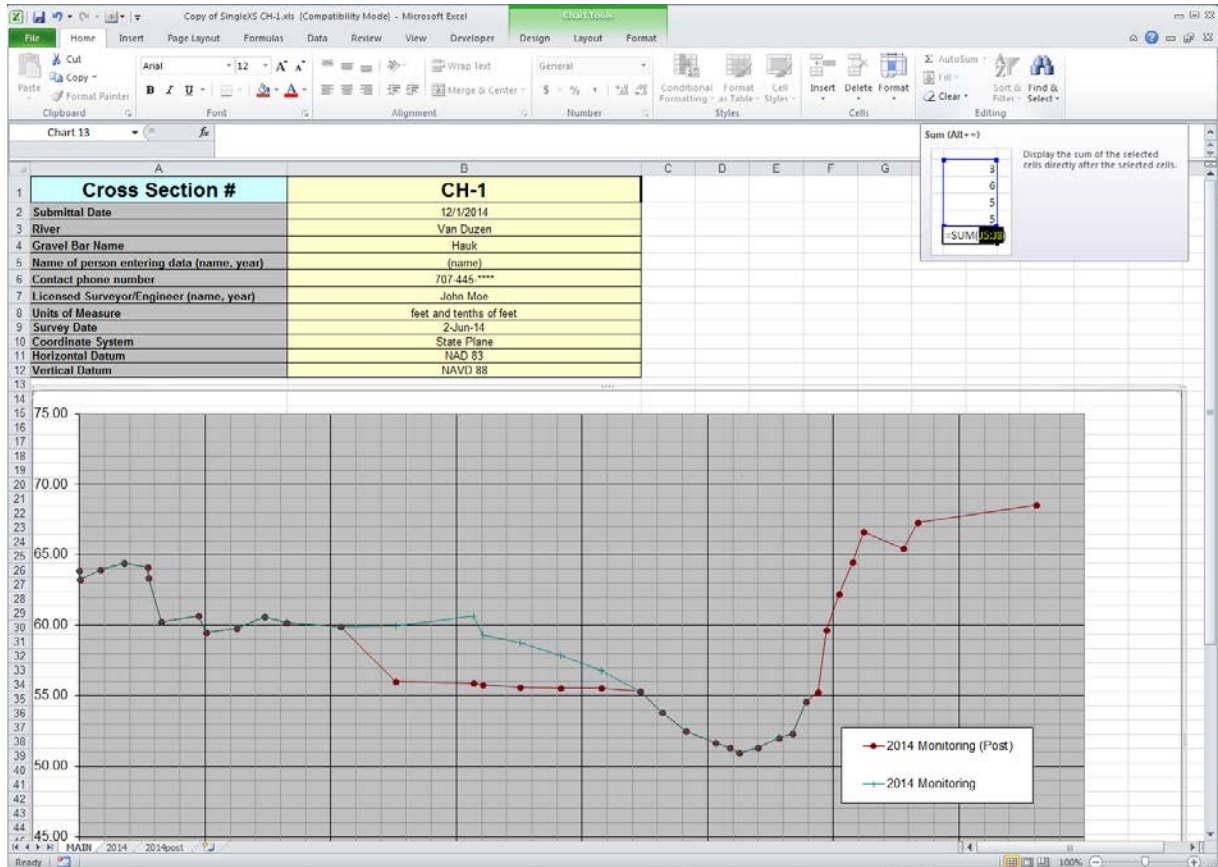


Figure 3 Front Page of each cross section Excel workbook: general cross section information with automatic plotted cross sections.

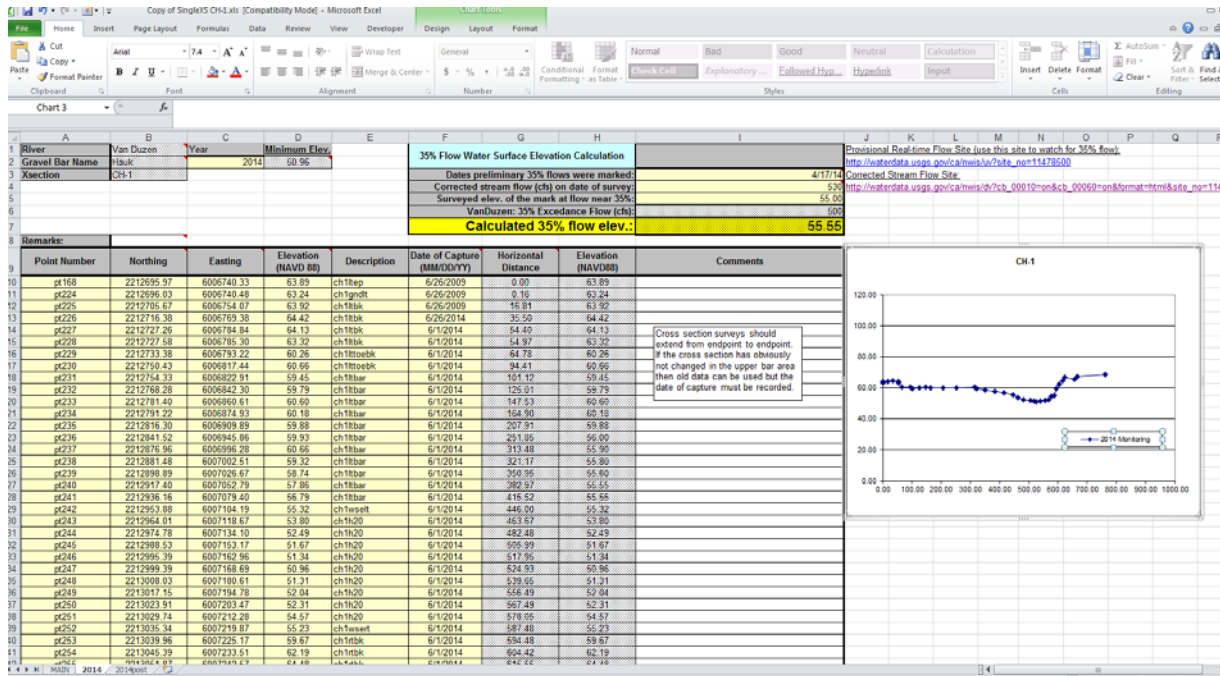


Figure 4 Second page of workbook: Monitoring Cross Section data include 35%.

