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Hearing Date:	August 13, 2009
Commission Action:	

STAFF REPORT: REGULAR CALENDAR

APPLICATION NO.: **1-09-006**

APPLICANT: **Eureka Ready Mix**

PROJECT LOCATION: At river mile 14 on the lower Eel River on the "Hauck Bar" located off of Fowler Lane, west of Highway 101, Alton area, Humboldt County (APNs 106-221-01, 201-221-09, 201-261-01 & -06).

PROJECT DESCRIPTION: Continued seasonal extraction of up to 150,000 cubic yards of river run aggregate (sand and gravel) per year for a period of five years from the dry river channel.

LOCAL PLAN DESIGNATION: Agriculture Exclusive (AE) and Natural Resources (NR) as designated by the Eel River Area Plan

LOCAL ZONING DESIGNATION: (1) Agriculture Exclusive, 60-acre minimum parcel size with archaeological, flood hazard, coastal streams and riparian protection and transitional agricultural lands combining zones (AE-60/A,F,R,T), and (2) Natural Resources with riparian protection combining zone (NR/R).

APPROVALS RECEIVED: (1) Humboldt County Coastal Development Permit No. CDP-59-92; (2) Humboldt County Surface Mining and Reclamation Plan No. SMP/RP 07-92/08-92; (3) Humboldt County Condition Use Permit No. CUP-29-92; and (4) North Coast Regional Water Quality Control Board Section

401 Water Quality Certification Order No. R1-2005-0011 (dated June 21, 2005; expires June 21, 2010).

OTHER APPROVALS NEEDED:

1. U.S. Army Corps of Engineers Section 404 Clean Water Act Letter of Permission (LOP 2009);
2. California Department of Fish & Game Section 1600 Streambed Alteration Agreement;
3. North Coast Regional Water Quality Control Board Section 401 Water Quality Certification (for 2010-2014 gravel extraction seasons);
4. State Lands Commission General Lease (for seasonal crossing installation); and
5. County of Humboldt Extraction Review Team (CHERT) approval.

SUBSTANTIVE FILE DOCUMENTS:

1. Final Program Environmental Impact Report (EIR) on Gravel Removal from the Lower Eel River, adopted 1992, and Supplemental EIR, certified July 24, 1992;
2. *Interim Monitoring Program and Adaptive Management Practices for Gravel Removal from the Lower Eel and Van Duzen Rivers (IMP)*, July 2, 1996;
3. *Biological Assessment for the U.S. Army Corps of Engineers LOP-2009 Aggregate Extraction Operations Lower Eel River and Van Duzen River, Humboldt County, California*, prepared by Alice Berg & Associates, Clio, CA, May 6, 2009;
4. *Lower Eel River Gravel Mining and Extraction Activities Biological Assessment (Western Snowy Plover)*, prepared by Winzler & Kelly, Eureka, CA, March 9, 2009;
5. NOAA-Fisheries Formal Consultation/ Final Biological Opinion for LOP-2009;
6. U.S. Fish & Wildlife Service Formal Consultation/Final Biological Opinion for LOP-2009;
7. *Analysis of Eel River Cross Sections at Gravel Mining Sites, 1997-2007*, prepared by County of Humboldt Extraction Review Team (CHERT), January 2009;
8. Humboldt County certified Local Coastal Program.

SUMMARY OF STAFF RECOMMENDATION

Staff recommends approval with special conditions of the proposed gravel extraction project.

The project site is located at the Hauck gravel bar on the lower Eel River, at approximately river mile 14 off of Fowler Lane, west of Highway 101, in the Alton area. The site is immediately downstream of the Van Duzen River confluence at the upstream extent of the broad, low-gradient floodplain of the Eel River (see Exhibit Nos. 1 and 2). Public access to the site is available at the Highway 101, Van Duzen River Bridge, one-half mile south of Fowler Lane, and from Riverwalk Drive in Fortuna.

The project site is approximately 10 miles from the ocean, at river mile 14. The Eel River flows north through the project parcels, parallel to Highway 101. The Van Duzen River enters the Eel River from the east at the upstream project limit, contributing to the large sediment depositional zone of the confluence. The meeting of the two rivers has resulted in accumulation of sediment creating a flat-water expanse extending nearly one mile upstream along the Eel River.

The applicant proposes to continue the on-going, seasonal extraction of up to 150,000 cubic yards of aggregate at Hauck Bar on an annual basis for a period of five years. The applicant also proposes to install seasonal railroad flatbed crossings over low-flow river channels to facilitate gravel transport and the reclamation of extraction areas. The proposed annual extraction amount of 150,000 cubic yards is proposed as an upper limit, is consistent with the PEIR for the lower Eel River, and is based upon evaluation of additional information as well as the data collected under the Humboldt County PEIR and Interim Management Programs. This project has been described to permit adaptive management of the project area. In any given year, project extraction volumes, locations, and methods would be submitted by the project consultants for approval by local, state, and federal agencies, including the County of Humboldt, Department of Fish and Game, and the Army Corps of Engineers. See Exhibit No. 4 for full project details, and see Appendix B for a description of extraction methods.

The Hauck Bar has been mined for sand and gravel on an ongoing basis since the 1950's (see Table 1 below). Eureka Ready Mix has been mining gravel from the site since 1981.

The gravel extraction areas on the bar are generally not visible from Highway 101, the principal public road in the area. Parts of the existing processing plant (equipment towers) are remotely visible. The proposed project would not modify the processing plant.

The Lower Eel River has been used for gravel extraction since 1911. Currently, approximately six gravel operations are located along a 9-mile stretch of the lower Eel River, and three additional operations are located on the lower reaches of the Van Duzen River, which flows into the Eel River at Alton (Exhibit No. 3). All of the operations along the Eel River and the portion of the lowest-most operation on the Van Duzen River west of the Van Duzen River Railroad Bridge are within the coastal zone. All of the gravel operations on the lower Eel and lower Van Duzen Rivers are interrelated in the sense that all of the gravel bars derive their material from the same upstream sediment sources. Brown and Ritter (1972) determined that the Eel River was a "hydraulically-limited" rather than "sediment-limited" river. This means that replenishment is more a factor of the size and duration of winter flows than the production of sediment in the watershed. This determination was based on the calculated high amounts of sediment that currently exist in active land sliding occurring in the watershed.

Humboldt County developed a strategy for controlling the cumulative impacts of the gravel operations on riverbed degradation and bank erosion. At the heart of the strategy is an annual administrative approval of extraction plans that specifies the particular method and location of extraction. The "CHERT" (County of Humboldt Extraction Review Team), which is composed of independent fluvial geomorphologists, hydrologists, biologists, and botanists, has the authority for the County to review all annual mining plans and prescribe changes to those plans as deemed

necessary. CHERT integrates all the monitoring data developed by the gravel operators for geomorphic evaluations of the streambed and also evaluates and recommends practices designed to preserve and enhance vegetation and wildlife habitat.

In January of 2009, CHERT released a 10-year analysis (Exhibit A) of river channel cross sections taken at various sites along the Eel and Van Duzen Rivers near mining sites (including the lower, middle, and South Fork reaches of the Eel River and the lower Van Duzen River). The report represents the longest-term geomorphic analysis completed to date examining the potential effects of gravel mining operations on river channel morphology. The report finds that "While certain methods of mining and locally excessive volumes can affect instream habitat in the short term, the river does not appear to suffer from long term or broad scale channel bed degradation from gravel mining. Furthermore, the CHERT adaptive management program authorized by the IMP specifically addresses preventing local over-extraction and avoids/minimizes mining methods that cause aquatic and riparian habitat damage" (page 2). The report concludes that "…we did not discern any large scale, persistent effects of Eel River gravel mining on channel thalweg elevations, mean bed elevations, or scour…Gravel mining effects in the Eel River are probably limited to short term, localized effects which the adaptive management program and federal and state oversight attempt to avoid or minimize. Refinement of project-scale minimization measures will continue to be a fundamental component of the adaptive management process, as will instream habitat improvement projects associated with gravel extraction operations" (page 24).

In an effort to streamline the processing of Clean Water Act permits for the numerous in-stream gravel operations within Humboldt County, the U.S. Army Corps of Engineers adopts a Letter of Permission (LOP) procedure for authorizing such projects. An applicant for a project covered by the LOP must submit yearly gravel plans and monitoring information to the Corps for approval under the procedure. The Corps incorporates the County's CHERT review process into its LOP procedure.

As with all "federal actions" that might adversely impact rare, threatened, and endangered fish and wildlife, the LOP process and the Corps' review of individual Section 404 permits is also subject to consultations with applicable natural resource trustee agencies as required under Section 7 of the Federal Endangered Species Act (FESA). The exposed cobble in the gravel bars adjacent to the low-flow channels provides roosting and/or nesting habitats for the federally listed western snowy plover (*Charadrius alexandrinus nivosus*). Additionally, the Eel River and its tributaries support three federally threatened fish species: Coho salmon (*Oncorhynchus kisutch*), Chinook salmon (*Oncorhynchus tshawytscha*), and steelhead trout (*Oncorhynchus mykiss*). The lower Eel River, including the project area, is mainly utilized by the anadromous fish as a migration route to and from the upstream spawning grounds. In addition, the lower Eel River supports summer rearing habitat for juvenile salmonids, especially steelhead yearlings and fall Chinook sub-yearlings, and holding areas for adult summer steelhead as well as spawning and nursery habitat for marine fishes and invertebrates. The formal consultations conducted by NOAA-Fisheries and the FWS provide critical evidence for the Commission's review of the proposed gravel mining operations on the lower Eel and Van Duzen Rivers that the operations will not result in significant adverse impacts on threatened and endangered species.

On July 27, 2009, NOAA-Fisheries transmitted its preliminary conclusions and draft terms and conditions to minimize the amount or extent of "take" of threatened salmonids (Exhibit D). The final Biological Opinion for LOP-2009 for proposed gravel extraction operations on the Eel and Van Duzen Rivers is anticipated to be issued in late August. The preliminary conclusion states that the gravel mining proposed under LOP 2009 for the five-year permit period is not likely to jeopardize the continued existence of threatened salmonids and is not likely to adversely modify or destroy designated salmonid critical habitat. The preliminary conclusion of NOAA-Fisheries notes that the measures instituted in 2004 have worked well, and the agency does not anticipate any significant changes the requirements and recommendations to the Corps that will be included in the final Biological Opinion for LOP-2009. Additionally, the FWS has informed staff that it does not anticipate that its recommended conditions for western snowy plover will be significantly different than those included in the 2005 Biological Opinion (see Exhibit F). The FWS preliminarily concludes that the proposed gravel operations will not jeopardize the continued existence of the plover or adversely modify or destroy its designated critical habitat. The FWS final Biological Opinion is expected to be issued by August 12, 2009. Staff recommends Special Condition No. 14 to require the applicant to submit, prior to permit issuance, final Biological Opinions in support of the gravel extraction authorized by this permit and that are consistent with all terms and conditions of this permit.

Staff believes that, with the recommended conditions described below, the proposed gravel extraction operation is consistent with the requirements of Section 30233 of the Coastal Act, in that feasible mitigation measures have been provided to minimize adverse environmental effects. The gravel extraction limitations and performance standards imposed through Special Condition Nos. 1, 3, and 5 are designed to prevent impacts to river morphology, riparian vegetation, threatened and endangered species, and water quality. Together with the requirements of Special Condition Nos. 6 and 7 to prohibit placement of material into the active channel and limit the extraction season, the project is conditioned to ensure that significant adverse impacts to the Eel River from the proposed gravel extraction operation will be avoided. Therefore, staff believes that the proposed project as conditioned is consistent with the requirements of Sections 30231, 30233, and 30240 of the Coastal Act, as well as all other applicable policies of the Coastal Act.

The Motion to adopt the Staff Recommendation is found on Page 6.

STAFF NOTES

1. Exhibits A through F are Common to Agenda Items Th-6c through Th-6f

Exhibits A through F are common to agenda items Th-6c (CDP Application No. 1-09-005, Eureka Ready Mix), Th-6d (CDP Application No. 1-09-006, Eureka Ready Mix), Th-6e (CDP Application No. 1-09-011, Charles Hansen), and Th-6f (CDP Application No. 1-09-022, Mercer-Fraser Co.). A single combined exhibit packet has been prepared for the four applications and is included under separate attachment.

2. Jurisdiction & Standard of Review

The project site is located in the Commission's retained permit jurisdiction. The County of Humboldt has a certified Local Coastal Program (LCP), but the site is within an area shown on State Lands Commission maps over which the State retains a public trust interest. Therefore, the standard of review that the Commission must apply to the project is the Chapter 3 policies of the Coastal Act.

I. MOTION, STAFF RECOMMENDATION, & RESOLUTION

The staff recommends that the Commission adopt the following resolution:

Motion:

I move that the Commission approve Coastal Development Permit No. 1-09-006 pursuant to the staff recommendation.

Staff Recommendation of Approval:

Staff recommends a **YES** vote. Passage of this motion will result in approval of the permit as conditioned and adoption of the following resolution and findings. The motion passes only by affirmative vote of a majority of the Commissioners present.

Resolution to Approve Permit with Conditions:

The Commission hereby approves a coastal development permit for the proposed development and adopts the findings set forth below on grounds that the development as conditioned will be in conformity with the policies of Chapter 3 of the Coastal Act. Approval of the permit complies with the California Environmental Quality Act because either 1) feasible mitigation measures and/or alternatives have been incorporated to substantially lessen any significant adverse effects of the development on the environment, or 2) there are no further feasible mitigation measures or alternatives that would substantially lessen any significant adverse impacts of the development on the environment.

II. STANDARD CONDITIONS: See Appendix A.

III. SPECIAL CONDITIONS:

1. Extraction Limitations

Extraction of material shall be subject to the following limitations:

(A) Consistent with the proposed project description, the permittee shall extract no more than 150,000 cubic yards of gravel annually from the project site;

(B) The permittee shall only extract material by traditional skims, horseshoe skims, inboard skims, narrow skims, alcove extractions, wetland pits, wet trenches for salmonid habitat improvement purposes only, and/or dry-trenches in the manner described Appendix B and in the U.S. Army Corps of Engineers Letter of Permission Procedure 2009 (LOP-2009) Public Notice dated February 19, 2009 (No. 2007-00857). If wet trenching methods for salmonid habitat improvements are used, the trenching within the wet channel shall be limited to the trenching configuration and extraction volume that is the minimum amount necessary for improving salmonid habitat. If dry trenching methods are used, a barrier such as silt fencing, or a gravel berm shall be constructed and maintained during trenching along the entire length of the excavated area to prevent turbid water from entering the flowing river. After completion of gravel extraction operations, the permittee shall remove the berm in several locations to prevent the creation of fish traps;

(C) Excavation shall not occur in the active channel (area where water is flowing unimpeded through the river channel);

(D) Extraction quantities shall not exceed (1) the proposed cubic yards per year of gravel extraction, (2) any specific allocation limit required by the Army Corps of Engineers, and (3) the long-term average sustained yield based on estimates of mean annual recruitment, as utilized by CHERT;

(E) Gravel extraction operations shall not disturb or remove any of the riparian vegetation on the river banks;

(F) Gravel extraction operations shall not disturb or remove any of the riparian vegetation on the gravel bar that is either: (1) part of contiguous riparian vegetation complex 1/16-acre or larger, or (2) one-inch-in-diameter at breast height (DBH) or greater;

(G) Horseshoe extractions shall occur on the part of the gravel bar that is downstream from the widest point of the bar and must be set back from the low flow channel with vertical offsets;

(H) Dry trench extractions shall be (1) limited to excavation on an exposed dry gravel bar; (2) either shallow and stay above the water table, or deep and extend below the water table, and (3) breached on the downstream end and connected to the river to prevent fish stranding after excavation when the sediment in the trench has settled;

(I) Alcove extractions shall be (1) located on the downstream end of gravel bars where naturally occurring alcoves form and provide refuge for salmonids; (2) regularly shaped or irregularly shaped to avoid riparian vegetation; (3) open to the low flow channel on the downstream end to prevent fish stranding; and (4) extracted to a depth either above or below the water table;

(J) Any bar-skimming extractions that are consistent with subsection (B) above that are proposed adjacent to the low flow channel shall have a minimum skim floor elevation at the elevation of the 35% exceedence flow;

(K) The upstream end of the bar (head) shall not be mined or otherwise altered by gravel extraction operations. 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; and

(L) The location of wetland pits shall be above the two-year flood frequency elevation.