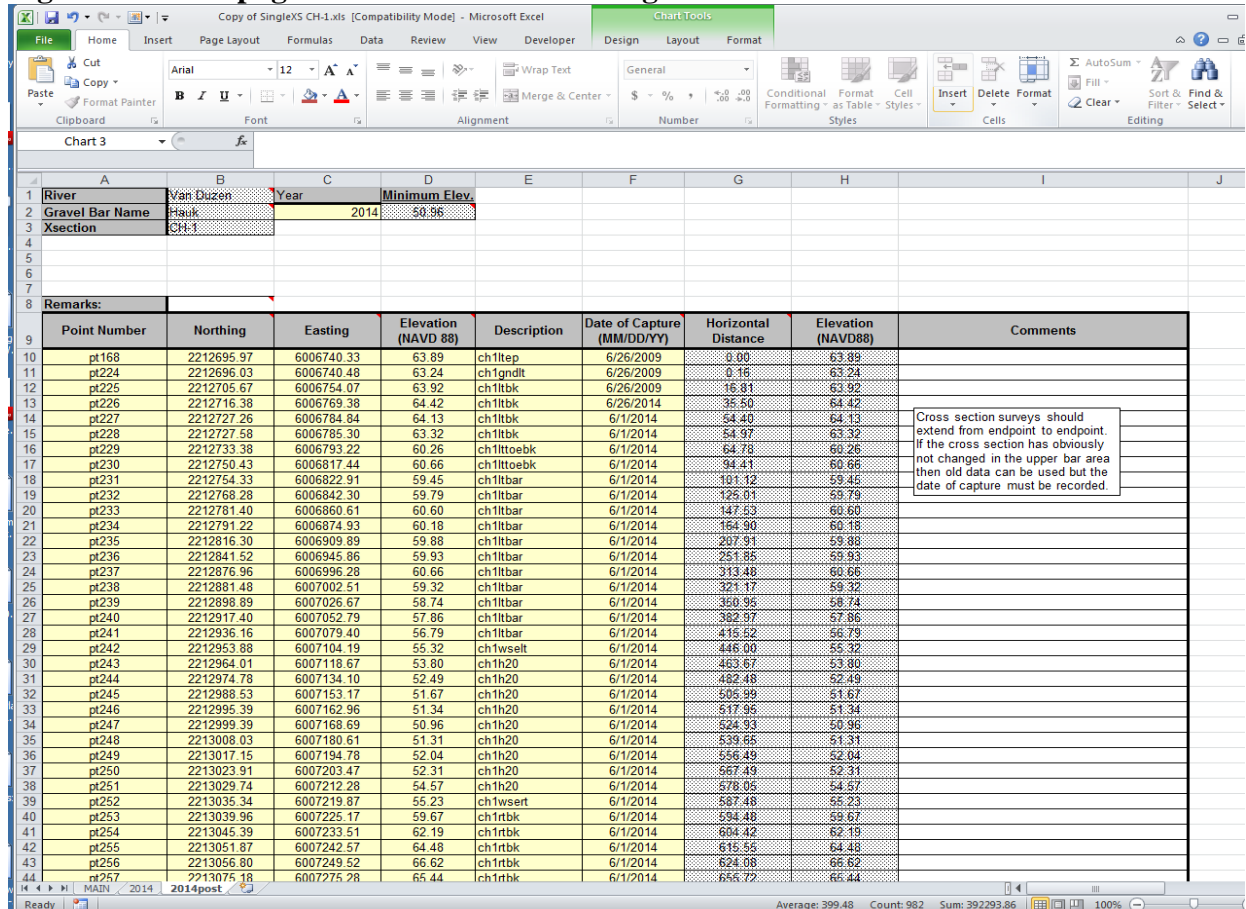


Figure 5 Third page of cross section workbook: Post Extraction Monitoring survey.

APPENDIX D

Monitoring for Riverine Quality Indicators Humboldt County Gravel Extraction Reaches

Introduction

The following monitoring plan is the result of inter-agency meetings and comments received from the applicants. The monitoring plan is required as part of the terms and conditions of the biological opinion for LOP 2015-1. Four sources of information make up the plan: 1) monitoring cross sections for all rivers; 2) water surface elevation at the 35% exceedence flow for all rivers, except the Trinity River (the width-to-depth ratio is analyzed at the 35% flow); and 3) habitat mapping for all rivers. These data shall be collected on years in which extraction takes place. If the year is succeeding an extraction year then monitoring cross-sections must also be completed and submitted.

All extraction reaches will be required to collect the cross section information, the 35% exceedence flow water surface elevation, and the habitat mapping data. The exception is the Trinity River where the 35% exceedence data are not required.

A noticeable trend in physical or habitat conditions of the river, i.e., decreasing pool depth or overall pool volume, may or may not be related to gravel mining operations. However, a trend in physical or habitat conditions informs us of how the baseline river condition is changing through time, and this information can then be used to inform future management decisions.

Physical Monitoring

Objectives

The width-to-depth ratio can be calculated for the channel below the 35% exceedence level utilizing the monitoring cross section data. A trend of decreasing width-to-depth ratio over multiple cross sections would indicate increasing channel confinement and may indicate improving habitat conditions. Conversely, an increasing width-to-depth ratio suggests a tendency toward a wider, shallower channel. Considering the overall incision or aggradation, the trend in topographic variability, and the overall trend in the width-to-depth ratio at the 35% exceedence flow water surface elevation will help define the trend in low flow habitat within the measured reach. The habitat assessment mapping will be used in conjunction with the physical monitoring to help define the trend in habitat conditions during the permit period.

Methods

Monitoring Cross Sections: Endpoints shall be placed above the 10-year flood plain. Endpoint location should be placed far enough away from banks, so that endpoints are not likely to be lost if there is bank caving. If an applicant is experiencing difficulty in locating endpoints that are

likely to stay in place, site-specific endpoint location can be developed during site reviews with the involved agencies. The benchmarks that the endpoints are tied to shall be located above the 100 year flood level. The current survey point frequency is at least every fifty feet in areas of constant slope. In addition, points should also be surveyed at obvious breaks in slope of more than 1 foot in elevation. Care should be taken to define the channel below the 35% exceedence water surface elevation to the same accuracy, including the wetted channel, making sure to get the lowest point in the cross section and in the thalweg, if they are different.

35% Exceedence Flow Elevation: Careful marking and survey of the water surface elevation near the 35% exceedence flow in each gravel extraction area shall be done in the spring of each extraction year when the flow recedes using the attached workbook for data submittal.

NMFS' analysis of the physical data will be based on the annual comparison and comparison over the permit period, of the distributions of residual depths, similar to that presented by Madej (1999). In this manner, the distribution, mean and standard deviation of residual depths will be compared.

Data Submittal

Applicants shall contact National Marine Fisheries Service (NMFS) for the appropriate Excel workbooks to submit the physical monitoring data. The Excel workbooks are specific for each river. The workbooks for data submittal must be used to record:

- Pre and Post Extraction Monitoring cross sections
- Elevation and location of the 35% exceedence water surface
- High water elevation and location from the previous winter

The workbooks for data submittal shall be used exactly as they are so that data can easily be joined among the different gravel bars. Please advise NMFS' staff if there's a need to modify the workbook. All operators must use the same data submittal organization.

Biological Monitoring

The biological monitoring component is intended to complement the physical monitoring described above. For each site, habitat data will be collected that describes the distribution and characteristics of three principal habitat types as described by the California Department of Fish and Game (Flosi, *et al. California Salmonid Stream Habitat Restoration Manual*. 1998): pools, flatwater, and riffles, with the addition of an alcove habitat. This habitat typing effort will be applied at each site, and extend at a minimum, one half of a meander sequence above and below a given extraction site. A habitat mapping component will be incorporated that delineates more specific micro-habitat features based upon relevant life history stages of concern for each reach.

Habitat surveys and mapped will only be required in years extractions take place. If no extraction occurs at a site, a minimum of one habitat survey will be conducted in each span of 5-years.

The intent of the habitat monitoring effort is two-fold. The first is to maintain continuity from past habitat mapping efforts and record the distribution and characteristics of habitat units that provide fish habitat value. To this end, the monitoring will be similar to that conducted in the past. The second intent of the monitoring is to provide the means to capture more qualitative biological observations than is possible using the physical monitoring protocols described in the previous section. Habitat units should be recorded on the current aerial photograph for the site(s) and be linked to both the cross section and habitat data forms. At a minimum, the habitat data forms should record the depth and area of individual habitat units, the extent and type of cover available, and any additional observations (e.g. cold water seeps, undercut banks, overhanging vegetation/large woody debris, spawning and holding habitat, coho rearing habitat, etc.) that provide useful information on the value of available habitat. We note that the utility of these more qualitative observations depend heavily on the same person(s) conducting the monitoring from year to year.

In order to minimize observer subjectivity in the habitat mapping process, two approaches are used. First, pools should be defined based on a variety of characteristics that include substrate composition (sand and small gravel), bottom morphology (concave), maximum depth and velocity (<1 fps and smooth surface). The second approach is to coordinate with NMFS staff during at least the first year of implementation to ensure that habitat units are consistent and meet the intent of the biological monitoring. Should multiple biologists conduct the monitoring, each biologist will coordinate with NMFS staff.

Annual data submissions should include the aerial photographs with the habitat units clearly delineated, summary tables including descriptions of the proportional area of each habitat type, the distribution of habitat measurements (e.g. pool depths) and a narrative describing the habitat conditions in the reach. In addition, the photographs should provide a clear link to the associated cross sections.

APPENDIX E
USFWS CONDITIONS FOR WESTERN SNOWY PLOVERS
AND WESTERN YELLOW-BILLED CUCKO

The following conservation measures are necessary for Worswick, Leland Rock, Hauck, Sandy Prairie, Drakes, Singley, and Hansen gravel bars to minimize the potential impacts to the western snowy plover:

1. Operators shall make an attempt to initiate all extraction related activities after September 15 each year to avoid direct effects to plovers. However, if this is not feasible, gravel extraction will not occur prior to July 22.
2. All pre-extraction activities within plover habitat that occur between March 1 and August 22 require a Service-approved surveyor (authorized under section 10(a)(1)(A) of the ESA) to minimize potential harm to plovers. To be effective, plover surveyors must have the authority to direct the activities of workers to avoid nests and other plover life stages, and require that activity be halted until technical assistance from the Service is received regarding avoidance or minimization measures. All reference to plover surveys will be conducted by a Service-approved surveyor. Vehicle use within plover habitat should be restricted to those occasions where the activity cannot be completed otherwise.
3. Plover surveys will be conducted prior to initiation of extraction activities to determine if a plover, nest, or brood is present within 1,000 feet of the extraction site (refer to item 3 below). If an active plover nest is present within 1,000 feet of a planned extraction site, extraction activities will not commence until the nest has hatched or the fate of the nest has been determined.
4. Between July 22 and September 15, extraction may commence within plover habitat after three (3) consecutive days of surveys have determined that no adult plovers, broods, chicks, or nests are within 1,000 feet of the proposed extraction site. The three consecutive days of surveys will not begin before July 20th, and will only occur on days of acceptable weather conditions (generally in the mornings and not during periods of low light, high winds or when heat waves distort observations).
5. Between July 22 and September 15, all areas containing suitable habitat within 1,000 feet of extraction sites will be surveyed for plovers and nests to determine the likelihood of chicks, juveniles and adults moving into areas where they could be affected by operations.
6. Between July 21 and September 15, operators of extraction sites that have plovers or nests within 1,000 feet of extraction sites will ensure the following: (1) daily plover surveys are conducted to determine the status of plovers and nests, (2) that plovers move to a distance greater than 1,000 feet away before commencing operations, and

- (3) training is provided to all extraction site personnel by a Service-approved biologist, for all extraction site personnel regarding identification of adult and immature plovers, plover behavior, and implementation of the conservation measures in the BO and the measures contained in LOP 2015.
7. Between July 21 and September 15, prohibit night driving (0.5 hour after sunset to 0.5 hour before sunrise) for extraction-related activities within suitable plover habitat. Authorized daytime driving shall be minimized to those trips essential to complete authorized work. Parking, staging, and maintenance of vehicles and equipment shall occur in areas of suitable plover habitat. The first three vehicle trips on haul roads in suitable habitat each day shall not exceed 10 mph to allow plovers and chicks to vacate roads.
 8. Access roads owned, controlled, or used by commercial gravel operators will be gated and locked when no active extraction and hauling is occurring (including at night) in order to deter recreational vehicle impacts to plovers on gravel bars.
 9. Before September 15, the Corps will not participate in on-site pre-extraction reviews until the Service-approved surveyor provides the Corps written or verbal confirmation that pre-extraction surveys have been completed in accordance with this BO and LOP 2015. In addition, if a Service representative is not on-site at the pre-extraction review, the surveyor must contact the Service via a call (voicemail message is okay) or e-mail notifying them that the survey was conducted.
 10. All operators conducting surveys within suitable plover habitat will submit annual plover survey reports to the Arcata Fish and Wildlife Office by November 15 of each year gravel extraction activities occur.

The following conservation measures are necessary to minimize the potential impacts to the Western yellow-billed cuckoo:

1. Service-approved survey protocol will be used to conduct cuckoo surveys (i.e., Halterman, M., M. J. Johnson, and J. A. Holmes 2011; A Natural History Summary and Survey Protocol for the Western Yellow-billed Cuckoo Population, see Appendix J). In addition, surveys will be conducted by a Service-approved surveyor (authorized under section 10(a)(1)(A) of the Act).
2. Survey call-stations would only be established if an extraction area or haul route was proposed within 1,000 feet of suitable habitat during the cuckoo's breeding season (May 1-September 15).
3. Identification of suitable cuckoo habitat and cuckoo survey locations will be determined in consultation with the Service.

4. Cuckoo detections, either during protocol surveys or incidentally, will be reported to the Service within 48 hours of discovery.
5. Suitable habitat for the cuckoo will not be cleared, cut, or removed, except for hand pruning of overhanging vegetation (stems smaller than 6 inches in diameter) along existing haul routes. Any other vegetation removal requiring equipment or power tools will be limited to outside the cuckoo's breeding season (i.e., limited to the period September 15-April 30).
6. All operators conducting surveys within cuckoo habitat will submit annual cuckoo survey reports to the Arcata Fish and Wildlife Office by November 15 of each year gravel extraction activities occur

The following **Terms and Conditions** are non-discretionary components of the Incidental Take Statement of the USFWS BO, issued September 4, 2015 (*AFWO-15B0075-15F0204*), and this LOP procedure. They shall be binding conditions of any grant or permit issued to the applicants, regardless of whether listed in the individual Letter of Permissions issued to the applicant.