2. Seasonal Crossings

Any proposed crossing of the low flow channel or secondary channels that could be expected to maintain flow year-round shall be subject to the following criteria:

(A) The crossing shall be of the railroad flatcar or bridge variety placed in a manner so as to span the channel with a minimum clearance of three (3) feet above the water surface;

(B) Stream channel crossing locations shall be determined on a site-specific basis. Special consideration shall be given to the proposed placement of the channel crossings at riffles and based on findings from CHERT that the location will minimize adverse effects to salmonids;

(C) No portion of the abutments or bridge supports shall extend into the wetted channel except in shallow flat-water areas;

(D) The presence of heavy equipment in the wetted low-flow channel shall be minimized by limiting the number of heavy equipment crossings during each crossing installation or removal. A maximum of two crossings per installation and two crossings per removal is allowed, although one crossing is preferred. Heavy equipment shall not be used in the wetted low-flow channel except for channel crossing installation and removal;

(E) Channel crossings shall only be placed after June 30 of each year; and

(F) Channel crossing removal shall be completed by October 15 of each year or by the extended date approved by the Executive Director pursuant to Special Condition No. 5.

3. Annual Gravel Extraction Plan

(A) **PRIOR TO THE START OF EACH YEAR'S GRAVEL EXTRACTION OPERATIONS**, the applicant shall submit, for the review and written approval of the Executive Director, a final gravel extraction plan for that gravel extraction season consistent with the terms and conditions of this permit and that contains the following:

1. A gravel extraction plan of the annual gravel extraction operation containing cross-sections, maps, and associated calculations that accurately depict the proposed extraction area, demonstrates that the proposed extraction will be consistent with the extraction standards and limitations specified in Special Condition Nos. 1, 2, 4, 5, 6, and 7 and is prepared in conformance with the requirements of the U.S. Army Corps of Engineers Letter of Permission Procedure 2009 (LOP-2009) Public Notice dated February 19, 2009 (No. 2007-00857);

2. A pre-extraction vertical rather than oblique aerial photo of the site taken during the spring of the year of mining at a scale of 1:6000 and upon which the proposed extraction activities have been diagrammed;

3. A botanical survey prepared by a qualified biologist with experience in riparian and wetland vegetation mapping, for the review and approval of the Executive Director, that maps all vegetation found in potential extraction areas of the site and highlights the location and extent of all vegetated areas containing woody riparian vegetation that is either (i) part of a contiguous riparian vegetation complex 1/16-of-an-acre or larger or (ii) one-inch-in-diameter at breast height (DBH) or greater. If the areas proposed for extraction are devoid of vegetation, the applicant may substitute the submittal of photographs (including aerial) that are sufficient in the opinion of the Executive Director to demonstrate that no vegetation exists in the proposed extraction areas in lieu of the botanical survey;

4. A copy of the gravel extraction plan recommended by the County of Humboldt Extraction Review Team (CHERT) for the subject year, unless review by CHERT is not required by the County, and evidence that the final gravel extraction plan is consistent with the recommendations of CHERT as well as consistent with all standard and special conditions of this permit;

5. A post-extraction survey of the prior year's mining activities (if any) conducted following cessation of extraction and before alteration of the extraction area by flow following fall rains, that includes the amount and dimension of material excavated from each area mined and is prepared in conformance with the requirements of the U.S. Army Corps of Engineers Letter of Permission Procedure 2009 (LOP-2009) Public Notice dated February 19, 2009 (No. 2007-00857);

6. The results of biological monitoring report data required by the U.S. Army Corps of Engineers Letter of Permission Procedure 2009 (LOP-2009) Public Notice dated February 19, 2009 (No. 2007-00857);

7. Pre-extraction snowy plover surveys that have been completed in accordance with Special Condition No. 4 and U.S. Fish and Wildlife Service Biological Opinion for the LOP-2009 for any development at the project site proposed to occur prior to September 15;

8. A plan for run-off control to avoid significant adverse impacts on coastal resources. The runoff control plan shall include, at a minimum, the following components;

   (a) The plan shall demonstrate that:

      (1) Run-off from the gravel mining extraction and stockpiling sites shall not increase sedimentation in coastal waters;

      (2) Run-off from the gravel mining extraction and stockpiling sites shall not result in pollutants entering coastal waters;

      (3) Best Management Practices (BMPs) shall be used to prevent entry of polluted stormwater runoff into coastal waters during the transportation and storage of excavated materials, including but not limited to:

(4) A suite of the following temporary erosion and runoff control measures, as described in detail within in the "California Storm Water Best Management Commercial-Industrial and Construction Activity Handbooks, developed by Camp, Dresser & McKee, et al. for the Storm Water Quality Task Force, shall be used during mining: Spill Prevention and Control (CA12), Vehicle and Equipment Fueling (CA31), Vehicle and Equipment Maintenance (CA32), Employee / Subcontractor Training (CA40), and Dust Control (ESC21);

(b) A narrative report describing all temporary runoff control measures to be used during mining;

(c) A site plan showing the location of all temporary runoff control measures; and

(d) A schedule for installation and removal of the temporary runoff control measures; and

9. Evidence demonstrating that any proposed wet trenching proposed for instream salmonid habitat restoration purposes is limited to the trenching configuration and extraction volume that is the minimum amount necessary for improving salmonid habitat, including, but not limited to, written approval of the proposed wet trenching from NOAA-Fisheries and/or the Department of Fish and Game.

B. The permittee shall undertake development in accordance with the approved final gravel extraction plan. Any proposed changes to the approved final gravel extraction plan shall be reported to the Executive Director. No changes to the approved final gravel extraction plan shall occur without a Commission amendment to this coastal development permit, unless the Executive Director determines that no amendment is legally required.

4. <u>Protection of Western Snowy Plover</u>

(A) If gravel extraction commences before September 15, gravel extraction operations shall occur at least 1,000 feet from suitable plover habitat. Except as specified below, daily plover surveys by an U.S. Fish and Wildlife Service (FWS)-approved biologist, according to FWS survey protocol, shall be conducted prior to commencement of daily on-site activities and continue consistent with subsections 1-2 below:

1. If plovers or an active plover nest is within the area of planned operations or a 1,000-foot buffer area, activities within 1,000 feet of the plovers or nest shall be delayed until the nest has hatched and the plovers have moved to a distance greater than 1,000 feet away (hazing is not authorized).

2. Extraction activities within 1,000 feet of plover habitat may only occur if three consecutive days of FWS-approved plover surveys conducted by a FWS-approved biologist are completed with no detections of plovers or nests. Operators must ensure that extraction activities do not occur when plovers or nests are within 1,000 feet of the extraction site.

(B) All pre-extraction activities conducted in suitable nesting habitat prior to August 22 of each year shall be preceded by plover surveys completed each day pre-extraction activities are planned to occur. The surveys shall be completed according to FWS survey protocol by a biologist approved by the FWS prior to daily initiation of any pre-operational activities (i.e. topographic surveys). Other surveys (i.e. hydrologic and biological resources) not directly conducted in suitable habitat, but needing access through or near suitable habitat, may be conducted without intensive plover surveys so long as the FWS is consulted first and the surveys are conducted according to the procedures for working in or near suitable plover habitat areas identified by FWS.

(C) Vehicle use in suitable plover habitat shall be minimized to the maximum extent feasible during the plover nesting season prior to September 15.

1. Vehicle use in suitable plover habitat shall be restricted to 10 mph, unless on a an established access/haul road, where speeds shall be restricted to 30 mph. The first three vehicle trips on access/haul roads in suitable habitat each day shall not exceed 10 mph.

2. Vehicle use in suitable plover habitat associated with gravel extraction operations shall be restricted to the daytime, between 0.5-hour before sunrise and 0.5-hour past sunset.

3. Parking, staging, and maintenance of vehicles and equipment shall occur at least 1,000 feet away from suitable plover habitat.

(D) Access roads owned or controlled by the gravel operator shall be gated and locked during the plover nesting season (between March 1 and September 15) when no active extraction and hauling is occurring, including at night, to help prevent recreational vehicles from impacting western snowy plovers. The gate shall be designed to block vehicles only and shall allow for pedestrian access, unless the applicant obtains additional authorization from the Commission to block pedestrian access.

5. <u>Extraction Season</u>

Extraction and all reclamation required by Special Condition No. 7 must be completed by October 15th of each season. The Executive Director may approve either a one or two week extension of gravel extraction and reclamation activities beyond that date to as late as November 1 if the permittee has submitted a request for an extension in writing, the Executive Director determines that dry weather conditions are forecast for the extension period, and any necessary extensions of time have been granted by the Department of Fish and Game, the U.S. Army Corps of Engineers, and NOAA Fisheries. No extraction or reclamation activities shall occur after October 15th unless the permittee has first received approval of an extension of time in writing from the Executive Director. The permittee must have reclaimed all portions of the seasonal development area except for removal of any authorized seasonal crossings before an extension can be authorized.

6. <u>Resource Protection</u>

The gravel extraction and processing operations shall not disturb or remove any of the established riparian vegetation habitat along the banks of the river, nor any of the riparian vegetation areas on the gravel bar limited by Special Condition No. 1. No new haul roads shall be cut through the habitat. No debris, soil, silt, sand, bark, slash, sawdust, rubbish, cement or concrete, oil or petroleum products, or other organic or earthen material from any gravel extraction or reclamation activities shall be allowed to enter into or be placed where it may be washed by rainfall or runoff into river waters.

7. Seasonal Site Closure

The seasonal development area must be reclaimed before October 15th, or by the extended date approved by the Executive Director pursuant to Special Condition No. 5. The site must be reclaimed when extraction has been completed. Reclamation includes: (a) filling in depressions created by the mining that are not part of the approved extraction method; (b) grading the excavation site according to prescribed grade; and (c) removing all seasonal crossings and grading out the abutments to conform with surrounding topography and removing all temporary fills from the bar. After October 15th, the development area must be reclaimed daily except for the removal of authorized seasonal crossings.

8. State Lands Commission Review

PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT, the applicant shall submit to the Executive Director, a written determination from the State Lands Commission that:

(A) No State lands are involved in the development; or

(B) State lands are involved in the development and all permits required by the State Lands Commission have been obtained; or

(C) State lands may be involved in the development, but pending a final determination an agreement has been made with the State Lands Commission for the project to proceed without prejudice to that determination.

9. DFG Streambed Alteration Agreement

PRIOR TO THE START OF EACH YEAR'S GRAVEL EXTRACTION OPERATIONS, the permittee shall submit a copy of any necessary Section 1603 Streambed Alteration Agreement or other approval required by the Department of Fish and Game (DFG) for that gravel extraction season which is consistent with all terms and conditions of this permit. The applicant shall inform the Executive Director of any changes to the project required by the Department. Such changes shall not be incorporated into the project until the applicant obtains a Commission amendment to this coastal development permit, unless the Executive Director determines that no amendment is legally required.

10. Regional Water Quality Control Board Water Quality Certification

PRIOR TO THE START OF EACH YEAR'S GRAVEL EXTRACTION OPERATIONS, the permittee shall submit a copy of any necessary CWA Section 401 Water Quality Certification

(WQC) or other approval required by the North Coast Regional Water Quality Control Board for that gravel extraction season which is consistent with all terms and conditions of this permit. The applicant shall inform the Executive Director of any changes to the project required by the Board. Such changes shall not be incorporated into the project until the applicant obtains a Commission amendment to this coastal development permit, unless the Executive Director determines that no amendment is legally required.

11. Annual Army Corps of Engineers Approvals

PRIOR TO THE START OF EACH YEAR'S GRAVEL EXTRACTION OPERATIONS, the permittee shall submit a copy of any authorization issued by the U.S. Army Corps of Engineers granting approval for that year's gravel extraction season which is consistent with all terms and conditions of this permit, or evidence that no seasonal authorization is required. The applicant shall inform the Executive Director of any changes to the project required by the Corps. Such changes shall not be incorporated into the project until the applicant obtains a Commission amendment to this coastal development permit, unless the Executive Director determines that no amendment is legally required.

12. Permit Termination Date

The gravel operations authorized by this permit shall terminate on November 1, 2013. Continued gravel operations after that date shall require a new coastal development permit.

13. Final Army Corps of Engineers Approval of LOP-2009

PRIOR TO COMMENCEMENT OF ANY DEVELOPMENT AUTHORIZED BY THIS COASTAL DEVELOPMENT PERMIT, the permittee shall provide to the Executive Director a copy of a permit issued by the Army Corps of Engineers, or letter of permission, or evidence that no permit or permission is required. The applicant shall inform the Executive Director of any changes to the project required by the Army Corps of Engineers. Such changes shall not be incorporated into the project until the applicant obtains a Commission amendment to this coastal development permit, unless the Executive Director determines that no amendment is legally required.

14. Final Biological Opinions

PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT, the applicant shall submit evidence, for the review and approval of the Executive Director, that the National Marine Fisheries Service (NOAA-Fisheries) and the U.S. Fish and Wildlife Service have issued final Biological Opinions in support of the gravel extraction authorized by this permit and that are consistent with all terms and conditions of this permit. The applicant shall inform the Executive Director of any changes to the project required by the agencies. Such changes shall not be incorporated into the project until the applicant obtains a Commission amendment to this coastal development permit, unless the Executive Director determines that no amendment is legally required.

IV. FINDINGS & DECLARATIONS

The Commission hereby finds and declares as follows:

A. Environmental Setting

(1) *Background on the Lower Eel River*

The lower Eel River from the city of Rio Dell downstream to the estuary is a depositional reach bordered by open pastures and some urban development. The average channel width of the lower Eel is 1,900 feet, and summer fog influences water temperatures in the river. Historically, the channel in much of the project area was significantly deeper than it is currently, and through the first half of the 20th century the river was navigable by shallow draft boats for commercial shipping. Historical analyses of gradient and riffle conditions in the lower Eel provide additional evidence that the river is severely aggraded relative to historic conditions. The Eel River at its confluence with the Van Duzen River (just upstream of the project site) is aggraded to the point that, in some years (e.g., 1994 and 2001), salmonids holding in the lower Eel River cannot migrate upstream in late fall due to subsurface flows. This same situation has occurred just below the Sandy Prairie levee approximately two to four miles downstream of the project site. In the past, the Department of Fish and Game (DFG) has requested that gravel operators open up the channels to allow for fish passage.

Bank protection and levee structures placed in the lower Eel River have limited the river's ability to migrate and overflow its banks. The river's meandering ability during high flows has been influenced by the past land uses in the area, including construction of the Sandy Prairie levee in 1959 and the Grizzly Bluff levee following the 1964 flood, plus the cutting of the old original channel sometime in the 1860's at Fernbridge (approximately 5 river miles downstream of the project site). Levees separate potential overflow areas from the main channel and concentrate the high flow energy of floods to a narrower part of the river bed, thereby moving more bedload material through the project area. When available sediment exceeds the channel carrying capacity, sediment deposition (channel aggradation) occurs. The braided section of the channel between river mile 10.5 and 13.1 contains the largest available area to store bedload during the 50- to 100-year flows.

(2) *Project Area Location*

The project site is located at the Hauck gravel bar on the lower Eel River, at approximately river mile 14 off of Fowler Lane, west of Highway 101, in the Alton area. The site is immediately downstream of the Van Duzen River confluence at the upstream extent of the broad, low-gradient floodplain of the Eel River (see Exhibit Nos. 1 and 2).

The applicant proposes to conduct gravel extraction at Hauck Bar on an annual basis for a period of five years. The Hauck Bar has been mined for sand and gravel on an ongoing basis since the 1950's (see Table 1 below). Eureka Ready Mix has been mining gravel from the site since 1981.

The gravel extraction and processing operation is located on four separate parcels that stretch along approximately 4,000 lineal feet of the river. The western boundary of the property is

defined by the center-line of the main channel of the river. The parcel extends easterly from the center of the channel across the gravel bar, which is crossed by various secondary overflow channels, some of which are typically dry at the peak of summer.

At the end of the eastern most overflow channel, a bank rises steeply 10 to 15 feet to a terrace that extends eastward approximately 300 feet to the Sandy Prairie Levee, a flood control improvement installed by the U.S. Army Corps of Engineers after the disastrous 1964 floods on the Eel River. This terrace area west of the levee is covered by riparian habitat and pasture land. The applicant's processing operation is located east of the levee. This operation includes gravel stockpiles, a portable office, a portable concrete batch plant, aggregate processor, concrete walled diesel fuel tank enclosure, and truck weighing scales. East of the Sandy Prairie Levee, the terrace area extends another 2,000 feet to Sandy Prairie Road. This area to the east of the levee is devoted to agricultural pasture land with a barn complex located at the extreme eastern edge of the parcel.