1. To protect flightless chicks, an exclusionary fence will be installed around all trenches to minimize the potential for chick entrapment. The fencing will be installed within 24 hours of digging the trench. The fencing will be a silt fence fabric not less than 24 inches tall. The fabric will be keyed-in to the gravel bar so that no gaps greater than 0.5 inch exist below the fabric. The fabric will extend across both sides of the entire trench. The exclusionary fencing will remain in place until September 15 or until no plovers are detected on the gravel bars within the action area.
2. Large woody debris or other salmonid habitat restoration structures will not be incorporated on the Worswick Bar. Elevated structures can be used by plover predators as perch sites. If large wood debris washes up on the Worswick Bar without human intervention (i.e. large woody debris is deposited as a result of natural river flows rather than being dragged or otherwise placed by humans), it should be left in place. If the large woody debris needs to be moved, it will be done outside of the plover breeding season, and in coordination with the Arcata FWO.
3. All trash and food scraps brought into the action area will be removed daily and secured in predator-proof receptacles. Feeding wildlife, including corvids and gulls, will be prohibited.
4. The Corps will ensure that gravel operators are aware of the plover conservation measures described in the project description, and terms and conditions in this biological opinion. In addition, the Corps shall make periodic checks to ensure that all of the conservation measures, and therefore the terms and conditions of this biological opinion are being adhered to. The Corps shall note the date and time of compliance checks, the situation under which the check was completed (eg. whether or not

extraction activities were ongoing at the time of the compliance check, the Corps was on a site visit, etc.), the findings of the compliance check, and any corrective action taken by the Corps and/or operator. A minimum of 3 compliance checks shall be conducted annually throughout the LOP period, beginning the first extraction year following issuance of this BO.

5. Prior to January 31st of each year for the duration of project, the Corps shall provide the Service with an annual compiled report of gravel extraction activities on the lower Eel River gravel bars (not individual reports from gravel operators). The report shall discuss and summarize plover survey results from the previous extraction-year, including, but not limited to, adult plover use of the project area, nest numbers and locations, nest fates, brood activity, and reproductive success. The report shall include a complete list of survey dates and related pre-extraction activity, weather conditions, names of plover surveyors, and survey results (even survey results when no plovers were detected). The result of the Corps' compliance checks (term and condition 3 above) shall be included in the annual report. The first report shall be submitted by January 31st of 2016 if gravel extraction activities occurred during 2015.

**APPENDIX F
GRAVEL EXTRACTION SITES ELIGIBLE
FOR AUTHORIZATION UNDER LOP 2015-1**

The following list includes the active gravel extraction sites that are eligible for authorization under this procedure. Any additional gravel extraction proposals would require consultation with NMFS before inclusion in this appendix and/or authorization.

River	Operator	Gravel Bar
Middle Eel	Humboldt County Public Works	Fort Seward
		Charles (Larabee Creek)
	Humboldt Redwood Co.	Scotia Dam
		Upper/Lower Truck Shop
		Dinner Creek
		Three Mile
		Elinor
		Larabee Creek
		South Fork
		Bowlby
		Vroman
Maynard		
South Fork Eel	Wallan and Johnson	Wallan and Johnson
	Randall Sand and Gravel	Home/Tooby
Lower Eel	Humboldt County Public Works	Worswick
	Mercer-Fraser Co.	Sandy Prairie Complex
	Eureka Ready Mix	Singley
		Drake
Van Duzen	Rock and Gadberry Sand and Gravel	Leland Rock
	Jack Noble	Noble
	Tom Bess	Bess
	Humboldt County Public Works	Pacific Lumber
Trinity	Klamath-Trinity Aggregates	Rowland
	Mercer-Fraser Co.	McKnight
		Willow Creek/Big Bar
Bear River	Humboldt County Public Works	Branstetter
N. Fork Mattole	Humboldt County Public Works	Cook

APPENDIX G

Conditions, Limitations and Criteria Specific to Gravel Mining on the HRC Reach of the Eel River

The Middle Mainstem (or Humboldt Redwoods Company (HRC)) Reach of the Eel River is constrained by steep canyons and bedrock. This stretch of the river is more confined than within the Lower Eel River. Humboldt Redwood Company is the primary landowner and operator located along this stretch of the river, which runs approximately 25 miles from Scotia to McCann. There are 10 extraction bars within this stretch with documented operations dating back to the 1940s and 1950s.

The bedrock dominated conditions of this stretch keeps the configuration of the river consistent from year to year with little to no variation shown from historic aerial photos, irrespective of the level of extraction. HRC's authorized extraction volumes are small in comparison to the size of the gravel bars and number of unmined bars within the same reach.

Anadromous salmonids typically use this reach as a migratory corridor. In general, spawning is not known to occur in this reach of the Eel River and especially within HRC's 10 permitted extraction sites. The HRC reach could be improved by protecting the large substrate components and creating or improving juvenile rearing habitat, tributary access and connectivity, creation of pool habitat near cold-water tributaries, and adult holding and migratory habitat. The 35% exceedence flow level is used to set the minimum skim floor elevation for extraction operations. Of the extraction techniques described in Appendix L of the LOP most have been used in the past for these 10 locations, and all indications are that the full list will be available, as well as other potential extraction techniques moving into the future.

APPENDIX H

Conditions, Limitations and Criteria Specific to Gravel Mining on the Lower Eel River

The lower Eel River, from the confluence with the Van Duzen River downstream, is important nesting and rearing habitat for western snowy plovers as well as migration and rearing habitat for coho, Chinook and steelhead. The Corps and NMFS believe that this reach of river could be improved with increases in riparian vegetation, adult migratory habitat, mainstem and off-channel juvenile rearing habitat, and channel confinement. The interagency review team has also observed that road removal and reduced vehicular access would prevent the removal of large woody debris, which is desirable for salmonid habitat. For these reasons, the lower Eel River contains extra conditions to further limit adverse impacts.

1. Impacts to snowy plovers shall be avoided to the maximum extent possible. Appendix E further describes the operating requirements that are required for gravel activities, including pre-extraction planning and surveys. For Worswick, Leland Rock, Hauck, Sandy Prairie, Drakes, and Hansen bars, the Corps will not participate in on-site pre-extraction reviews until after September 15 or after the plover biologist provides the Corps written confirmation that the pre-extraction surveys have been completed in accordance with the pending USFWS Biological Opinion and Appendix E of the LOP.
2. Alternative extraction techniques shall be preferred over traditional skimming (bar scalping). These alternative techniques may include, but are not limited to horseshoe extractions, wetland pits, trenches and dry-trenches, as described in the Appendix L.
3. In addition to the alternative extraction techniques listed above, narrow skims that are adjacent to the low flow channel but provide for protection of the adjacent cross-over riffle by limiting extraction to the areas away from the entire riffle will also be considered for the lower Eel River on a case-by-case basis. These narrow skims may have a minimum vertical offset of 2 feet above the water surface elevation of the low flow channel. Narrow skim widths will be determined on a site specific basis, but narrow skims must: (1) not increase channel braiding; (2) not lower the elevation at which flows enter secondary channels; (3) avoid the higher portions of the annually inundated bar surface; and (4) must promote channel confinement. The CHERT recommendation shall include a summary of the reasoning, along with sufficient biological, hydrological, and sediment transport rationale to support the recommended width.

APPENDIX I

Conditions, Limitations and Criteria Specific to Gravel Mining on South Fork Eel River

The South Fork reach of the Eel River is typically contained by bedrock and steep canyons. Habitat improvement goals include mainstem and off-channel juvenile rearing habitat, improved salmonid access to tributaries, edgewater habitat, adult holding and migratory habitat, placement of large wood and/or boulders and riparian habitat. The South Fork Eel River provides habitat for Chinook, coho and steelhead, but especially is spawning habitat for Chinook. Alternative extraction techniques shall be preferred over traditional skimming. These alternative techniques may include, but are not limited to horseshoe extractions, wetland pits, trenches and dry-trenches, as described in the Appendix L.

APPENDIX J

Conditions, Limitations and Criteria Specific to Gravel Mining on the Van Duzen River

The mouth of the Van Duzen River channel is broad and generally shallow. In conjunction with the aggraded conditions, the river may flow subsurface in the late summer and early autumn. The situation has caused stranding and mortality of Chinook salmon in recent years. The Corps'

and NMFS' goals include silt sequestration, adult holding and migratory habitat, mainstem and off-channel juvenile rearing habitat, riparian habitat, road removal, encouraging a single-thread channel and more riparian vegetation, and/or encouraging the thalweg adjacent to the existing riparian vegetation. Trenches along the south side of the river, upstream of the Highway 101 bridge, are not preferred since there is a tendency to erode the slope and intrude into an undesirable sediment material. It would be convenient to have a buffer between the river and the slide at Noble's Ranch. Trenching is more appropriate on the Van Duzen River. Extraction proposals in the lower two miles of the Van Duzen River shall be limited to alternative extraction designs, such as trenching, alcoves, horseshoe pits, very narrow skims, etc. In particular, trenching is recommended in some locations in the lower Van Duzen, especially when very close to the wetted channel. For the Leland Rock bar, a point of contact from National Marine Fisheries will be appointed for weekend advice, and will be recorded in the extraction checklist, (see Appendix N).

"Very Narrow Skims" on the lower two miles of the Van Duzen River (from the confluence to River Mile 2) shall be limited to 90 feet total width, as measured across the top of the extraction. This width provides for confinement of typical early season (November/December) peak flows of 1,000 cfs and maintains a depth of one foot within the narrow skim area, which shall also be above the water surface elevation of the 35% exceedence flow, so that impairment of adult passage is reduced.

For Leland Rock bar, downstream of the Highway 101 Bridge, the Corps will not participate in on-site pre-extraction reviews until after September 15 or after the applicant or plover biologist provides the Corps written confirmation that the pre-extraction surveys have been completed in accordance with the USFWS BO.

Extraction proposals shall include a justification describing how the proposal will prevent increases in the width:depth ratio and not increase the likelihood of salmon stranding.

Appendix K Conditions, Limitations and Criteria Specific to Gravel Mining on the Trinity River

The Trinity River is typically contained by bedrock and steep canyons until it opens up at Hoopa Valley, which still has one durable canyon wall. The habitat could be improved by creating more riparian habitat, and placing brushy debris along the otherwise exposed edgewater. The minimum skim floor elevation on the Trinity River shall be a minimum of two feet above the adjacent summer low-flow water surface elevation.

Appendix L

Definitions associated with gravel extraction

Skims

TRADITIONAL SKIM

Skimming or scalping of gravel from exposed gravel bars involves the use of excavating machinery to remove the uppermost layer of gravel. Historically, skimming may have been performed as far down as the water surface. However, to be eligible for authorization under the LOP 2009-1, skimming shall be performed above the 35% exceedence flow water surface elevation of the low flow channel, and downstream from the Head of bar buffer (described below), and on exposed (dry) bars, within the active channel that is typically inundated annually.

After skimming, the bar must be graded in order to be left smooth, free of depressions and with a slope downstream and/or to the low-flow channel. Traditional skims are typically laid out as curvilinear benches along the outside of gravel bars, and are typically no wider than about half the exposed bar surface width.

HORSESHOE SKIM

This method would harvest gravel from the downstream two-thirds of gravel bars. A lateral edge-of-water buffer is maintained along the low flow channel. The upper third of the bar will be left in an undisturbed state as an upper bar buffer. The finished grade of the extraction area will have a downstream gradient equal to the river and a flat cross slope and will be no lower than the 35% exceedence flow elevation. Cut-slopes will be left at a 2:1 (horizontal: vertical) slope except along the upstream side at the head-of-bar buffer where a 6:1 slope will be established. There will be at least a 15-foot offset buffer from the bank. The extraction surface shall daylight along the downstream one-third to one-fifth of the bar to facilitate drainage following high runoff events. The horizontal and vertical offsets are intended to remove the excavation area away from the low-flow channel and minimize effects on listed salmonid species by disconnecting the mined surface from frequent flow inundation. Due to less frequent flow inundation, horseshoe-shaped skims may take larger flow events to replenish than traditional skim designs, depending on the unaltered bar height between the excavation and the stream.

INBOARD SKIM

This method is similar to the horseshoe except that it maintains a wider horizontal offset from the low flow channel where warranted. These areas would be excavated to a depth no lower than the water surface elevation offset, with a 0–0.5% cross slope, steeper (1:1) slopes on the sides, and gentle (10:1) slopes at the head of the excavation. The horizontal and vertical offsets are intended to remove the excavation area away from zones of frequent flow inundation. There would be a 15-foot offset buffer from the bank. The excavation may extend into the upper one-third of the head-of-bar buffer if sufficient rationale is provided to show that protection of the upstream riffle would be maintained.

NARROW SKIM

The narrow skims would be no more than one-third of the bar width, follow the shape of the bar feature, maintain the point of maximum height of the bar, and trend in the general direction of streamflow. These skims would maintain a vertical offset corresponding to the discharge at 35% exceedence level. Finished skims would be free draining and slope either toward the low-flow channel or in a downstream direction. Furthermore, these skims would avoid the head of the bar, defined as the upstream one-third of the exposed bar surface. This buffer may be decreased on a case-by-case basis provided the extraction area narrows, tapering smoothly to a point and remains below the upstream cross-over riffle.

Van Duzen River

Narrow skims along the lower two miles of the Van Duzen River shall be limited to a maximum width of 90 feet across the top of the extraction. This width is designed to contain average peak flows of 1,000 cfs commonly seen during the early period of adult salmonid migration in November and December. The minimum skim floor shall be equal to the water surface elevation of the 35% exceedence flow.

Lower Eel River

Narrow skims that are adjacent to the low flow channel, but are not adjacent to entire riffle areas, will also be considered for the lower Eel River. These narrow skims may have a minimum vertical offset of 2 feet above the water surface elevation of the low flow channel. Narrow skim widths will be determined on a site specific basis, but narrow skims must: (1) not increase channel braiding; (2) not lower the elevation at which flows enter secondary channels; (3) avoid the higher portions of the annually inundated bar surface; and (4) must promote channel confinement.