The gravel extraction areas on the bar are generally not visible from Highway 101, the principal public road in the area. Parts of the existing processing plant (equipment towers) are remotely visible. The proposed project would not modify the processing plant.

Seven other gravel operators are located in the coastal zone along an approximately 9-river-mile reach downstream of the project site, all of which extract sand and gravel from the rivers (i.e., at Singley, Worswick, Drake, Canevari, Sandy Prairie, and Hansen Bars along the lower Eel River). Additionally, three other gravel operations are located upstream of the project site on the Van Duzen River, including a portion of the Leland Rock bar, which is within the coastal zone (see Exhibit No. 3). Tables 1 and 2 below summarize the permitting and gravel extraction history of the lower Eel River over the years.

The site is planned and zoned in the Humboldt County LCP either Natural Resources (NR) with a Streams and Riparian Corridors Combining Zone (NR/R) or Agriculture Exclusive (AE), with minimum parcel sizes of 60 acres (AE-60), with Flood Hazard (F), Archaeological Resources (A), Streams and Riparian Corridors (R), Coastal Wetland Areas (W), and Transitional Agricultural Land (T) combining zones.

Although the Humboldt County zoning for the property includes an archaeological combining zone (indicating the area is considered to have the potential for archaeological resources), no known archaeological resources exist at the site. Much of the terrace land along this area has been subject to disturbance as agricultural lands and has been inundated during major flood events. Areas of gravel bars, within the bank full channel, are generally not considered conducive to the establishment or preservation of archaeological sites due to the high incidence of inundation and fluvial reworking.

The entire property is located within the coastal zone, and the western-most approximately two-thirds of the parcel lies within the Commission's retained jurisdictional area. The boundary between the Commission's coastal development permit jurisdiction and that of the County runs generally north-south, just east of the Sandy Prairie Levee. Therefore, all of the gravel extraction

activities and proposed summer gravel truck crossings are within the Commission's jurisdiction and are the subject of Coastal Development Permit No. 1-09-006.

The project site is approximately 10 miles from the ocean, at river mile 14. The Eel River flows north through the project parcels, parallel to Highway 101. The Van Duzen River enters the Eel River from the east at the upstream project limit, contributing to the large sediment depositional zone of the confluence. The meeting of the two rivers has resulted in accumulation of sediment creating a flat-water expanse extending nearly one mile upstream along the Eel River.

Public access to the site is available at the Highway 101, Van Duzen River Bridge, one-half mile south of Fowler Lane, and from Riverwalk Drive in Fortuna.

(3) *Habitat Types & Special-Status Species*

The total project area is approximately 280 acres in size, approximately 150 acres of which is within the current boundary of "ordinary high water." The area within the OHW boundary is subject to change based upon natural river processes (e.g., erosion, accretion, and meander). Habitat types that occur in the area include the exposed gravel bars, North Coast riparian scrub, North Coast black cottonwood forest, and the low-flow river channel.

The exposed cobble in the gravel bars adjacent to the low-flow channels provides roosting and/or nesting habitats for at least two avian species, killdeer (*Charadrius vociferus*) and western snowy plover (*Charadrius alexandrinus nivosus*), but otherwise represents one of the sparsest habitats in terms of wildlife diversity and numbers. The western snowy plover has been listed under the federal Endangered Species Act as a threatened species since 1993. Though originally thought to inhabit primarily open beach strand environments, plovers have also been observed roosting and nesting on gravel bars on the lower Eel River. The plover sightings on the Eel River have been in the months of April through early September, during the nesting season. Unlike many avian species which nest in trees, plovers establish their nests on the open gravel bars.

In general, the riparian vegetation lining the lower Eel River is perhaps the single-most important element for the natural environment in the area, providing habitat for many birds and mammals. The presence of two different kinds of riparian habitat, riparian scrub and black cottonwood forest, provides habitat for a greater number of wildlife species than a more uniform and simple habitat structure would. In addition to its habitat value, the riparian corridor also provides water quality protection, bank stabilization through root penetration, and flood protection.

The North Coast riparian scrub habitat in the project area fluctuates in size, density, location, and maturity in response to flow events, sediment deposition, and natural meandering of the river channel. The vegetation growing within this habitat type is dominated by coyote brush (*Bacharris pilularis*), a sparse covering of small trees (including cottonwood and willow), and various (mostly weedy annual) grasses and herbs. Riparian scrub habitat supports a variety of wildlife species, including a number of small mammals such as raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), gray fox (*Urocyon cinereoargenteus*), rodents and rabbits, and many bird species that use the habitat for foraging, nesting, and cover.

North Coast black cottonwood (*Populus balsamifera* ssp. *trichocarpa*) forest lines the river banks and terraces, maintaining natural channel confinement in the absence of large flood events. This habitat type is a broad-leaved, winter deciduous forest dominated by black cottonwood, with lesser amounts of willow (*Salix* spp.) and red alder (*Alnus rubra*). The forest has a dense canopy as well as a dense shrub layer and herbaceous understory. The stands of North Coast black cottonwood forest in the area range back to 45 years old, established following major flooding of the Eel River that occurred in 1964. The cottonwood forest represents the most structurally complex habitat in the area, which in turn supports a higher number and diversity of wildlife species than the other habitats. The North Coast black cottonwood forest provides valuable foraging, breeding, roosting, and shelter habitat for a wide variety of wildlife species, including at least nine bird species, eight mammalian species, two amphibian species, and one reptile species.

Although none have been detected at the project site, the black cottonwood forest offers suitable habitat for a state-listed endangered species, the willow flycatcher (*Empidonax traillii*), as well as four "species of special concern," including black-shouldered kite (*Elanus caeruleus*), Cooper's hawk (*Accipiter cooperii*), yellow warbler (*Dendroica petechia*), and yellow-breasted chat (*Icteria virens*).

In general, the riparian zone along the lower Eel River provides migration routes for wildlife. Over 200 different species of birds and 40 different species of mammals have been observed in the Eel River Delta, most of which utilize portions of the riparian corridor. Riparian vegetation also is critical to the survival of salmonids residing in and migrating through the lower Eel River.

The Eel River and its tributaries are ranked among the most significant anadromous fisheries in Northern California. Coho salmon (*Oncorhynchus kisutch*), Chinook salmon (*Oncorhynchus tshawytscha*), and steelhead trout (*Oncorhynchus mykiss*) are among the most important species with regard to commercial and sport fisheries. The coho was listed by the federal government as a "threatened species" along the northern California and southern Oregon coastlines in May of 1997, with critical habitat designated in May of 1999. Additionally, the Southern Oregon – Northern California Coasts Evolutionarily Significant Unit coho (SONCC coho) is currently listed as a threatened species in areas between Punta Gorda and the California-Oregon border under the California Endangered Species Act (CESA). Chinook salmon was federally listed as "threatened" in September of 1999, with critical habitat designated in February of 2000. Finally, steelhead trout was listed as "threatened" in June of 2000.

The lower Eel River, including the project area, is mainly utilized by the anadromous fish as a migration route to and from the upstream spawning grounds. In addition, the lower Eel River supports summer rearing habitat for juvenile salmonids, especially steelhead yearlings and fall Chinook sub-yearlings, and holding areas for adult summer steelhead as well as spawning and nursery habitat for marine fishes and invertebrates. A reference to the project site in the

Biological Assessment prepared for the lower Eel River (Berg 2009, Exhibit C)[1] states as follows:

> "Habitat adjacent to the Hauck Bar consists primarily of flatwater units with several small age 2+ steelhead habitat units and one adult holding pool just downstream of the confluence of the Van Duzen River. The primary habitat goal is to enhance upstream salmonid migration habitat through development or maintenance of a fish passage channel through the Van Duzen River delta. The over-all objective is to improve the success of upstream salmonid migration through the extraction site to the Van Duzen River watershed. " [page 30].

Other fish species in the river that are listed by the California Department of Fish and Game as "species of special concern" include coastal cutthroat trout (*Oncorhynchus clarki*), Pacific lamprey (*Lampetra tridentata*), and Green sturgeon (*Acipenser medirostris*).

The riverine habitat of the river channels on the project site and the occasional ponds that form under summer low water conditions provide habitat not only for fish, but also for invertebrates, amphibians, invertebrate-eating birds, and various mammals including river otters, mink, and other mammals that come to the river to forage (e.g., deer and raccoon).

B. Background on Past & Current Permitting of Gravel Operations on the Lower Eel & Van Duzen Rivers

The Lower Eel River has been used for gravel extraction since 1911. Currently, approximately six gravel operations are located along a 9-mile stretch of the lower Eel River, and three additional operations are located on the lower reaches of the Van Duzen River, which flows into the Eel River at Alton (Exhibit No. 3). All of the operations along the Eel River and the portion of the lowest-most operation on the Van Duzen River west of the Van Duzen River Railroad Bridge are within the coastal zone. As stated above, the Hauck Bar is the upper-most of all the gravel operations on the lower Eel River (i.e., the portion of the Eel River below its confluence with the Van Duzen River).

All of the gravel operations on the lower Eel and lower Van Duzen Rivers are interrelated in the sense that all of the gravel bars derive their material from the same upstream sediment sources. Brown and Ritter (1972) determined that the Eel River was a "hydraulically-limited" rather than "sediment-limited" river. This means that replenishment is more a factor of the size and duration of winter flows than the production of sediment in the watershed. This determination was based on the calculated high amounts of sediment that currently exist in active land sliding occurring in the watershed.

Thus, over-extraction by all of the projects in the lower Eel River combined with multiple low winter flow years can contribute cumulatively to erosion of the bed and banks of the river, which

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[1] Berg, A. 2009. *Biological Assessment for the U.S. Army Corps of Engineers LOP 2009 Authorizing Aggregate Extraction Operations in The Lower Eel River and Van Duzen River, Humboldt County, California*. Draft BA prepared by Alice Berg & Associates for County of Humboldt, Drake Materials, Eureka Ready-Mix, Hanson Sand & Gravel, Van Duzen River Ranch, Mercer-Fraser Company, Rock & Gadberry Sand & Gravel, Thomas R. Bess Asphalt, Sand & Gravel. [See Exhibit C.]

in turn can erode adjacent riparian and other habitat areas, interfere with fishery resources, undermine bridge supports, and cause other significant adverse impacts. However, as noted in the County Programmatic Environmental Impact Report (PEIR) referenced below, these same impacts can and have occurred when excessive deposition from high winter flow/duration events occur. Besides the cumulative impacts resulting from river morphology changes, other significant cumulative adverse impacts include habitat degradation from the installation of new gravel processing operations and access roads within environmentally sensitive habitat adjacent to the exposed gravel bars, exclusion of recreational use of the river banks, and noise. These types of impacts typically do not occur if the area is properly managed.

(1) *1991 Programmatic Environmental Impact Report*

Until 1991, there had been very little coordinated review of the combined effects of the various gravel mining operations. Permits granted in the past by the various approving agencies were site-specific and granted with little knowledge of the cumulative impacts of gravel mining throughout the lower Eel River.

Gravel mining operations on the Eel River now require the approval of a number of different local, state and federal agencies. The initiation of coordinated review began to change in 1991. That year, Humboldt County considered the granting of a gravel lease from the County-owned bar at Worswick (on the lower Eel River approximately three miles downstream of the subject site). To comply with environmental review requirements under the California Environmental Quality Act (CEQA) the County prepared a Program Environmental Impact Report (PEIR) to describe and analyze the potential environmental effects resulting from the 13 gravel removal operations in the lower Eel River-Van Duzen watersheds. The document was certified in July 1992 and was intended to be incorporated by reference into future environmental documents prepared for individual gravel extraction projects in the area.

As part of that effort, the County initiated a comprehensive review of the status of County permits for each of the operators to reach a final determination as to which operations were proceeding according to valid vested rights or County permits, and which ones required further review. The Department of Fish and Game also began to insist that the operators demonstrate that they had all necessary County approvals before the Department would issue annual Fish and Game Code Section 1603 Streambed Alteration Agreements.

As a result, information was documented about the significant cumulative adverse impacts of the gravel mining operations. The PEIR showed that little change in the bed had occurred over the previous 75 years. Annual monitoring as well as analyses of additional sources of historic bed elevations subsequently substantiated this finding. A late-1990's comparative study by the U.S. Army Corps of Engineers repeating cross sections at locations that were surveyed in 1969 showed overall little change in bed elevations and gradient over the previous 30 years.

(2) *County of Humboldt Extraction Review Team (CHERT)*

The County developed a strategy for controlling the cumulative impacts of the gravel operations on riverbed degradation and bank erosion. At the heart of the strategy is an annual administrative

approval of extraction plans that specifies the particular method and location of extraction. The primary mitigation measure recommended by the PEIR is for the County to prepare a River Management Plan that includes, as a primary component, an annual monitoring program to make annual decisions on where and how much gravel can be removed from the lower Eel and Van Duzen Rivers without adversely affecting the rivers. As described in the PEIR, the monitoring program was to be conducted by a consulting firm using funds provided by the gravel operators. The monitoring program would involve periodic biological surveys, creating cross-sections and thalweg profiles, and taking aerial photos and ground photos each year for each gravel operation. This information would be compiled and compared to data from previous years to determine gravel recruitment, changes in channel morphology, and impacts on wildlife and fisheries. The implementation of this program is currently occurring through the Corps' permitting process and the Humboldt County Interim Management Program. Much of this information is being collected by consultants for the gravel operators as part of the annual monitoring requirements of permitting and reviewing agencies before the commencement of mining each season.

In 1997, the County established its "Lower Eel River Interim Monitoring Plan" (IMP) for use until such time that the River Management Plan is developed. The monitoring plan incorporated and refined the reporting and monitoring requirements that were originally developed in 1991. The Plan also calls for the establishment of a review team to provide the County and other oversight agencies with scientific input on the gravel operations. The Committee that was established is known as "CHERT" (County of Humboldt Extraction Review Team) and is composed of independent fluvial geomorphologists, hydrologists, biologists, and botanists. CHERT has the authority for the County to review all annual mining plans and prescribe changes to those plans as deemed necessary. CHERT integrates all the monitoring data developed by the gravel operators for geomorphic evaluations of the streambed and also evaluates and recommends practices designed to preserve and enhance vegetation and wildlife habitat.

In January of 2009 CHERT released a 10-year analysis (Exhibit A) of river channel cross sections taken at various sites along the Eel and Van Duzen Rivers near mining sites (including the lower, middle, and South Fork reaches of the Eel River and the lower Van Duzen River).[2] The report represents the longest-term geomorphic analysis completed to date examining the potential effects of gravel mining operations on river channel morphology. The report finds that "While certain methods of mining and locally excessive volumes can affect instream habitat in the short term, the river does not appear to suffer from long term or broad scale channel bed degradation from gravel mining. Furthermore, the CHERT adaptive management program authorized by the IMP specifically addresses preventing local over-extraction and avoids/minimizes mining methods that cause aquatic and riparian habitat damage" (page 2). The report concludes that "…we did not discern any large scale, persistent effects of Eel River gravel mining on channel thalweg elevations, mean bed elevations, or scour…Gravel mining effects in the Eel River are probably limited to short term, localized effects which the adaptive management program and federal and state oversight attempt to avoid or minimize. Refinement of project-scale minimization measures will continue to be a fundamental component of the

[2] County of Humboldt Extraction Review Team (CHERT). January 2009. *Analysis of Eel River Cross Sections at Gravel Mining Sites, 1997-2007*. Unpublished report prepared by Randy Klein, Doug Jager, Andre Lehre, and Bill Trush. 24 pp (Exhibit A).

adaptive management process, as will instream habitat improvement projects associated with gravel extraction operations" (page 24).