SECONDARY CHANNEL SKIMS

These extractions are elongate, shallow skims in the area of dry, secondary channels, designed to be free-draining and open at either end so as to not impede fish passage/migration and to prevent any potential fish stranding. The upstream riffle crest, or elevation control of secondary channels shall not be affected by extraction proposals. The skim floor of these excavations shall be set at the 35% exceedence flow elevation. Secondary channel skims, with proper design, have a restorative function, as described in the section below.

Head of Bar Buffer

The upstream end of the bar (head of bar) shall not be mined or otherwise altered by the proposed action. The minimum head of the bar shall be defined as that portion of the bar that extends from at least the upper third of the bar to the upstream end of the bar that is exposed at summer low flow. Therefore, the upstream one-third portion of the bar as exposed at summer low flow is provided as the minimum head of bar buffer. The intent of the head of bar buffer is to provide protection of the natural stream flow steering effect provided by an undisturbed bar.

Variances to the minimum head of bar buffer may be considered on a case-by-case basis (e.g., for narrow skims) if the proposed alternative provides equal or greater protection. The specific nature of the proposed variance must be described, along with sufficient biological, hydrological, and sediment transport rationale to support the recommended alternative. Modifications in the default head-of-bar buffer dimension shall, at a minimum, provide for protection of the adjacent cross-over riffle by limiting extraction to the area downstream of the entire riffle.

Alcove

Alcove extractions are located on the downstream end of gravel bars, where naturally occurring alcoves form and may provide velocity refuge for juvenile salmonids during high flows, and potential thermal refuge for juvenile salmonids during the summer season. Alcove extractions are irregularly shaped to avoid disturbance of riparian vegetation, and are open to the low flow channel on the downstream end to avoid stranding salmonids. Alcoves are extracted to a depth either above or below the water table, and are small in area and volume extracted, relative to other extraction methods.

Exposed Bar

The bar area subject to annual flow inundation and active sediment transport and replenishment cycles. Area may contain sparse patches of widely scattered individual woody plants.

Wetland pits

Wetland pits are irregularly shaped excavations (to avoid excavating riparian vegetation) located on the 2-to-5 year floodplain surface. An excavator digs out the sediment below the water table and leaves the sides of the pit sloped. Wetland pits allow for gravel extraction away from frequently inundated gravel bar surfaces, and most salmonid habitat features. Wetland pits will only fill with sediment during high flow events, on the order of every 2-to-5 years, and typically over a multi-year period. Wetland pits must have vegetation, either existing or planted, around their perimeter, and must contain some type of cover elements, such as woody debris.

Trenching

Wet trenching

The wet trenching method of extraction is used to excavate sediment directly from portions of the channel, after the stream flow has been diverted to a secondary channel location. The wet trenching method of extraction would only be used when there is the additional objective of improving instream salmonid habitat by the limited use of sediment removal, and where the diversion of the low flow channel into a secondary channel that provides salmonid habitat is possible.

Dry trenching

The dry trenching method of extraction may be both shallow and stay above the water table, or deep and extend below the water table. The dry trenching method involves gravel bar excavation on the exposed (dry) bar surface. A gravel berm may be constructed with materials on site to isolate the trench from the channel, or the trench may be far enough from the low flow channel to not require a berm to separate it. Material is then excavated from inside the trench to a depth that is limited by the reach of the equipment, and by the annual, site specific recommendations provided by CHERT. After excavation, and when the sediment in the trench has settled, the berm is breached on the downstream end, and the trench is connected to the river to prevent fish stranding. Alternatively, the berm may be constructed to be naturally breached during normal fall flows.

Appendix M INCIDENTAL TAKE STATEMENT for Federally-listed Threatened Salmonids

The National Marine Fisheries Service (NMFS) issued a Biological Opinion for LOP 2015-1 on August 27, 2015. The Incidental Take Statement is excerpted below. If you are interested in obtaining a complete copy of the Biological Opinion, please contact the Corps' Regulatory Division, North Branch Chief. The measures described below are non-discretionary and must be binding conditions of any grant or permit issued to an applicant, as appropriate, for the exemption in section 7(o)(2) to apply. If the Corps: (1) fails to assume and implement the measures or fails to require the applicant to adhere to the measures 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, the Corps must report the progress of the action and its impact on the species to NMFS as specified in the ITS [50 CFR § 402.14(i)(3)].

Amount or Extent of the Take

NMFS anticipates that annual gravel mining operations under the LOP 2015-1 will result in take of SONCC coho salmon, CC Chinook salmon and NC steelhead within the action area. NMFS expects temporary physical habitat impacts will occur primarily within the extraction areas. The temporary physical habitat impacts will primarily influence the availability of shelter during high flows which inundate extraction areas as well as reduce the quality and quantity of juvenile rearing habitat (i.e., reductions in coarse substrate, deep water habitats, riparian vegetation and velocity refugia) for SONCC coho salmon, CC Chinook, and summer and winter run NC steelhead. The impairment of essential behavior patterns of juveniles resulting from the temporary loss of habitat, short-term increases in turbidity, and displacement during instream bridge construction is likely. We also expect that localized changes in habitat will result in a small reduction in the emergence of fry from redds within the Van Duzen and South Fork Eel rivers, adjacent to and immediately downstream of the extraction sites. Reductions in habitat and alterations in essential behavioral patterns will result in both decreased growth rates and ocean survival. Overall, we anticipate that the number of individuals harmed resulting from these annual temporary habitat changes will be low.

NMFS is unable to estimate the number of individuals that will experience lower survival as a result of the proposed action. The number of coho salmon, CC Chinook, and NC steelhead occupying the action area is dependent on their population size and hydrology which varies spatially and temporally throughout the extraction reaches. We anticipate that a small number of steelhead juveniles may be crushed during construction and removal of temporary channel crossings (bridges). In addition, we expect that adults and juveniles of all three species may become stranded in trenches and wetland pits. Although the trenches and wetland pits will be designed to avoid stranding, unexpected river changes may cause stranding of fish with mortality before fish rescue operations commence. While we cannot reliably estimate the number of individuals that may become stranded in a given year, NFMS expects that the probability of stranding is very low due to minimization measures included in the LOP 2015-1, but if stranding occurs, then a small number of juveniles or adults (in any combination of the three species) may become stranded and die in trenches or wetland pits. Overall, the effects of the action vary based on the extraction intensity, location, and hydrological factors. NMFS is using two surrogates for the amount of take which could occur. The surrogates are based on the maximum extraction acreage and the maximum extraction volumes of each extraction reach during the 2005 through 2014 permit periods. NMFS does not expect the maximum acreage for LOP 2015-1 to increase due to site specific volume limitations. The maximum extraction acreage and maximum volume for each reach from 2005 through 2014 is as follows:

- Lower Eel River: 42.3 acres/215,760 cu. yds.
- Middle Eel River: 9.3 acres/64,424 cu. yds.
- South Fork Eel: 9.5 acres/73,956 cu. yds.
- Van Duzen River: 29.3 acres/137,850 cu. yds.
- Mattole River/Bear River/PL Bar/Fort Seward: 2.6 acres/14,064 cu. yds.

NMFS expects that physical habitat impacts will be: (1) limited to the habitat adjacent to and immediately upstream of and downstream of the extraction areas described in Table 2-21 below; (2) compliant with the minimization measures of the LOP 2015-1; and (3) within the expected effects of the proposed action as described in this Opinion. Critical minimization measures in the LOP 2015-1 include, implementing a head-of-bar buffer, giving preference to alternative extraction techniques on the South Fork Eel River, Lower Eel River and Van Duzen River, and limiting the type of skimming on the Van Duzen River to narrow skims with widths of no more than 90 feet as measured across the top of the extraction. We expect more frequent use of alcoves, trenches and narrow skims in these reaches in lieu of traditional skimming, and that a fish migration channel will be designed and implemented in the Van Duzen River delta at the Leland Rock site and the Hauck Bar site. We also expect that trenching will be used at the Bess and Noble sites.

The duration of effects is anticipated to extend from 2015-2025, and possibly beyond. Although many of the effects will be short-lived and occur on a seasonal basis (*e.g.*, effects of bridge construction), effects to habitat and consequent incidental take of coho salmon, Chinook salmon and steelhead juveniles may persist beyond a given extraction season.

Hoopa Valley Tribe

NMFS anticipates that HVT gravel mining operations as permitted under the CWA section 404 permit will result in incidental take of naturally produced, unmarked coho salmon in the Trinity River. NMFS expects that temporary physical habitat impacts will occur primarily on the extraction areas. These changes will primarily influence the sheltering of coho salmon juveniles during higher flows that inundate the extraction areas. These localized changes in habitat will reduce juvenile rearing habitat. We expect impairment of essential behavior patterns of juveniles as a result of a temporary loss of habitat (*i.e.*, coarse substrate), short-term increases in turbidity and fine sediment, and from being displaced during instream heavy equipment activity from bridge construction. These reductions in habitat and behavioral displacement of juveniles will increase competitive pressures on the affected individuals resulting in decreased growth rates and lower ocean survival. Coho salmon that are displaced from rearing areas will be subject to increased predation. We expect that very few juvenile coho salmon will be harmed as a result of these changes in habitat per year and no adults will be affected.

NMFS is unable to determine the number of individuals that will experience lower survival as a result of the HVT's proposed action because the number of coho salmon that occupy the action area varies temporally and spatially in response to population size, hydrology, and other factors that will influence their use of the action area. In addition, the effects of the action will vary based on extraction intensity, location, and the persistence of changes in the bar caused by extraction that will vary due to hydrologic and other factors. Therefore, NMFS is using a surrogate for the amount of take in terms of the extent of the gravel bars that may be mined in the action area. The distance of river where the bars occur is approximately 5.3 river miles. In addition, the acreage of the bars is:

- Tish Tang Campround Bar = approx. 9.7 acres
- Tish Tang Creek Bar = approx. 1.2 acres
- Campbell Bar = approx. 3.2 acres
- Tish Tang #8 Bar = approx. 15.2 acres
- Cal Pac Bar = approx. 5.4 acres
- Security East Bar = approx. 11.4 acres

The duration of effects is anticipated to extend from 2015-2025, and possibly beyond. Although many of the effects will be short-lived and occur on a seasonal basis (*e.g.*, effects of bridge construction), effects to habitat and consequent incidental take of coho salmon may persist beyond a given extraction season. Anticipated incidental take may be exceeded if gravel extraction operations extend beyond the described action area in either volume (100,000 cubic yards) or spatial extent (as described above), are not in compliance with the applicable minimization measures, or if effects of gravel extraction operations are exceeded or different than the effects described in this Opinion.

Table 1. For each river, gravel bar sites are listed from the most upstream site to the most downstream site, and are not necessarily contiguous. The approximate length of each site is measured along the center-line of the stream, adjacent to each bar. Data was provided by Humboldt County Planning Division (April 26, 2000), except for the Cook’s Valley site and the Fort Seward site where data was provided by the Corps (June 27, 2000), and the McKnight site, where data was provided by the Corps (June 25, 2001), and the HVT sites where data was provided by NMFS (2009).

Stream	Length (ft)	Gravel Bar Site Name
Middle Eel River	3646	Vroman and Maynard Bars
	4160	Truck Shop and Scotia Bars
	8340	Dinner Creek and Three Mile Bars
	8398	Elinor Bar
	4844	Holmes Bar
	7900	Dyerville, South Fork and Bowlby Bars
Lower Eel River	1117	Hansen Bar
	1754	Upper Sandy Prairie Bar
	3507	Canevari - Sandy Prairie Bar
	2160	Lower Sandy Prairie Bar
	3413	Worswick Bar
	2807	Singley Bar (downstream of Fernbridge)
South Fork Eel River	809	Cook’s Valley (at the Humboldt/Mendocino County line)
	1218	Tooby Park/Garberville
	2097	Randall Sand and Gravel/Tooby Park/Garberville
	1854	Wallen/Johnson Redway Bar (near the town of Redway)
Lower Van Duzen River	2304	Pacific Lumber Bar (near the town of Carlotta)

Stream	Length (ft)	Gravel Bar Site Name
	661	Thomas Bess Ranch
	15506	Van Duzen Ranch
	1890	Leland Rock Gravel Bars
Lower Trinity River	2000	McKnight Bar (near the town of Salyer)
	4497	Big Rock (near the town of Willow Creek)
	834	Klamath River Aggregate (near the town of Hoopa)
North Fork Mattole	4909	Cook Bar (at confluence with mainstem Mattole River)
Upper-Mid Eel	2000	Satterlee Bar near Fort Seward, at approximate river mile 68
Bear River	975	Branstetter Bar
Larabee Creek	2270	Charles Bar near Blocksburg on Alderpoint Rd.

Effect of the Take

In the biological Opinion, NMFS determined that the amount or extent of anticipated take, coupled with other effects of the proposed action, is not likely to result in jeopardy to SONCC Coho salmon, CC Chinook salmon, or NC steelhead or the destruction or adverse modification of critical habitat when the reasonable and prudent alternative is implemented.

Reasonable and Prudent Measures

“Reasonable and prudent measures” are nondiscretionary measures that are necessary or appropriate to minimize the impact of the amount or extent of incidental take (50 CFR 402.02).

LOP 2015-1

NMFS believes that the following reasonable and prudent measures are necessary and appropriate to minimize take of SONCC coho salmon, CC Chinook salmon and NC steelhead resulting from implementation of the proposed action.

The Corps shall:

1. Ensure that the monitoring necessary to track changes to salmonid habitat quality and quantity in the vicinity of gravel extraction sites is implemented.
2. Ensure that wetland pits are located above the 2-year flood frequency elevation.

3. Recommend that the County updates the 1994 Eel River Final PEIR to reflect changes in the status of the species, environmental baseline, and gravel extraction practices.

Hoopa Valley Tribe

NMFS believes that the following reasonable and prudent measure is necessary and appropriate to minimize take of SONCC coho salmon resulting from implementation of the proposed action.