(3) *U.S. Army Corps of Engineers Letter of Permission Procedure*

In the fall of 1993, due to an amendment to its Clean Water Act (CWA) regulatory program, the Corps became more involved in regulating gravel extraction operations. Whereas previously the Corps' regulatory review of many in-stream gravel extraction operations focused mainly on the installation of channel crossings and stockpiling of material on the river bar, in 1993, the Corps began actively regulating incidental fill related to gravel mining activities themselves. In an effort to streamline the processing of CWA permits for the numerous in-stream gravel operations within Humboldt County, the Corps adopted a Letter of Permission (LOP) procedure for authorizing such projects (LOP 96-1). The LOP was adopted after a series of interagency and public meetings. An applicant for a project covered by the LOP must submit yearly gravel plans and monitoring information to the Corps for approval under the procedure. The Corps incorporated the County's CHERT review process into its LOP procedure.

As discussed in more detail below, the Corps issued an LOP to cover gravel mining in Humboldt County for the 2002-2008 gravel extraction seasons (LOP 2004-1) and has issued a new LOP Procedure 2009 (LOP-2009) Public Notice dated February 19, 2009 (No. 2007-00857) to cover gravel mining in Humboldt County for the next five years. The LOP-2009 is still in process (pending final Biological Opinions from NOAA-Fisheries and the U.S. Fish and Wildlife Service) and is expected to be issued in late August or early September, before the end of this summer's gravel mining season.

As with all "federal actions" that might adversely impact rare, threatened, and endangered fish and wildlife, the LOP process and the Corps' review of individual Section 404 permits is also subject to consultations with applicable natural resource trustee agencies as required under Section 7 of the Federal Endangered Species Act (FESA). FESA Section 7 directs all federal agencies to use their existing authorities to conserve threatened and endangered species, and, in consultation with other federal agencies possessing ecological expertise regarding ecology and habitat requirements for these plants and animals, ensure that their actions do not jeopardize listed species or destroy or adversely modify critical habitat. Section 7 applies to management of federal lands as well as other federal actions that may affect listed species, such as federal approval of private activities through the issuance of federal permits, licenses, or other actions such as the LOP gravel mining and authorization procedure and the issuance of individual Section 404 permits.

The consultation process primarily consists of the agency undertaking the action of compiling biological assessment (BA) data detailing the current status of the fish and wildlife species within the area subject to the federal agency action, and a preliminary assessment of the likely effects of the action on those species. This information is then submitted to the particular resource agencies assigned the responsibility for ensuring protection to the various FESA-listed species. The National Marine Fisheries Service (NOAA-Fisheries) prepares and issues a Biological Opinion (BO) regarding impacts of gravel extraction to the listed salmonid species.

The western snowy plover, a listed threatened species, also requires consultation with the U.S. Fish and Wildlife Service (FWS). Based on the findings of the NOAA-Fisheries and FWS reviews, mitigation measures required by the FESA are incorporated into extraction requirements. As more information is gathered on the species and the direct, indirect, and cumulative effects on species individuals and their habitat, these mitigation requirements are revised as necessary.

a. Federal ESA Section 7 Consultations with NOAA-Fisheries

NOAA-Fisheries originally issued a BO in July of 1997 for the Letter of Permission Procedure for Gravel Mining and Excavation Activities within Humboldt County, California (LOP 96-1). The LOP 96-1 was authorized for a five-year term, expiring in August 2001. Several FESA listing actions occurred subsequent to the issuance of NOAA-Fisheries' 1997 BO, including designation of critical habitat for Southern Oregon/Northern California Coastal (SONCC) coho salmon, listing of California Coastal (CC) Chinook salmon as threatened and designation of critical habitat, and listing of Northern California (NC) steelhead as threatened. As a result of the listing of additional salmonid species and designation of critical habitat in 1999, the Corps requested reinitiation of Section 7 ESA consultation, and NOAA-Fisheries prepared a revised BO (dated May 1, 2000). In June of 2001, the Corps extended the expiration date of LOP 96-1 to October 31, 2001 and requested an amendment to the duration of the 2000 BO, which analyzed the extended duration of the proposed gravel extraction activities.

NOAA-Fisheries began working with the Corps, other agencies, and Humboldt County gravel operators and their consultants during the winter of 2001-2002 on a replacement LOP procedure anticipated to be in place for the 2002-2007 extraction seasons (originally enumerated as LOP 2002-1). A draft LOP 2002-1 was circulated for public comment in May 2002, at which time it became apparent to involved agencies that several issues could not be resolved prior to the 2002 mining season. As a result, the Corps decided to further extend LOP 96-1 through December 31, 2002 to provide an authorization process for the 2002 gravel mining season and again requested that NOAA-Fisheries amend the 2000 BO to analyze the extended duration of LOP 96-1.

On November 26, 2002, the Corps issued a public notice announcing re-initiation of its efforts for authorization of a new Humboldt County LOP process, re-enumerated as LOP-2003-1. Concurrent with the announcement, the Corps again requested a FESA Section 7 consultation from NOAA-Fisheries.

On June 11, 2003, NOAA-Fisheries issued a draft BO for LOP-2003-1. The Draft BO incorporated newly available information that was not previously analyzed in the 2000 BO and its subsequent revisions issued for the LOP's 2001 and 2002 administrative extensions. In addition, the draft BO further detailed the potential adverse direct, indirect, and cumulative effects of gravel mining and extraction activities on listed salmonid species that might occur under the proposed five-year duration of LOP 2003-1.

In the draft BO, NOAA-Fisheries concluded that authorization of LOP 2003-1 procedures as proposed by the Corps for gravel mining during the 2003-2007 seasons, "is likely to jeopardize

the continued existence of threatened SONCC (Southern Oregon/Northern California) coho salmon, NC (Northern California) steelhead, and threatened CC (Central California) Chinook salmon, and is likely to adversely modify SONCC coho salmon critical habitat." As required by the FESA, accompanying the "jeopardy opinion" were "reasonable and prudent alternatives" (RPAs) to the proposed LOP protocols. If followed, NOAA-Fisheries believed gravel mining pursuant to LOP-2003-1 would avoid the likelihood of jeopardizing the continued existence of listed species or destruction or adverse modification of critical habitat. With such program alterations in place, NOAA-Fisheries could issue an "incidental take statement" that would allow the Corps to undertake the LOP process without being found in conflict with the provisions of the FESA.

However, in subsequent meetings with the mining applicants, the public, and with Corps, NOAA-Fisheries, USFWS, and other permitting agency staff, several of the mining applicants expressed their concerns over the possible future difficulties that might be encountered should the five-year LOP procedure be authorized under a jeopardy opinion. Additional concerns were voiced as to whether NOAA-Fisheries had adequately considered and analyzed the information collated over the years by the miners on the effects of gravel mining FESA-listed fish species. As a result, the Corps decided to extend once again LOP 96-1 through December 31, 2003 to provide an authorization process for the 2003 gravel mining season and again requested that NOAA-Fisheries amend the 2000 BO to analyze the extended duration of LOP 96-1. In addition, the Corps modified the procedures and terms of LOP 96-1 to include the reasonable and prudent alternatives identified within the draft BO for LOP 2003-1 in the interest of avoiding a jeopardy opinion also being issued for the 2003 extension of LOP 96-1.

On August 29, 2003, NOAA-Fisheries issued its BO on the modified LOP procedure for gravel mining (modified LOP 96-1). The BO concluded that gravel mining under the modified LOP 96-1 procedure for the 2003 mining season was not likely to jeopardize the continued existence of threatened SONCC coho salmon, NC steelhead, and threatened CC Chinook salmon, and was not likely to adversely modify or destroy SONCC coho salmon critical habitat. In addition, NOAA-Fisheries issued an accompanying "incidental take statement" subject to three "reasonable and prudent measures" that set certain procedural requirements for the implementation of LOP 96-1, but did not require substantive changes to the limitations on mining contained in modified LOP 96-1.

In the winter of 2003-2004, the Corps issued a public notice announcing once again, re-initiation of its efforts for authorization of a new Humboldt County LOP process, re-enumerated as LOP-2004-1. The 2004-1 LOP notice was prepared after extensive consultation with NOAA-Fisheries on changes in procedures to further reduce impacts on threatened salmon species and to enhance critical habitat. The new procedures placed an emphasis on (1) ensuring that the floor elevation of gravel bar skimming operations remain above the water surface elevation of the 35 percent exceedence flow for each site, on an annual basis, to further reduce the chances of river bed alterations from mining, and (2) encouraging the use of alternative extraction methods such as alcove extractions at the down stream end of grave bars to provide velocity refuge for fish during high flows and trenching in desiccated stream channel areas to improve fish passage. The LOP set forth certain extraction limitations that all operators planning to mine under the LOP must

follow (e.g., see those listed below for LOP-2009). Concurrent with the announcement of the new LOP, the Corps again requested a FESA Section 7 consultation from NOAA-Fisheries. On August 13, 2004, NOAA-Fisheries transmitted its completed BO of the LOP 2004-1 for proposed gravel extraction operations on Humboldt County rivers and its effects on SONCC coho salmon and its designated critical habitat, CC Chinook salmon, and NC steelhead pursuant to Section 7(a)(2) of the Endangered Species Act (Exhibit E). The BO concluded that after reviewing the best available information, the LOP Procedure 2004-1 as proposed, would not likely jeopardize the continued existence of the three salmonid species or result in the destruction or adverse modification of SONCC coho salmon designated critical habitat. NOAA-Fisheries also evaluated the proposed project for potential adverse effects to essential fish habitat (EFH) for federally managed fish species. The BO concluded that the proposed action may adversely affect EFH. However, the opinion stated that NOAA-Fisheries had no conservation measures to recommend over what was currently proposed. The BO noted that conservation recommendations provided in past gravel mining consultations had been incorporated into the proposed action.

The last time the Commission approved coastal development permits for gravel mining on the lower Eel and lower Van Duzen Rivers was in 2004, the same year that the Corps issued the LOP. Based on the Biological Opinion issued by NOAA-Fisheries that the seasonal extraction of gravel on the lower Eel and lower Van Duzen Rivers over the five years proposed under LOP-2004-1 would not result in more than incidental take of threatened salmon species and would not jeopardize their continued existence, the Commission approved the projects, having determined that the proposed 5-year gravel mining projects proposed for the lower Eel and lower Van Duzen Rivers that would be performed in accordance with the procedures described in the LOP notice and NOAA-Fisheries Biological Opinion would avoid impacts on sensitive fish species consistent with the requirements of Sections 30233 and 30240 of the Coastal Act. LOP-2004-1 expired at the end of 2008. In addition, the six gravel mining permits granted by the Commission in 2004 only authorized gravel mining through the summer of 2008.

b. Federal ESA Section 7 Consultations with the U.S. Fish & Wildlife Service

Similar to NOAA-Fisheries consultation on the Corps LOP process, the U.S. Fish and Wildlife Service (FWS) has consulted in the past on the LOP process with regard to impacts on the western snowy plover. The western snowy plover has been listed under the federal Endangered Species Act as a threatened species since 1993, and plovers were first discovered nesting on Eel River gravel bars near Fernbridge in June of 1996. Since that time the FWS has provided technical assistance to the Corps regarding its actions relative to the effects of gravel extraction on plovers.

In August of 1996, the FWS, in response to an informal consultation request from the Corps regarding LOP 96-1, concurred with the Corps' determination that the LOP 96-1 procedure was not likely to adversely affect the western snowy plover. This determination was based on various operating requirements being implemented including, but not limited to, not commencing gravel extraction operations prior to September 15 in the absence of plover surveys and maintenance of a minimum 300 meter buffer between identified plover habitat and gravel operations.

In July of 2001 the Corps requested formal Section 7 consultation on the extension of LOP 96-1 and its effect on the plover, but the FWS responded with a letter dated August 17, 2001 that more information was necessary to initiate formal consultation. Additional recommendations were provided by the FWS for the draft LOP 2002-1, including those mentioned above plus additional details such as speed limits and time-of-day restrictions on operations.

Formal consultation on the plover was again requested by the Corps in May of 2004. In September 2004 the FWS explained that the agency was unable to complete consultation on the LOP 2004-1 before the 2004 extraction season, but confirmed that plover chicks had vacated the gravel bars for the 2004 year, and gravel extraction was not likely to adversely affect plovers. Also in September 2004 the FWS concurred with the Corps' determination that issuance of an individual permit to Eureka Ready Mix for gravel extraction activities at Hauck Bar (at river mile 14, just downstream of the confluence of the Eel and Van Duzen Rivers) was not likely to adversely affect plovers, provided various protective measures were followed.

In September of 2005 the FWS issued its Biological Opinion for gravel operations on the lower Eel River covered under LOP 2004-1 (Exhibit F), at which time the LOP 2004-1 was republished with the Incidental Take Statement (ITS) attached as Appendix E. The terms and conditions of the ITS included various measures to protect plovers from activities associated with gravel extraction on the lower Eel River. The Biological Opinion expired at the end of 2008.

In its approval of various gravel mining permits in 2004, the Coastal Commission determined that the proposed 5-year gravel mining projects proposed for the lower Eel and lower Van Duzen Rivers that would be performed in accordance with the procedures described in the LOP-2004-1 notice and the FWS Biological Opinion would avoid impacts on the western snowy plover, consistent with the requirements of Sections 30233 and 30240 of the Coastal Act.

(4) *Permits and Consultations for the 2009-2014 Gravel Extraction Seasons*

With the expiration of LOP-2004-1 at the end of 2008, the planning process for a new Humboldt County LOP procedure began in the spring of 2008. In February of 2009, the Corps issued a new LOP procedure notice (No. 2007-00857), which describes standardized procedures for gravel extraction activities, temporary stockpiling of gravel, associated salmonid habitat improvement activities, and construction of seasonal road crossings for the five-year implementation period of LOP-2009. The new LOP-2009 announcement is very similar to LOP-2004-1 in its terms and conditions. The Biological Assessments (BA) prepared by the applicants to assist the Corps, NOAA-Fisheries, and the FWS in their review of the proposed gravel operations to be permitted under LOP-2009, however, was required to include a detailed assessment of the effects of the gravel extraction activities authorized under the previous LOP (LOP-2004-1). The BA also was to list and quantify habitat enhancement activities undertaken during the five-year implementation period of LOP-2004-1 to determine a rough target of enhancement activities for the LOP-2009 implementation period.

The gravel extraction terms and limitations set forth in proposed LOP-2009 include, in part, the following:

- All applicants shall use the CHERT process for annual review and recommendations.
- A minimum head-of-bar length, generally defined as that portion of the bar that extends from at least the upper third of the bar to the up-stream end of the bar as exposed at summer low flow shall not be mined or otherwise altered.
- The minimum skim floor elevation will remain above the water surface elevation of the 35% exceedence flow for each site, on an annual basis.
- Temporary channel crossings locations will avoid known spawning areas. Where bridges are not able to span the entire wetted channel, the crossing location will be determined on a site-specific basis.
- Temporary crossings will be placed after June 30 only. All crossings and associated fills will be removed after excavation ceases but before October 15 on the Eel River with possible extensions of time.
- The amount of time heavy equipment is in the wetted channel shall be minimized by limiting the number of equipment crossings to two (2) occurrences during placement and removal of the crossing structures.
- Temporary storage of excavated material may occur on the gravel bar, but must be removed by October 1. 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.
- All riparian woody vegetation and wetlands must be avoided to the maximum extent possible. Any riparian vegetation or wetland that is to be disturbed must be clearly identified by mapping. Woody vegetation that is part of a contiguous 1/8-acre complex, or is at least 2 inches diameter breast height (DBH) that is disturbed must be mitigated;
- 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 approval is given by owners of these structures and approved by the Corps;
- The project area must be regraded, if necessary, before the water levels rise in the rainy season and must be completed by October 15 each year. 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.
- Unless the Letter of Permission is specifically modified, gravel extraction shall cease by October 15 each year. Regrading, if necessary, shall be completed prior to October 15th.

Requests for a extension will be reviewed by the Corps on a case by case basis. The applicant, however, must have regraded the site before an extension can be authorized.

- 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.
- 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 (of the LOP-2009 public notice) contains requirements necessary to assure the extraction activities (including pre-season surveys) are not likely to adversely affect the western snowy plover.
- 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. Appendix M (of the LOP-2009 public notice) contains the most recent NOAA-Fisheries Biological Opinion. The BO contains restrictions (reasonable and prudent measures), which are mandatory conditions of the LOP-2009. [This measure anticipates issuance of the NOAA-Fisheries Biological Opinion, which has not yet occurred.]
- 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-2004. 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.
- 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, educational signing regarding 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 this sign.
- Impacts to snowy plovers shall be avoided to the maximum extent possible. Appendix E (of LOP-2009 public notice) further describes the operating requirements that are required for gravel activities, including pre-extraction planning and surveys. 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 FWS final Biological Opinion for LOP-2009 and Appendix E of the LOP.