The Corps shall:

1. Ensure that the monitoring necessary to track changes to coho salmon habitat quality and quantity in the vicinity of gravel extraction sites is implemented.

Terms and Conditions

The terms and conditions described below are non-discretionary, and the Corps or any applicant must comply with them in order to implement the reasonable and prudent measures (50 CFR 402.14). The Corps or any applicant has a continuing duty to monitor the impacts of incidental take and must report the progress of the action and its impact on the species as specified in this incidental take statement (50 CFR 402.14). If the entity to whom a term and condition is directed does not comply with the following terms and conditions, protective coverage for the proposed action would likely lapse.

LOP 2015

The following terms and conditions implement reasonable and prudent measure 1:

Ensure that the monitoring necessary to track changes to salmonid habitat quality and quantity in the vicinity of gravel extraction sites is implemented.

- a. The Corps will ensure that all required monitoring is completed annually. This requirement includes both the biological monitoring that is described in the biological monitoring plan dated February 2015 and added to the LOP 2015-1 on April 4, 2015, as Appendix D, and the physical monitoring that is described in Appendix C of the LOP 2015-1. Completion of required monitoring will be documented by development of a tracking system by the Corps that clearly shows that all applicants meet all monitoring requirements annually. The tracking system will be developed and implemented by the Corps by December 31, 2015.
- b. The Corps will provide a cross section data protocol and reporting format that NMFS and CHERT have reviewed to ensure that all data is provided in a consistent format. If modifications to the protocol are necessary, proposals for the modifications will be circulated to CHERT, NMFS and the applicants for review and comment prior to approval and implementation.

- c. Ensure that the site-specific checklists required by the LOP 2015-1 (Appendix N of the LOP 2015-1 provides an example checklist) are completed annually for all mining sites.
- d. Ensure that monitoring reports are provided to NMFS each year by December 31. Reports shall be submitted to:

Matt Goldsworthy
Acting North Coast Branch Chief
National Marine Fisheries Service
1655 Heindon Road
Arcata, California 95521

The following terms and conditions implement reasonable and prudent measure 2:

Ensure that wetland pits are located above the 2-year flood elevation in order to reduce the potential for salmonid stranding.

- a. Pre-extraction plans will provide either an air photo showing observed edge of water of the previous winter flood flow with a frequency above the 2-year flood and below the proposed wetland pit location or a HEC-RAS model will be provided that demonstrates that the location of wetland pits are above the 2-year flood level.

Hoopa Valley Tribe

The Corps, and its applicant, the HVT, must comply with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary.

The following terms and conditions implement reasonable and prudent measure 1:

Ensure that the proposed monitoring to track changes to Coho salmon habitat quality and quantity in the vicinity of gravel extraction sites is implemented.

- a. The Corps will ensure that all required monitoring is completed annually. Completion of required monitoring will be documented by development of a tracking system by the Corps that clearly shows that the HVT meets all monitoring requirements annually. The tracking system will be developed and implemented by the Corps by December 31, 2015.
- b. Ensure that all monitoring reports are provided to NMFS each year prior to December 31. Reports shall be submitted to:

Matt Goldsworthy
Acting North Coast Branch Chief
National Marine Fisheries Service
1655 Heindon Road
Arcata, California 95521

Reinitiation of Consultation

LOP 2015

This concludes formal consultation for LOP 2015. As 50 CFR 402.16 states, 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 taking specified in the incidental take statement 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 designated that may be affected by the action.

For example, reinitiation of consultation may be required if (1) the extraction intensity that was analyzed in the Opinion by river reach is exceeded, and if greater mining intensity results in habitat changes not anticipated in this Opinion; or (2) critical minimization measures such as, implementing a head-of-bar buffer, giving preference to alternative extraction techniques on the South Fork Eel, Lower Eel and Van Duzen rivers, and limiting skim widths in the Van Duzen River to no more than 90 feet as measured across the top of the extraction, are not implemented. Reinitiation of consultation is also required if additional sites other than those listed in the ITS Table 1 are authorized by the LOP 2015-1.

Hoopa Valley Tribe

This concludes formal consultation for the Hoopa Valley Tribe. As 50 CFR 402.16 states, 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 taking specified in the incidental take statement 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 designated that may be affected by the action. In instances where the amount of incidental take is exceeded, consultation shall be reinitiated immediately. For example, reinitiation of consultation may be required if minimization measures such as the head-of-bar buffer and the pre-extraction planning process are not implemented.

Appendix N

Sample Operational Checklist*

(*This list is intended to illustrate the basic requirements and methods to be followed during gravel extraction operations. It is by no means an exhaustive list, but a sample of what an operator's checklist may resemble for the management of gravel extraction activities.)

Gravel Bar Name:

In addition to commercial gravel extraction, the regulating agencies also have specific habitat goals for the ____ extraction area. For instance, the agencies are also attempting to develop a fish channel from the Eel up the Van Duzen River.

NMFS POC for weekend operations: _____phone #. Not necessary for all gravel bars.

- Habitat mapped for previous year and turned in on _____
- 1. Permits Required: _____ date obtained
 - NC RWQCB
 - CDFW
 - Ca Coastal Comm
 - USACE (LOP or mod)
 - SMARA
- 2. Extraction Method
- 3. Cut Stakes: In place on monitoring and extraction cross sections at the perimeter of the extraction area. Each stake should be labeled with depth of cut, pre-extraction elevation, cross-section no. and station no.
- 4. Corps, NMFS and CHERT are provided the 5-day notice that excavation is imminent at extraction area. The agencies are notified that the previous specific extraction area is complete. I.e. Extraction Area A is complete, we're moving on to Area
- 5. Bridge (if any) location and construction approved.
- 6. Site inspected for grease/oil-spills. If observed, photograph and document the spill, implement the spill-cleanup plan and notify the Corps' and NMFS' points of contact.
- 7. Equipment parked above the OHWM during maintenance and after-hours.
- 8. Extraction surface has even, gradual, consistent slope. Free of depressions.
- 9. Tires and autobody debris, or other large metal debris removed from the gravel bar and

disposed/recycled properly.

- 10. Water surface elevation marked at 35% flow. The identification marks shall be maintained throughout the extraction and post-extraction inspection.

- 11. Specific terms and conditions of LOP or Modification:
 - a) _____
 - b) _____
 - c) _____
 - _____
 - _____

- 12. Maximum Volume authorized

- 13. Survey/monitoring requirements: _____ date
 - Spring Aerial Photos
 - Habitat Survey
 - Pre-extraction Monitoring Xsec
 - Post-extraction Xsec
 - Volume calcs
 - Flows marked at several locations to define 35% flow water surface elevation

- 14. Time Constraints: _____ actual date
 - Pre extraction plans to agencies:
 - Start no earlier than 1 June.
 - End prior to 15 October
 - Bridge installed no earlier than 30 June
 - Bridge removed by 01 October
 - Post extraction plans due by 15 December

- 15. Other Considerations:
 - Skims above 35%?
 - Riffles? Size of Buffer?
 - Head of bar? Size of head of Bar buffer?

- 18. Habitat mapping scheduled for _____.

- 19. Petroleum spill kit location _____.