- 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 of the LOP.[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.

Shortly after the announcement of the new LOP, the Corps again requested a FESA Section 7 consultation from NOAA-Fisheries and the FWS. The formal consultations conducted by NOAA-Fisheries and the FWS provide critical evidence for the Commission's review of the proposed gravel mining operations on the lower Eel and Van Duzen Rivers that the operations will not result in significant adverse impacts on threatened and endangered species. In previous actions on coastal development permits for gravel mining on the lower Eel and Van Duzen rivers, the Commission has relied upon those biological opinions to find consistency of the gravel mining projects with Section 30233 of the Coastal Act and to approve the projects.

On July 27, 2009, NOAA-Fisheries transmitted its preliminary conclusions and draft terms and conditions to minimize the amount or extent of "take" of threatened salmonids (Exhibit D). The final Biological Opinion for LOP-2009 for proposed gravel extraction operations on the Eel and Van Duzen Rivers is anticipated to be issued in late August. The preliminary conclusion states that

> *"After reviewing the best available scientific and commercial information, the current status of SONCC coho salmon, CC Chinook salmon, NC steelhead, and their designated critical habitats, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the biological opinion of NMFS that gravel mining under LOP 2009 for the five-year permit period, ending December 31, 2013, is not likely to jeopardize the continued existence of threatened SONCC coho salmon, threatened NC steelhead, and threatened CC Chinook salmon, and is not likely to adversely modify or destroy SONCC coho salmon, CC Chinook salmon or NC steelhead designated critical habitat."*

[3] For a description of gravel extraction methods referenced in the LOP, see Appendix B.

The preliminary conclusion of NOAA-Fisheries notes that the measures instituted in 2004 have worked well, and the agency does not anticipate any significant changes the requirements and recommendations to the Corps that will be included in the final Biological Opinion for LOP-2009.

The FWS final Biological Opinion is expected to be issued by August 12, 2009. The FWS has informed staff that it does not anticipate that its recommended conditions for western snowy plover will be significantly different than those included in the 2005 Biological Opinion (see Exhibit F). The FWS preliminarily concludes that the proposed gravel operations will not jeopardize the continued existence of the plover or adversely modify or destroy its designated critical habitat. As discussed in more detail in Finding IV-O below, the Commission attaches Special Condition No. 14, which requires the applicant to submit, prior to permit issuance, final Biological Opinions in support of the gravel extraction authorized by this permit and that are consistent with all terms and conditions of this permit. Any changes required by the agency shall be reported to the Executive Director and not incorporated into the project until the applicant obtains any necessary amendment to the coastal development permit.

(5) ***History of Coastal Commission Permits for Gravel Extraction on the Lower Eel & Van Duzen Rivers***

Over the past two decades, the Commission has issued at least 28 permits for gravel extraction on the lower Eel and Van Duzen Rivers, as summarized in Table 1. In general, actual annual extracted volumes in the lower Eel have consistently been lower than approved volumes every year over the past decade, as seen in Table 2. From 1997 through 2007, a total of 2,273,959 cubic yards of aggregate was extracted from the lower Eel (averaging 206,724 cubic yards annually), which is only 62 percent of the total approved volume of 3,685,802 cubic yards (see Table 2).

Table 1. Summary of gravel operations in the coastal zone on the lower Eel and Van Duzen Rivers, from approximately River Mile (RM) 5 on the lower Eel up to just beyond the confluence of the Eel and Van Duzen Rivers (up to RM 0.7 on the lower Van Duzen River).

Location (Bar & River Mile)	List of Current & Past Applicants	Coastal Development Permit Nos.	Approved Maximum Annual Volumes (cubic yards)
Singley Bar (RM 5-6)	Eureka Ready Mix (aka Eureka Sand & Gravel); Arcata Readimix	1-92-157 1-97-068 1-04-022 1-09-005*	150,000
Worswick Bar (RM 7)	Humboldt County Public Works Dept.; Humboldt Bay Gravel, Inc.; Eureka Southern Railroad Co.	1-90-195 1-96-062 1-00-055 1-04-024 1-09-014*	25,000
Drake Bar (RM 9)	Mallard Pond Sand & Gravel; Drake Materials; Drake Sand & Gravel	1-94-079 1-01-046 1-02-162 1-04-046	250,000

Location (Bar & River Mile)	List of Current & Past Applicants	Coastal Development Permit Nos.	Approved Maximum Annual Volumes (cubic yards)
Sandy Prairie Plant B (RM 10-11)	Mercer-Fraser; Canevari Timber Co.	1-94-006 1-94-006-A1	200,000
Sandy Prairie Plant A (RM 11-12)	Mercer-Fraser	1-94-035 1-00-009 1-03-014 1-04-020 1-09-022*	70,000
Hansen Bar (RM 13.5)	Charles Hansen	1-97-017 1-02-023 1-03-030 1-09-011*	50,000
Hauck Bar (RM 14)	Eureka Ready Mix (aka Eureka Sand & Gravel)	1-96-053 1-02-022 1-02-164 1-04-011 1-09-006*	150,000
Near the confluence of Van Duzen & Eel Rivers (up to Van Duzen RM 0.7)	Rock & Dwelley	1-96-068 1-02-006 1-03-048 1-04-045 1-09-021*	100,000

* Permit applications are pending approval.

Table 2. Approved and extracted gravel mining volumes in the lower Eel River (excluding the Rock and Dwelley operation on the lower Van Duzen River) since 1997 (from CHERT 2009, Exhibit A).

Year	Approved Volume (cubic yards)	Extracted Volume (cubic yards)	Percent
1997	561,700	326,500	58
1998	399,100	273,000	68
1999	471,400	290,500	62
2000	291,300	208,600	72
2001	389,900	119,300	31
2002	387,300	220,000	57
2003	318,300	163,900	51
2004	188,840	120,305	64
2005	199,370	166,280	83
2006	235,495	208,240	88
2007	243,097	177,334	73
Totals	**3,685,802**	**2,273,959**	**62**
Years	**11**	**11**	**---**
Annual Averages	**335,073**	**206,724**	**62**

At the project site, gravel extraction operations historically have varied with market demands and river conditions, but similar to the trend seen in the lower Eel in general, actual annual extracted volumes at the project site have consistently been lower than approved volumes every year over the past five years, as seen in Table 3. Between 2004 and 2008, a combined total of 268,339

cubic yards of aggregate was extracted from the site, with an annual average of 53,668 cubic yards.

Table 3. 2004 through 2008 CHERT-approved versus actual extracted gravel volumes for the Hauck Bar project site (from CHERT 2004, 2005, and 2006-2008 unpublished data tables in Alice Berg & Associates 2009, Exhibit C).

Year	CHERT Approved Volume (cubic yards)	Actual Extracted Volume (cubic yards)	Percent
2004	87,025	75,720	87
2005	69,560	56,300	81
2006	40,760	37,695	92
2007	33,089	32,743	99
2008	70,310	65,881	94
Totals	**300,744**	**268,339**	**89**
Years	**5**	**5**	**---**
Annual Averages	**60,149**	**53,668**	**89**

C. Detailed Project Description

The applicant proposes to continue the on-going, seasonal extraction of up to 150,000 cubic yards of aggregate per year from the Hauck Bar, which is located at river mile 14 on the lower Eel River, just below its confluence with the Van Duzen River in the Alton area. Extracted materials would be hauled to one of Eureka Ready Mix's processing facilities, which are located outside of the coastal zone. The applicant also proposes to install seasonal railroad flatbed crossings over low-flow river channels to facilitate gravel transport and the reclamation of extraction areas. The site is accessed off of Fowler Lane approximately one-half mile west of Highway 101. See Exhibit No. 4 for full project details.

In past extraction seasons, the Hauck gravel bar has had two main extraction areas. One area is located on the northern Van Duzen River delta. The other potential extraction area is located in the middle of the bankfull channel and is bordered on the east by the main channel and on the west by a secondary, or overflow, channel that varies in location depending on winter flows and annual recruitment and scour.

To access areas of the bar, the applicant is also seeking authorization to construct seasonal crossings over secondary or overflow channels of the Eel River. The crossings would consist of two 58-foot-long railroad flat cars placed side by side over the channels with gravel abutments using either washed gravel or gravel scraped from surrounding areas. Brow logs or large concrete blocks would be utilized to front, or stabilize, abutment fill and decrease encroachment of the aggregate fill into the wetted channel. Crossings would be located at points of the channel where potential salmonid spawning sites are not projected to occur, to be determined annually by a qualified fisheries biologist in consultation with the reviewing resource agencies.

The proposed annual extraction amount of 150,000 cubic yards is proposed as an upper limit, is consistent with the PEIR for the lower Eel River, and is based upon evaluation of additional

information as well as the data collected under the Humboldt County PEIR and Interim Management Programs. This project has been described to permit adaptive management of the project area. In any given year, project extraction volumes, locations, and methods would be submitted by the project consultants for approval by local, state, and federal agencies, including the County of Humboldt, Department of Fish and Game, and the Army Corps of Engineers. Annual assessments and site evaluations would be used to determine where aggregate could be excavated without causing long-term river bed degradation, the levels and volume of recruitment, and appropriate extraction volumes. No mining would occur at any location until after specific mining and reclamation plans are developed on the basis of annual environmental assessments and monitoring of the proposed project site.

The applicant is seeking authorization to use several different kinds of extraction methods, including traditional skimming, narrow skims, secondary channel skims, low terrace extractions, wetland pits, alcoves, and trenching for the purpose of salmonid migration corridor enhancement (see Appendix B for method descriptions). Since 2002, the primary means of extraction at the Hauck Bar has come from restorative extraction efforts (i.e., development of a fish passage channel through the Van Duzen River delta). The annual mining plan that would be prepared prior to the start of mining each year would use one or more of the above methods, depending on factors such as extractions site location, salmonid habitat protection needs, annual replenishment of aggregate, and other environmental factors.

Extractions typically would be located on the inside of meanders, on point bars, or side channel bars. The head of the bar, upstream riffle, and channel cross-over would be preserved by locating extractions on the lower two-thirds of the bar, downstream of such features. Minimum extraction floor elevations would be designed to maintain at least 20-inches of depth over riffles. Extractions from deposits bordering dry secondary channels would be designed with minimum extraction floor elevations no less than one foot above the adjacent secondary channel thalweg.

Extraction areas containing woody vegetation would include design elements to protect vegetation from removal or disturbance by the extraction processes or low to moderate flow events. This would be achieved by adjusting extraction boundaries to avoid the vegetation complex and maintaining horizontal buffers around vegetation patches in a manner that would reduce erosion.

The project proposes to maintain channel confinement to the elevation of the 35 percent exceedence flow of the Eel River in order to maintain confined stream depth for migrating salmonids, as is required by LOP-2009 and terms and conditions of NOAA-Fisheries.

On-bar stockpiling of aggregate would occur in designated areas delineated during the pre-extraction multi-agency site visits. Any on-bar stockpiling would be temporary until transport to the processing facility could be coordinated. After October 15th each year, temporary stockpiles would be no larger than the volume of aggregate that could be removed from the bar surface during the current work day.

All proposed haul roads under this application are existing and established, but periodic grading and dust watering of roads would occur as necessary each extraction season to maintain safe and efficient travel.

During any given extraction year, gravel mining would not occur until after July 22nd, consistent with FWS recommendations for minimizing disturbance of the western snowy plover during its breeding season. Extraction operations would be completed in any given mining year by October 31st at the latest. Extraction operations conducted after October 15th in any given mining year would maintain reclaimed conditions at the end of each working day. This involves grooming and smoothing the extraction areas to prevent potential fish stranding and to promote a predictable flow pattern over the site upon inundation. Following final reclamation each year, all equipment and vehicles would be removed from the bank full channel by November 1st or earlier if declared by the Corps, NOAA-Fisheries, and/or the DFG. This coincides with the onset of the rainy season and rise in the river, which likely will inundate the extraction areas and/or prompt the upstream migration of adult salmonids.

D. Protection of the Riverine Environment

The proposed project involves the surface mining extraction of sand and gravel from the Hauck Bar of the lower Eel River using mechanized heavy equipment for grading and dredging operations. Several Coastal Act policies address protection of the portion of the river environment below the ordinary high water mark from the impacts of development such as gravel mining. Coastal Act Sections 30230 and 30231 require, in part, that marine resources (including salmonids) and coastal wetlands be maintained, enhanced, and where feasible restored. These policies specifically call for the maintenance of the biological productivity and quality of marine resources, coastal waters, streams, wetlands, and estuaries necessary to maintain optimum populations of all species of marine organisms and for the protection of human health. Section 30233 applies to any diking, filling, or dredging project in a river and other coastal waters. Gravel extraction within a river bed is a form of dredging within a wetland.

Section 30230 of the Coastal Act states, in applicable part:

> *Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.* [Emphasis added.]

Section 30231 of the Coastal Act states as follows:

> *The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface water*

flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.

Section 30233 of the Coastal Act provides, in applicable part, as follows:

(a) The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division, where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following:

…

(5) Mineral extraction, including sand for restoring beaches, except in environmentally sensitive areas. [Emphasis added.]

…

(c) In addition to the other provisions of this section, diking, filling, or dredging in existing estuaries and wetlands shall maintain or enhance the functional capacity of the wetland or estuary…

Section 30240 of the Coastal Act states as follows:

(a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas.

(b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.

Section 30107.5 of the Coastal Act defines "environmentally sensitive area" as encompassing:

…any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments.

When read together as a suite of policy directives, Sections 30230, 30231, and 30233 set forth a number of different limitations on what types of projects may be allowed in coastal wetlands. For analysis purposes, the limitations applicable to the subject project can be grouped into four general categories or tests. These tests require that projects that entail the dredging, diking, or filling of wetlands demonstrate that:

1. the purpose of the filling, diking, or dredging is for one of the seven uses allowed under Section 30233;
2. feasible mitigation measures have been provided to minimize adverse environmental effects;
3. the project has no feasible less environmentally damaging alternative; and
4. the biological productivity and functional capacity of the habitat shall be maintained and enhanced where feasible.

(1) *Permissible Use for Dredging and Filling of Coastal Waters*

The first test set forth above is that any proposed fill, diking, or dredging must be for an allowable use as enumerated under Section 30233 of the Coastal Act. The proposed project involves dredging for mineral extraction. The multi-year gravel operation proposes to use a variety of extraction techniques that would be allowed by the proposed Corps LOP and recommended by NOAA Fisheries as techniques that would avoid significant impacts to salmonids. Surface mining of gravel aggregate materials is specifically enumerated as a permissible use in the above-cited policy [Section 30233(a)(5)], provided the activity is not undertaken in environmentally sensitive areas. Therefore, to the extent that the proposed gravel extraction will avoid environmentally sensitive areas, the proposed project is consistent with the use limitations of Section 30233(a)(5).

All but one of the proposed gravel extraction techniques would involve excavation on dry portions of the gravel bars without encroachment into the salmon habitat of the river channel. The sole exception is the wet trenching technique, which would involve excavating 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 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. The wet trenching technique would involve excavation within salmonid ESHA habitat, and thus would not be permissible under Section 30233(a)(5). As the wet trenching method proposed is a form of substantial alteration of a river or stream proposed for the improvement of fish habitat, the Commission evaluates this aspect of the proposed development under Section 30236 of the Coastal Act in Section IV-E of the findings below.

a. Mineral Extraction Allowed by Section 30233(a)(5)

There are various types of environmentally sensitive habitats on the project site including: (a) the live (flowing) waters of the river, which is habitat for threatened salmonid species; (b) riparian habitat, including North Coast riparian scrub habitat occurring on high points within the bank-full channel of the river, and North Coast black cottonwood forest occurring on a large island and on the left bank of the river within the project site; and (c) nesting habitat for the federally threatened western snowy plover.

The proposed mining project will be located in areas that will avoid intrusion into these habitat areas and/or be performed at times when sensitive species will not be nesting and/or utilizing the site for habitat. Descriptions of the habitats and their use by wildlife are found in the Findings Section IV-A-(3), “Habitat Types & Special-Status Species,” of this report.

i. Flowing River Channel as Environmentally Sensitive Habitat

Under Section 30107.5 of the Coastal Act, any area supporting a plant, animal, or habitat is environmentally sensitive if the area meets two main criteria: (1) the plant, animal, or habitat is

either rare or of special value because of its special nature or role in the ecosystem, and (2) the area could be easily disturbed or degraded by human activities and developments.

The water column and river bottom substrate within the year-round low-flow channel of rivers provide habitat for a wide variety of resident and migratory fish and wildlife species at all trophic levels, ranging from aquatic macro-invertebrates to mammals. These perennially-inundated areas within the river meet the first criterion of the definition of environmentally sensitive area, because during the time that the proposed mining would be conducted within these riverine areas, the inundated areas of the reach may contain rare or endangered species, namely federal- and state-listed salmonids using this reach as a transit corridor between areas of holding habitat prior to the onset of upstream migration.

The perennially-inundated areas within the river also meet the second criterion in that diversion, dewatering, fill, and dredging activities for gravel extraction in the river, such as proposed by the applicant, can quickly disturb and degrade the habitat areas the mining activities come in contact with, at least during the mining activities. In addition, on a more permanent basis long after the initial excavation work is completed, trenching can also destabilize the river channel and easily cause erosional impacts that can degrade the perennially inundated areas within the river. Furthermore, most portions of the riverbed that remain wetted also qualify as environmentally sensitive areas because of their special role as a holding area and transit corridor for migrating threatened salmonids.

The Commission has previously determined in numerous permit actions that such riverine perennial channels supporting migrating threatened salmonids are environmentally sensitive areas. The Commission has consistently conditioned permits for development in and near such channels and along riparian woodlands within streams and rivers to avoid disturbances of such environmentally sensitive aquatic resources.

In the most comprehensive sense, the entire area between the banks of the river could be considered an environmentally sensitive area, at least during portions of the year when covered by higher flows. However, during the summer dry season when river waters are confined to the definable low-flow channels, the dry exposed areas within the stream banks become inaccessible to migratory threatened salmonid fish species and other aquatic life forms. In recognition of this situation and the resource-dependent nature of sand and gravel mining, for purposes of considering the proposed gravel mining's consistency with Section 30233(a)(5) and 30240, the Commission has generally applied the environmentally sensitive area designation only to the portions of the river containing live flow, whereas mining would occur during the dry season in the mid-summer to early fall.

Not all portions of the river containing live flow during the summer-early fall gravel mining season necessarily qualify as environmentally sensitive. The edges of the shallow flat-water areas in the lower Eel River do not support threatened migratory salmonid fish species during the summer to early fall gravel extraction season. Unlike other portions of the Eel River and other North Coast rivers, the lower Eel does not provide spawning habitat for the threatened salmonid species. Instead, salmon pass through the area during migration periods to spawn further

upstream. The migration periods occur at other times of the year when gravel extraction is not occurring. However, salmonids are found in the lower Eel at most times of the year, including in limited numbers during the summer to early fall gravel extraction period, but they do not frequent all parts of the channel. During the summer and early fall, water temperatures in the lower Eel River are considered stressful for salmonids. As water temperatures increase, the amount of dissolved oxygen (DO) in the water decreases. Surveys conducted under the Corps LOP procedure have shown that salmonid habitat areas are located in riffles and at the head of pools, where dissolved oxygen and food concentrations are highest. Shallow flat-waters and the lower reaches of long pools are avoided by salmonids since they do not have the necessary oxygen and food concentrations, lack cover, and do not provide relief from higher water temperatures. Therefore, the Commission finds that the edges of the shallow flat-water areas of the channel during the summer and early fall are not environmentally sensitive, as they do not provide threatened salmonid habitat. This finding should not be construed as indicating that other shallow flat-waters of other coastal rivers or even other parts of the Eel River during the summer are similarly not environmentally sensitive. The specific use of the lower Eel River by threatened salmonid species has been surveyed pursuant to the Corps LOP process and the consultation process with NOAA-Fisheries and has been documented in Biological Opinions prepared for the gravel operations. The surveys provide a basis for demonstrating that the salmonids do not inhabit the shallow flat-waters during the summer months. The results cannot be generalized to other river systems where no such surveys have occurred. In addition, unlike other rivers, the lower Eel is not considered by NOAA-Fisheries to provide salmonid spawning habitat.

Based on discussions with NOAA-Fisheries, gravel mining activities undertaken directly within the flowing river channels in the form of trenching have the potential to have both direct and indirect significantly adverse impacts on threatened salmonid species through: (a) water quality degradation associated with increased turbidity and sedimentation of coastal waters; (b) fish injuries and or deaths from contact with excavation equipment; (c) fish injuries, deaths, and changes in behavior due to flow diversions; (d) decreased invertebrate production associated with removal and/or degradation of habitat substrate; and (e) increased susceptibility to predation due to tendency of migratory fish to concentrate in trench excavations that afford little or no cover from predators and poachers.

None of the proposed extraction techniques except “wet trenching” described below in Section IV-E specifically include extraction within wetted channel. However, the applicants do propose to install seasonal crossings with abutments that could extend into shallow flat-water portions of the channel. The Biological Opinion prepared for the gravel extraction operations require that seasonal crossings be located where the temporary bridge structures would minimize the potential impact to sensitive salmonid habitats. The locations are determined based on identification by a fisheries biologist of where sensitive juvenile rearing, adult holding, and spawning habitats do not exist. NOAA-Fisheries and CHERT review the proposed bridge placement and determine where the bridge can be located to avoid salmonids. If the seasonal crossings cannot completely span the channel, the review process will direct the crossings to be located in shallow flat-water areas where salmonids are not present. The wider flat-water portions of the channel are usually too wide to be feasibly crossed by a seasonal crossing without some portions of the crossing abutments extending into the side of the channel. Through the

LOP – Biological Opinion process, mitigation measures have been developed for abutments that enter the wetted channel. During construction, the operator is required to contain abutment fill behind a containment structure such as a K-rail, sill logs, concrete blocks, or other suitable material to avoid filling any more of the channel than is absolutely necessary. The nearside below-water abutment fill is required to consist only of clean washed gravel to minimize downstream turbidity. Bridge construction, use, and removal shall occur prior to the arrival of the upstream migrating adult salmonids.

To ensure that mineral extraction and associated activities such as the installation of seasonal crossings within an ESHA as precluded by Coastal Act Sections 30233(a)(5) and 30240 do not occur, the Commission attaches (1) **Special Condition No. 1-(C)**, which prohibits excavation from occurring within the active wetted channel, where sensitive salmonid species could be present, except for wet trenching performed for restoration of instream salmonid habitat authorized pursuant to Section 30236, and (2) **Special condition 2-(C)**, which prohibits any portion of the seasonal crossing abutments from extending into the wetted channel, except in shallow flat-water areas, which are not considered environmentally sensitive during the time of year when gravel extraction operations are permitted to occur.

ii. Riparian Vegetation as Environmentally Sensitive Habitat

The Coastal Commission has previously determined in numerous permit actions that most forms of riparian vegetation are environmentally sensitive, as riparian zones serve many critical ecosystem functions. First, riparian areas contribute important organic debris that is transformed into nutrients, which support the riverine food web. Wood, leaf litter, and other organic matter from riparian areas provide nutrients for life at the base of the food web. Riparian vegetation supports insects and other prey resources, which are eaten by juvenile salmon and other fish and wildlife. If these areas are altered or eliminated, the food supply and, thus, the abundance of fish is likely to be reduced. Additionally, riparian vegetation provides cover – both for shade and protection purposes – for aquatic species such as salmonids, which need cool water temperatures for growth and survival and protection from predators. Furthermore, riparian areas capture contaminants; by absorbing or filtering contaminated stormwater runoff, soils and vegetation in riparian areas can prevent pollutants from entering coastal waters. Moreover, healthy riparian areas support rich and diverse communities of animals, including birds, amphibians, and mammals, that depend on the areas for feeding, breeding, refuge, movement, and migration. Importantly, riparian areas serve as buffers for human health and safety. The riparian functions of water quality, soil stability, and the ability to absorb the impacts of large storm events and other natural, physical processes have direct benefits to humanity. Flooding and storm events can be exacerbated in the absence of riparian areas, which can serve as protective buffers. The Commission has consistently conditioned permits for development near riparian woodlands along streams and rivers to avoid disturbances of riparian areas where mature vegetation exists.

Some of the riparian scrub vegetation on the gravel bar is inundated during high flows and is often uprooted and scoured by river flows. The hydrodynamics of the river can cause the channel itself to migrate over time, which in time can eliminate more stands of riparian scrub vegetation from one year to the next. As a result, much of the vegetation is young, having only grown a

season or several seasons since the time of the last inundation severe enough to remove the plants previously growing there. Given that some of this riparian vegetation is very new and underdeveloped, it may not provide habitat values sufficient enough for the vegetation to be characterized as environmentally sensitive.

Under Section 30107.5 of the Coastal Act, as discussed above, any area supporting a plant, animal, or habitat is environmentally sensitive if the area meets two main criteria: (1) the plant, animal, or habitat is either rare or especially valuable because of its special nature or role in the ecosystem, and (2) the area could be easily disturbed or degraded by human activities and developments. The non-persistent, young riparian scrub-shrub areas clearly meet the second criterion in that gravel extraction on the river bar, such as proposed by the applicant, can quickly degrade or obliterate any of this habitat that extraction activities come into contact with. With regard to the first criterion, the young riparian scrub-shrub vegetation is not rare, as it generally does not contain rare or endangered species, and it can be found extensively on the many thousands of acres gravel bars along North Coast waterways. However, such vegetation can be considered especially valuable and therefore also meet the first criterion. In general, riparian vegetation must grow to a certain size and mass before it can begin to contribute significantly to the river ecosystem. A willow sprig growing in isolation that has just taken root and only rises a few feet out of the ground cannot serve the ecosystem functions discussed above such as contributing organic debris to the riverine food web (including supporting insects and other macro-invertebrates on which juvenile salmonids depend), capturing contaminants, providing forage area, nesting opportunities, or screening from predators for birds and wildlife, and other functions. As the plant grows taller, however, and as more riparian plants colonize the surrounding area, the developing vegetation begins to contribute more debris to the riverine food web, capture more contaminants, and provide more forage, nesting, and cover opportunities that make it especially valuable habitat and therefore an environmentally sensitive area.

There is no clear-cut answer to the question of just when in the growth and development of riparian scrub vegetation it reaches the point where it can be considered environmentally sensitive. In discussions with Department of Fish and Game staff, Commission staff has learned that no specific plant height and diameter, coverage, age, etc. thresholds exist for riparian vegetation that define when habitat value is sufficient to categorize the vegetation as environmentally sensitive. Part of the reason for this uncertainty is that there can be tremendous variability in the values of riparian vegetation of the same size from one location to the next depending on such factors as surrounding habitat and vegetation, surrounding land uses, river configuration, etc.

One existing standard that may provide useful guidance for determining when riparian scrub-shrub vegetation reaches the point of becoming environmentally sensitive is a standard imposed in the Corps LOP Procedure. One restriction of the Corps LOP for gravel mining on the Eel River concerns riparian vegetation. The restriction states as follows:

> "All riparian and woody vegetation and wetlands must be avoided to the maximum extent possible. Any riparian vegetation or wetland that is to be disturbed must be clearly identified by mapping. Woody vegetation that is part of a contiguous 1/8-acre complex

> or is at least two inches in diameter breast height (DBH) must be mitigated if it is disturbed. Impacts to other woody vegetation must be described and a summary submitted to the Corps and CHERT with the gravel extraction plans. These impacts may require mitigation at the discretion of the Corps…"

The above-referenced Corp LOP restriction establishes a threshold for when impacts to riparian vegetation must be mitigated. The threshold is reached any time the riparian area that would be disturbed contains woody vegetation that is part of a contiguous 1/8-acre complex or is at least two inches (2") in diameter at breast height.

The Corps administers its permit program under Section 404 of the Clean Water Act (and the related Section 10 of the Rivers and Harbors Act of 1899). This administration does not limit mineral extraction in wetlands and open coastal waters to the same extent that Coastal Act Section 30233 does. As previously stated, Section 30233(a)(5) only allows the dredge or fill of wetlands and open coastal waters for mineral extraction if the mineral extraction occurs outside of environmentally sensitive areas. Although the Corps can allow mineral extraction in an environmentally sensitive area so long as mitigation is provided, the Commission cannot allow mineral extraction within an environmentally sensitive area at all. Thus, the Corps' purpose in determining when mitigation should be required is not the same as determining when riparian vegetation reaches a level of growth and development such that it should be considered environmentally sensitive.

By requiring mitigation whenever a riparian vegetation area that is to be disturbed contains woody vegetation that is part of a contiguous 1/8-acre complex or is at least 2 inches DBH, the Corps LOP indicates that vegetation at this level already is providing habitat value. Otherwise, if the vegetation were not providing habitat value there would be no need for mitigation. Therefore, the Commission finds that the riparian vegetation must reach a form of growth and development where it provides important habitat values at some point before the Corps threshold is reached. Acknowledgement of this fact is contained in the rest of the Corps standards which indicate that impacts to other woody vegetation not rising to the threshold level must also be described and submitted to the Corps and may require mitigation at the discretion of the Corps.

In discussions with DFG staff, Commission staff has discerned that under average growing conditions, a willow tree that is one inch (1") in DBH or part of a contiguous 1/16-acre complex would likely have survived for one growing season. Given that riparian vegetation is only becoming established during the first growing season, the vegetation may not provide significant habitat value at this point. On the other hand, vegetation that has survived more than one growing season would be established and likely to be used by wildlife. Therefore, the Commission finds that the riparian scrub-shrub vegetation should be characterized as an environmentally sensitive area when the vegetation contains woody vegetation that is part of a contiguous complex of 1/16-acre or larger or is one-inch or larger in DBH. In addition, by restricting extraction in vegetated areas that are essentially half as developed as the riparian vegetation for which mitigation is indicated under the Corps LOP, the Commission will minimize the chances that any riparian vegetation providing significant habitat value will be disturbed by the proposed gravel extraction.

To ensure that mineral extraction proposed by the applicant each year is not performed within an area of environmentally sensitive riparian vegetation, thereby remaining an allowable use under Coastal Act Section 30233(a)(5), the Commission attaches **Special Condition Nos. 1-(E) & 1-(F)**, which further state that gravel extraction operations shall not disturb or remove any area of riparian vegetation growing on the river banks or on the gravel bar meeting either the aerial extent or plant girth criteria discussed above. Furthermore, the Commission attaches **Special Condition No. 3** which requires the applicant to submit annually for the review and approval of the Executive Director a final gravel extraction plan for the gravel extraction season that is consistent with the extraction limitations of Special Condition No. 1, which include the aforementioned limitations on extracting gravel in riparian areas.

iii. Exposed Gravel Bars as Environmentally Sensitive Habitat

Another form of environmentally sensitive areas that has the potential for occurrence on the exposed gravel bars is seasonal nesting habitat of the western snowy plover. As noted previously, the western snowy plover is a federally listed threatened species, which in the past has been observed nesting on gravel bars of the lower Eel and Van Duzen Rivers during April through early September. The FWS has overseen surveying on the gravel bars within the Eel River during the April to September breeding season window. Surveys conducted in 2008 indicate that a total of only four adult plovers constructed a total of two nests along the Eel River gravel bars with 100 percent of resulting chicks hatching out (see Exhibit B). The number of plovers sighted on gravel bars has declined over the past several years, though the overall number of plovers sighted on local beaches has increased.

As the habitat of rare and endangered species meets the definition of environmentally sensitive areas pursuant to Section 30107.5 of the Coastal Act, the Commission finds that any areas utilized by the western snowy plover during the nesting season when the birds are present constitute ESHA. Therefore, the Commission attaches **Special Condition No. 4**, which requires that gravel extraction operations avoid western snowy plover habitat by either not commencing until after the nesting season, or commencing only after a biologist approved by the FWS has surveyed the site and either found no plover nests, or has found some but will conduct daily surveys to ensure a 1,000-foot buffer area is maintained around the nests that are found. Furthermore, Special Condition No. 4 requires daily surveys prior to pre-extraction activities occurring in suitable habitat and restricts vehicle use to prevent adverse impacts to plovers. This condition is consistent with the recommendations of the FWS to avoid disturbance of the threatened bird species. The requirements of Special Condition No. 4 will ensure that mineral extractions will not impact western snowy plover habitat during the time of nesting, when such areas constitute environmentally sensitive areas.

b. Conclusion on Use Limitations of Coastal Act Section 30233(a)

Therefore, as conditioned herein, the proposed gravel extraction operation is consistent with the use limitations of Section 30233 of the Coastal Act on dredging in coastal water bodies, as the proposed gravel extraction is for mineral extraction in areas that are not environmentally sensitive, consistent with Section 30233(a)(5).

(2) ***Alternatives Analysis***

The second test set forth by the Commission's dredging and fill policies is that the proposed dredge or fill project must have no feasible less environmentally damaging alternative. In this case, the Commission has considered the various identified alternatives, and determines that there are no feasible less environmentally damaging alternatives to the project as conditioned by Special Condition Nos. 1-12. A total of four possible alternatives have been identified, including: (a) the "no project" alternative; (b) obtaining sand and gravel from quarry operations; (c) obtaining sand and gravel from terrace deposits in the Eel River floodplain; and (d) modifying the proposed project. As explained below, each of these alternatives is infeasible and/or more environmentally damaging than the proposed project as conditioned.

a. <u>No Project Alternative</u>

The no project alternative means that no gravel extraction would occur at the site. Without extraction from the site, an equivalent amount of sand and gravel materials would be obtained from other sources to meet regional demand for cement and concrete aggregate products for the construction of roads, buildings, and other development. Increasing production from other river bar extraction operations would have environmental impacts similar to or greater than the proposed project.

The proposed project is located in an area where gravel has historically been accumulated and mined. Mining in many other parts of the river where gravel does not accumulate could lead to changes in river geomorphology which, in turn, could cause a variety of adverse impacts such as increased sedimentation, the undermining of bridge supports, and bank erosion resulting in the loss of environmentally sensitive riparian habitat areas and/or adjacent agricultural lands.

As discussed below, obtaining additional sand and gravel terrace deposits from the valley floors of local rivers would also create adverse environmental impacts similar to or greater than the proposed project. The Commission therefore finds that the "no project" alternative is not a feasible less environmentally damaging alternative to the project as conditioned.

b. <u>Obtaining Sand and Gravel from Quarry Operations</u>

Excavation from the river could be avoided if an equivalent amount of sand and gravel could be obtained from upland quarries. As discussed in the Final Programmatic EIR on Gravel Removal from the Lower Eel River certified by Humboldt County in 1992, there are few quarries in the vicinity where it would be economically feasible to obtain material of sufficient quality and quantity to that available at the project site. The substrate of nearby areas of Humboldt County is composed mostly of the Franciscan formation, which is comprised of large masses of greywacke and sandstone interspersed with less competent (for construction applications) clay and silt materials. This composition of material generally does not lend itself to quarrying. The quarries that are found in the region are generally located in remote areas with limited water supplies and where no nearby processing facilities are available. The unprocessed materials would need to be transported greater distances resulting in increased traffic, air quality, and greenhouse gas

emissions impacts. The Commission therefore finds that substituting gravel extracted from quarry operations is not a feasible less environmentally damaging alternative to the project as conditioned.

c. Obtaining Sand and Gravel from Terrace Deposits

Excavation from the river could be avoided if an equivalent amount of sand and gravel products could similarly be obtained from terrace deposits in the floodplain of the lower Eel, Van Duzen, or Mad Rivers. The floors of these river valleys are underlain by substantial amounts of gravel deposited over thousands of years and provide upland rock quarries. However, commencing gravel extraction from these terrace deposits would create its own adverse environmental impacts. Much of the undeveloped valley floor of each of these rivers is developed with agricultural and timber production uses. Converting productive coastal agricultural lands or forest lands to gravel extraction or other uses would not be consistent with Coastal Act policies, which call for the maintenance of lands suitable for agriculture and timber production. Most of the remaining undeveloped areas of these river valleys are currently covered with riparian habitat and other environmentally sensitive habitats. Extracting gravel from such areas would result in far more impacts to environmentally sensitive habitat than extraction at the project site as conditioned by the permit to avoid all riparian habitat. Therefore, the Commission finds that substituting gravel extracted from terrace deposits in local river valleys is not a feasible less environmentally damaging alternative to the proposed project as conditioned.

d. Modifying the Proposed Project as Conditioned

Various modifications to the project as proposed and conditioned could be made in an attempt to reduce the environmental effects. One such modification would be to mine in different locations at the project site. However, this modification would not result in less significant adverse impacts than the project as conditioned under this permit. As discussed previously, the proposed project has been conditioned to restrict mining to areas that would avoid significant adverse impacts to coastal resources. Therefore, modifying the proposed gravel extraction project to require mining in different locations at the project site could result in greater impacts to coastal resources and would not be a feasible less environmentally damaging alternative. No other feasible modification to the proposed extraction scheme has been identified. Therefore, the Commission finds that modifying the proposed gravel extraction project as conditioned is not a feasible less environmentally damaging alternative.

Conclusion

For all of the reasons discussed above the Commission finds that there is no less environmentally damaging feasible alternative to the development as conditioned, as required by Section 30233(a).

(3) *Feasible Mitigation Measures*

The third test set forth by the dredging and fill policy of the Coastal Act is whether feasible mitigation measures have been provided to minimize the adverse environmental impacts of the proposed project.

Depending on the manner in which the gravel operation is conducted, the portions of the proposed project to be conducted below the ordinary high water mark could have five potentially significant adverse effects on the natural environment of the lower Eel River. These impacts include: (a) direct and indirect impacts on fisheries; (b) alteration of the riverbed and increased bank erosion; (c) impacts on environmentally sensitive riparian vegetation; (d) impacts on western snowy plover; and (e) impacts on water quality. The potential impacts and their mitigation are discussed in the following sections:

a. Impacts on Fisheries

As noted previously, the Eel River and its tributaries are ranked among the most significant anadromous fisheries in Northern California and include coho salmon, Chinook salmon, and steelhead trout, all federally listed threatened species under the federal Endangered Species Act. The project area and the lower Eel River are important for these anadromous fish as a migration route to and from upstream spawning grounds. In addition, the lower Eel River supports summer rearing habitat for juvenile salmonids, especially steelhead yearlings and fall Chinook sub-yearlings, and holding areas for adult summer steelhead as well as spawning and nursery habitat for other marine fishes and many invertebrates.

Gravel extraction from river bars can adversely affect fisheries in a number of ways. Poorly designed extractions can alter the river channel or even cause capture of the channel into extraction areas in a manner that can lead to significant downstream erosion of stream banks and greater sedimentation of the river. In addition, NOAA-Fisheries has indicated that juvenile and adult salmonid stranding could occur as a result of certain extraction methodologies depending on how the methodology is implemented and the manner in which the extraction area is reclaimed following extraction. For example, the various on-bar and secondary channel trenching techniques could result in salmonid stranding once river waters rise following the end of the mining season and then subsequently drop during the following spring. The potential for salmonid stranding is minimized if the trenches are breached on their down-stream ends to provide the fish with a connection back into the river's main channel.

NOAA-Fisheries staff has also indicated that gravel mining has the potential to result in elevated turbidity levels and increased sedimentation. Fine sediments can become entrained in runoff from skimmed bar surfaces, as skimming typically exposes finer sediment that would be inundated during lower discharges. According to NOAA-Fisheries, increased sedimentation can adversely impact salmonid spawning habitat by filling pores spaces, which decreases hydraulic conductivity of the gravel, thus reducing the supply of oxygenated water to incubating eggs.

Construction and removal of channel crossings and the use of heavy equipment can adversely affect salmonids. Heavy equipment is required to operate in the wetted, low-flow channel to construct and remove the crossings, which are typically placed at riffle locations. According to NOAA-Fisheries, death or injury of salmon through direct contact with such heavy equipment is likely during installation and removal of the crossing structures. In addition, Chinook salmon build redds and spawn in riffles, and the redds could be subject to a pulse of fine sediment during

removal of the channel crossing in late fall. In addition, the operation of heavy equipment has the potential to result in disturbance to salmonids caused by noise and vibration in the extraction work area. Furthermore, stream crossings can also impact rearing salmon habitat by impeding or altering channel stream flow dynamics.

The impacts of gravel mining operations on sensitive fish species include more than just the direct gravel mining activities within or in proximity to the low flow channel or the individual impacts of a particular gravel mining operation at one site. Often of greater significance are the indirect effects of gravel mining on physical riverine form together with the cumulative adverse impacts on sensitive fish species from all of the various gravel mining operations occurring along the river. Accurately assessing significant adverse indirect and cumulative impacts of the various gravel mining operations on sensitive fish species and/or their habitat can be a difficult task for any one operator to perform.

An assessment of the significant adverse indirect and cumulative impacts of gravel mining operations permitted by the U.S. Army Corps of Engineers (Corps) along the lower Eel River on sensitive fish species does exist in the form of Biological Opinions issued by the National Marine Fisheries Service (NOAA-Fisheries). These Biological Opinions are issued as a result of formal consultations between the Corps and NOAA-Fisheries pursuant to Section 7 of the Federal Endangered Species Act.

As discussed previously in Finding IV-B, on June 17 2009, the Corps formally requested that NOAA-Fisheries prepare a Biological Opinion to analyze the Corps LOP Procedure 2009 for proposed gravel extraction on Humboldt County rivers over the next five years (through 2014). NOAA-Fisheries anticipates issuing its Biological Opinion by the end of August 2009.

Based on the biological information collected as part of the FESA Section 7 consultation, NOAA-Fisheries staff concludes that the proposed seasonal extraction of gravel over the next five years will not result in more than incidental take of threatened salmonid species and will not jeopardize their continued existence. In its July 27, 2009 draft preliminary conclusions and draft terms and conditions to minimize the amount or extent of "take" of threatened salmonids (Exhibit D), NOAA-Fisheries states that

> "*After reviewing the best available scientific and commercial information, the current status of SONCC coho salmon, CC Chinook salmon, NC steelhead, and their designated critical habitats, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the biological opinion of NMFS that gravel mining under LOP 2009 for the five-year permit period, ending December 31, 2013, is not likely to jeopardize the continued existence of threatened SONCC coho salmon, threatened NC steelhead, and threatened CC Chinook salmon, and is not likely to adversely modify or destroy SONCC coho salmon, CC Chinook salmon or NC steelhead designated critical habitat.*"

The preliminary conclusion of NOAA-Fisheries notes that the measures instituted in 2004 have worked well, and the agency does not anticipate any significant changes the requirements and

recommendations to the Corps that will be included in the final Biological Opinion for LOP-2009, which is expected to be issued by late August of 2009.

To ensure that significant adverse impacts to salmonids from exceedance of incidental take of listed species does not occur during authorized mining operations, the Commission incorporates within the standards of **Special Condition Nos. 1 and 3** specific elements of proposed LOP Procedure 2009 that have been identified by NOAA-Fisheries as important for minimizing impacts to channel form and function, as well as protecting fish habitat.

As part of its review, NOAA-Fisheries has been reviewing the extraction methods and techniques described in LOP-2009 including, but not limited to, traditional skims, horseshoe skims, inboard skims, narrow skims, alcove extractions, wetland pits, wet trenches for salmonid habitat improvement purposes only, and dry-trenches. NOAA-Fisheries staff believes that although there is a preference for the non-skimming methods, all of the above methods would not adversely affect channel form and function in a manner that would be likely to jeopardize the continued existence of the sensitive fish species.

Therefore, to ensure that the mineral extraction proposed by the applicants use these proposed techniques to avoid degradation of the habitat of threatened salmonid species, the Commission includes within the requirements of **Special Condition No. 1-(B)** a limitation which requires use of only these extraction methods. This requirement will ensure that significant adverse disturbance of fish habitat from use of inappropriate extraction measures will be avoided.

Maintaining a head of the bar buffer, where gravel extraction would be precluded, is intended to provide protection of the natural stream flow steering effect provided by an undisturbed bar. According to the Biological Opinion, head-of-bar buffers reduce the potential for geomorphic changes to the river from sediment extraction. The buffer helps to maintain bar slope and form, which in turn helps to guide stream flows that are effective at creating and maintaining habitats. Therefore, **Special Condition No. 1-(K)** precludes mining in the upper one-third of a gravel bar, consistent with the Biological Opinion and Corps permit requirements.

The use of vertical offsets of the gravel extraction area from the low flow channel of the river that exists during the summer mining season will also help minimize sedimentation impacts on the river. The natural entrainment of sediment into river flows in the dry summer and early fall seasons is minimal in comparison with natural entrainment in winter months, when heavy rains entrain large quantities of sediment into river flows. Anadromous fish depend on the natural variation in sedimentation of river flows for spawning, migration, and other life-cycle changes. Artificially introducing large amounts of sediment at times of the year when natural entrainment would be low will adversely affect the anadromous fish as discussed above. Therefore, certain vertical offsets need to be maintained to prevent the sediment in lower skimmed surfaces of the bars from becoming entrained prior the beginning of significant movement of fine bed load material in the river. The general effect of skim floor elevations is that effects associated with sediment inputs are reduced as the elevation of the skim floor increases. The application proposes to set minimum skim floor elevations to correspond to the water surface elevation of the flow that is exceeded 35 percent of the time in the historic record of daily average flows for

rivers in Humboldt County. According to the Biological Opinion, the 35 percent exceedence flow is the flow where significant movement of fine bed load material begins in the rivers of Humboldt County. A skim floor at the 35 percent exceedence flow will provide confinement of the low flow channel until the stream is gaining in volume and naturally beginning to transport fine sediment. Therefore, **Special Condition No. 1-(J)** requires that any bar-skimming extractions that are proposed adjacent to the low flow channel shall have a minimum skim floor elevation at the elevation of the 35% exceedence flow.

In addition, gravel mining operations on the river bed need to cease before the rainy season to prevent significant adverse impacts to fisheries, as the runs of the various species of anadromous fish up and down the river increase in the fall with the rise in river water levels and remain at high levels through the early spring. In recent F&GC Section 1600 Streambed Alteration Agreements issued for gravel extraction at the project site, the Department of Fish and Game has limited gravel extraction operations to the dry season of June 1 through October 15 each year, which corresponds to the period when potential impacts to fisheries is lowest. The Department can extend the operations until November 1 if dry weather conditions prevail. The NOAA-Fisheries 2004 Biological Opinion also allows for completion of gravel mining operations by October 15, with similar extensions to November 1 if possible. The 2009 Biological Opinion, according to NOAA-Fisheries staff, would similarly allow for such extensions.

Therefore, the Commission attaches **Special Condition No. 5** that requires mining and all post-extraction bar grooming work and equipment removal be performed during the summer months and completed by October 15 to ensure no significant disturbance to anadromous fish. The Executive Director may approve a one or two week extension of gravel extraction and regrading activities to as late as November 1 if dry weather conditioned are forecasted and the permittee has received all necessary approvals to extend gravel operations over the extension period from the Department of Fish and Game, the U.S. Army Corps of Engineers, and NOAA-Fisheries.

The 2004 Biological Opinion also indicates that it is the opinion of NOAA-Fisheries that the proposed gravel mining under the project is not likely to destroy or adversely modify SONCC coho salmon designated critical habitat (Exhibit E). The 2009 Biological Opinion anticipated by NOAA-Fisheries staff will similarly conclude that the proposed gravel mining operation is not likely to destroy or adversely modify such critical habitat. As discussed in more detail in Finding IV-O below, the Commission attaches **Special Condition No. 14**, which requires the applicant to submit, prior to permit issuance, final Biological Opinions in support of the gravel extraction authorized by this permit and that are consistent with all terms and conditions of this permit. Any changes required by the agency shall be reported to the Executive Director and not incorporated into the project until the applicant obtains any necessary amendment to the coastal development permit.

Therefore, the Commission finds that as conditioned, the proposed gravel mining project would avoid significant cumulative adverse impacts on sensitive fish species consistent with the requirements of Sections 30231, 30233, and 30240 of the Coastal Act.

b. <u>Impacts on River Morphology</u>

As discussed above, a potential major impact of gravel mining operations is degradation of the riverbed and erosion of the riverbanks. Such impacts can occur if the amount of gravel extracted from a particular part of the river over time exceeds the amount of gravel deposited on the site through natural recruitment – the downstream movement of sand and gravel materials. Bed degradation and bank erosion can also result from the manner in which gravel is extracted. For example, if gravel bars are skimmed too close to the low-water surface or are left with a very shallow slope, at higher flow stages the river will tend to spread across the bar, reducing the overall depth of flow and resulting in rapid channel migration or instigation of a multi-channel "braided" configuration. This is also true of watercourse reaches where aggradation of materials is a problem. Such sites tend to trap gravel that would otherwise move downstream, potentially trapping or impeding fish migration up and down the river.

Although the applicants propose to extract an amount of gravel that is small relative to the overall permitted gravel mining activity along the Eel River, extraction without consideration of river morphology concerns could cause bed degradation and riverbank erosion.

As discussed above in Finding IV-B-2, in January of 2009 CHERT released a 10-year analysis of river channel cross sections taken at various sites along the Eel and Van Duzen Rivers near mining sites (including the lower, middle, and South Fork reaches of the Eel River and the lower Van Duzen River) (Exhibit A).[4] The report represents the longest-term geomorphic analysis completed to date examining the potential effects of gravel mining operations on river channel morphology. The report finds that "While certain methods of mining and locally excessive volumes can affect instream habitat in the short term, the river does not appear to suffer from long term or broad scale channel bed degradation from gravel mining. Furthermore, the CHERT adaptive management program authorized by the IMP specifically addresses preventing local over-extraction and avoids/minimizes mining methods that cause aquatic and riparian habitat damage" (page 2). The report concludes that "…we did not discern any large scale, persistent effects of Eel River gravel mining on channel thalweg elevations, mean bed elevations, or scour…Gravel mining effects in the Eel River are probably limited to short term, localized effects which the adaptive management program and federal and state oversight attempt to avoid or minimize. Refinement of project-scale minimization measures will continue to be a fundamental component of the adaptive management process, as will instream habitat improvement projects associated with gravel extraction operations" (page 24).

As discussed in the previous section, the proposed gravel extraction methods have been proposed to avoid significant adverse impacts to channel form and function. The determination of the NOAA-Fisheries Biological Opinion that gravel operations conducted in accordance with the LOP-2004 procedures will not result in more than an incidental take of listed species and will not likely threaten the continued existence of these species, and the opinion of NOAA-Fisheries staff that mining under the LOP-2009 would similarly not result in more than incidental take of listed species, is based in part on a finding that the extraction methods specified in LOP 2009 will be used to help preserve channel form and minimize bank and bar erosion that would degrade

[4] County of Humboldt Extraction Review Team (CHERT). January 2009. *Analysis of Eel River Cross Sections at Gravel Mining Sites, 1997-2007*. Unpublished report prepared by Randy Klein, Doug Jager, Andre Lehre, and Bill Trush. 24 pp (Exhibit A).

fishery habitat. **Special Condition Nos. 1 and 2** limit the use of gravel extraction techniques to those recommended by NOAA-Fisheries. In addition, the annual gravel extraction plans will be reviewed by CHERT in consultation with NOAA-Fisheries and the Corps to ensure that the particular methods proposed in any given year will minimize the chances of degradation of channel form based on conditions that exist at the time. **Special Condition No. 3** requires that the annual gravel extraction plan be submitted for the review and approval of the Executive Director and section (A)(4) of that condition requires that the submitted plan be consistent with the recommendations of CHERT. These requirements will ensure that disturbance of the active channel will be avoided.

c. Impacts on Environmentally Sensitive Riparian Vegetation

To prevent disturbances to riparian habitat, **Special Condition No. 1** includes the requirement that the mining be performed, on the portions of the gravel bar that do not contain or are in close proximity to riparian vegetation with environmentally sensitive habitat characteristics. Furthermore, the Commission attaches **Special Condition No. 6**, which reiterates that gravel extraction and processing operations shall not disturb or remove any area of environmentally sensitive vegetation growing on the gravel bar or river bank, and enumerates the threshold growth characteristics for when riparian vegetation becomes environmentally sensitive habitat. In this manner, disturbance to all of the environmentally sensitive riparian vegetation in the vicinity of the project will be avoided.

d. Impacts on Western Snowy Plover

The western snowy plover (*Charadrius alexandrinus nivosus*) was listed as a threatened species by the U.S. Fish and Wildlife Service (FWS) in 1993. A final rule for critical habitat for the species was published by the FWS in 2005. On the lower Eel River, designated critical habitat for the plover includes seasonally exposed gravel bars located between the mouth of the Eel River upstream to its confluence with the Van Duzen River. At the State level, the western snowy plover has been classified by the Department of Fish and Game as a "species of special concern" throughout all of California since 1978.

Snowy plovers were first documented nesting on gravel bars along the lower Eel River in 1996, which prompted increased surveying and monitoring efforts to describe the seasonal and spatial use of the lower Eel River by plovers. Surveys have indicated that snowy plovers are distributed along the unvegetated portions of larger gravel bars from the mouth of the Eel River upstream to the mouth of the Van Duzen River and have been found on the gravel bars from early April until early September.

According to the western snowy plover Biological Assessment prepared for the gravel operators on the lower Eel River (Winzler & Kelly, March 9, 2009, Exhibit B), overall plover population numbers, nests, and fledged chicks along the lower Eel River gravel bars have been declining over the years. While in 2001 there were 39 birds and 39 nests detected on the lower Eel River, in 2008 there were only four birds and two nests on the lower Eel River (none of which were located on the Sandy Prairie landform). During the same time period however, plover nesting on local beaches increased. Although the reason for this apparent shift in habitat use from river bars

to beaches is not understood, it is clear that some nest loss along the lower Eel has occurred due to river floods (high spring flows). Additionally, Colwell et al. (2005-2008) documented that recreational vehicle use of the gravel bars has directly contributed to 41 percent of Eel River plover nest failures over the past four years.

Because the plover is a federally listed threatened species, the responsibility for protecting the species rests with the U.S. Fish and Wildlife Service (FWS). The Service's Arcata office coordinates with the U.S. Army Corps of Engineers to provide guidance and regulatory review to gravel extraction operators on the lower Eel River. The FWS has set forth recommendations for plover protection based on current data. These recommendations have been incorporated as Special Condition No. 4 and are outlined below.

Western snowy plover adults, nests, and chicks are very cryptic, largely because of their ability to blend in with their surroundings as a defense strategy. All life stages of the plover are susceptible to death or injury by humans driving, operating equipment, and otherwise using occupied plover habitat. Disturbance from noise and activity associated with gravel extraction, vehicle use, and pre-gravel extraction activities may adversely affect western snowy plovers by altering their feeding and breeding behavior, reducing the suitability of nesting habitat, masking essential warning signs of predators, and attracting potential scavengers/predators.

According to the FWS, data from other portions of the western snowy plover's range suggest that activity and vehicle use in nesting and chick rearing habitat during low light and night conditions likely increases the risk of vehicle strikes to plovers, including adults. Activities associated with gravel extraction (including surveys for engineering, hydrology and biological resources) often need to be conducted prior to the initiation of gravel extraction activities. Because these pre-extraction activities require vehicular use and human presence in potential nest areas during the nest season, the potential exists to adversely affect the western snowy plover through direct harm or harassment.

To avoid disturbance to the plovers from vehicle use and pre-extraction activities, the Commission attaches **Special Condition No. 4**. Special Condition No. 4 requires the following: (a) For activities occurring prior to September 15, daily plover surveys shall be conducted by a biologist approved by the FWS prior to daily initiation of any pre-extraction activities that occur in suitable plover habitat; (b) If plovers or an active plover nest is within the area of planned operations or a 1,000-foot buffer area, activities within 1,000 feet of the plovers or nest shall be delayed until the nest has hatched and the plovers have moved to a distance greater than 1,000 feet away (hazing is not authorized); (c) Extraction activities within 1,000 feet of plover habitat may only occur if three consecutive days of FWS-approved plover surveys conducted by a FWS-approved biologist are completed with no detections of plovers or nests, and operators must ensure that extraction activities do not occur when plovers or nests are within 1,000 feet of the extraction site; (d) All pre-extraction activities conducted in suitable nesting habitat prior to August 22 of each year shall be preceded by plover surveys completed each day that pre-extraction activities are planned to occur.

Due to the significant adverse impacts that vehicle use on the gravel bars has on the federally threatened western snowy plover, the FWS proposes including in its Biological Opinion prepared for the Corps LOP-2009 term and conditions aimed at minimizing vehicle impacts. The FWS is requiring that vehicle use in suitable plover habitat shall be minimized during the plover nesting season (March 1-September 15), and that access roads owned, controlled, or utilized by commercial gravel operators shall be gated and locked during the plover nesting season when no active extraction and hauling is occurring (including at night). This requirement has been included as part of **Special Condition No. 4**, which specifies various measures to protect western snowy plover in the project area, as discussed above. The condition imposed by the Commission requires that the gates be designed to block vehicular access only and shall allow for pedestrian access, unless the applicant obtains additional authorization from the Commission to block pedestrian access. This condition will keep the vehicles that adversely affect the plovers off of the bars during the plover nesting season while protecting the pedestrian access to the shoreline consistent with the access policies of the Coastal Act. If the applicant desires to install gates that block pedestrian as well as vehicular access, the applicant must apply for additional authorization from the Commission so that the Commission can evaluate whether such gates in the specific location proposed would block the public's right of access inconsistent with the access policies of the Coastal Act.

The requirements of Special Condition No. 4 will ensure that gravel operations will not be performed in western snowy plover nesting sites or otherwise significantly disturb this threatened species. Therefore, as conditioned, the Commission finds that the project will avoid significant adverse impacts to the western snowy plover species.

e. Impacts on Water Quality

If properly managed, the proposed gravel operations should not significantly adversely affect the river's water quality. However, gravel extraction operations in close proximity to an open stream course could adversely impact water quality and ultimately the biological productivity and fisheries resources of the river. For example, pushing gravel materials or allowing sediment-laden water to drain from an excavation bucket into the river could degrade water quality and biological productivity by increasing the turbidity of the water. In addition, if not retained to allow settlement of suspended sediment, wash water from gravel processing activities could entrain soil materials which could result in sedimentation of coastal waters.

To prevent such occurrences, the Commission attaches Special Condition Nos. 1, 3, 6, and 7. **Special Condition No. 1** requires the applicant to perform the mining project on the exposed gravel bar, to avoid in-water activities that might result in sedimentation of the river. **Special Condition No. 3** requires that a runoff control plan be reviewed and approved by the Executive Director as part of the annual final gravel extraction plan ensuring that mining equipment be maintained and operated in such a manner as to not allow for release of petroleum products into the river, that spill clean-up materials be available on the worksite, and that operators and sub-contractors undergo spill contingency training. **Special Condition No. 6** prohibits placing any material into the river during gravel extraction activities. **Special Condition No. 7** requires that

all materials be promptly removed from the river after the cessation of mining and prior to the start of the rainy season.

Therefore, as conditioned, the project will not result in significant adverse impacts to coastal water quality.

Conclusion

The Commission finds, as conditioned herein, the proposed gravel extraction operation is consistent with the requirements of Section 30233 of the Coastal Act in that feasible mitigation measures have been provided to minimize adverse environmental effects. The gravel extraction limitations and performance standards imposed through Special Condition Nos. 1, 3, and 5 are designed to prevent impacts to river morphology, riparian vegetation, threatened and endangered species, and water quality. Together with the requirements of Special Condition Nos. 6 and 7 to prohibit placement of material into the active channel and limit the extraction season, the project is conditioned to ensure that significant adverse impacts to the Eel River from the proposed gravel extraction operation will be avoided. Therefore, the proposed project as conditioned is consistent with the requirements of Sections 30231, 30233, and 30240 of the Coastal Act.

(4) ***Maintenance and Enhancement of Estuarine Habitat Values***

The fourth general limitation set by Sections 30231 and 30233 is that any proposed dredging or filling project in coastal waters must maintain and enhance the biological productivity and functional capacity of the habitat, where feasible.

As discussed in the section of this finding on mitigation, the conditions of the permit will ensure that the project will not have significant adverse impacts on fisheries resources, river morphology, environmentally sensitive riparian vegetation, western snowy plover, or water quality. By avoiding impacts to coastal resources, the Commission finds that the project will maintain the biological productivity and functional capacity of the habitat consistent with the requirements of Sections 30231, 30233, and 30240 of the Coastal Act.

Conclusion

The Commission thus finds that the project is an allowable use, that there is no feasible less environmentally damaging alternative, that no additional mitigation is required for the impacts associated with the dredging of coastal waters, and that riverine habitat values will be maintained or enhanced. Therefore, the Commission finds that the proposed development, as conditioned, is consistent with Sections 30231 and 30233 of the Coastal Act.

E. Development Within Coastal Rivers and Streams

Section 30236 of the Coastal Act states the following:

> *Channelizations, dams, or other substantial alterations of rivers and streams shall incorporate the best mitigation measures feasible, and be limited to (l) necessary water supply projects, (2) flood control projects where no other method for protecting existing structures in the floodplain is feasible and where such protection is necessary for public safety or to protect existing*

> *development, or (3) developments where the primary function is the improvement of fish and wildlife habitat*. [Emphases added.]

Section 30236 sets forth a number of different limitations on what development may be allowed that causes substantial alteration of rivers and streams. For analysis purposes, a particular development proposal must be shown to be for one of three purposes: (1) for a necessary water supply project; (2) flood control projects where there is no other feasible methods for protection of existing structures within the floodplain and the project is necessary for public safety and the protection of existing development; or (3) primarily for fish and wildlife habitat improvement. In addition, the development proposed must provide the best mitigation measures feasible to minimize the significant adverse environmental effects of the subject channelization, damming, or other substantial alteration of a river or stream.

As discussed above, the wet trenching technique, which may be proposed in an annual gravel extraction plan if deemed appropriate by NOAA-Fisheries and DFG, would involve excavation within salmonid ESHA habitat, and thus would not be permissible under Section 30233(a)(5). However, Section 30236 allows substantial alteration of rivers and streams where the primary function is for the improvement of fish habitat. To the extent that use of the wet trenching technique is primarily for the improvement of fish habitat, the proposed wet trenching excavation is consistent with the use limitations of Section 30236, as explained below.

Trenching can be an effective tool for the enhancement of salmonid migration corridors and in providing cold water refuge adjacent to the wetted channel. NOAA-Fisheries has encouraged the use of trenching on the lower Eel and lower Van Duzen Rivers to assist salmonid migration through desiccated bar areas. Trenching adjacent to the low-flow channel also can provide adult holding habitat. A migration trench is essentially a designed channel mimicking a natural channel, which permits salmonid migration and water flow through a desiccated reach of a stream. Meander and slope may be designed into the channel to control velocity and provide resting areas for fish. Large woody debris also may be placed within the channel to provide cover and refuge for salmonids during upstream migration. Connection of the designed channel at the upstream end must be carefully planned so that the existing channel area is not significantly diminished and so that low, pulse flows do not encourage fish migration into channel areas that are incapable of providing cover and protection from predation or upstream passage. The upstream connection to the existing channel should most likely form a narrow riffle to prevent pool dewatering.

To ensure consistency with the limited purpose for which Section 30236 allows substantial alteration of rivers and streams, the Commission attaches **Special Condition No. 1-(B)**, which states that if wet trenching methods for salmonid habitat improvements are used, the trenching within the wet channel shall be limited to the trenching configuration and extraction volume that is the minimum amount necessary for improving salmonid habitat. Additionally, the Commission attaches **Special Condition No 3-(A)-9**. This condition requires that, prior to the start of each year's gravel extraction operations, the applicant shall submit, for the Executive Director's review and approval, a final gravel extraction plan for that gravel extraction season that includes, among other things, evidence demonstrating that any proposed wet trenching for

instream salmonid habitat restoration purposes is limited to the trenching configuration and extraction volume that is the minimum amount necessary for improving salmonid habitat, including but not limited to, written approval of the proposed wet trenching from NOAA-Fisheries and/or the Department of Fish and Game.

By limiting the trenching configuration and extraction volumes to the minimum amount necessary for improving salmonid habitat ensures that the primary function of the technique will be for the improvement of fish habitat, even though there may be incidental use of the gravel extracted for commercial purposes. This aspect of the mining is consistent with 30236, provided that the primary function of the extraction is for the improvement of fish habitat and the best mitigation measures feasible are incorporated into the project. Special Condition Nos. 1, 3, 5, 6, and 7 discussed above require the best feasible mitigation measures be taken relating to extraction standards and limitations, methods of extraction, and the timing of extraction to minimize significant adverse environmental effects on coastal resources such as sensitive species and riparian vegetation.

Therefore, the Commission finds that as conditioned herein, the proposed wet trenching excavation is consistent with the requirements of Section 30236 of the Coastal Act, in that the primary function of the wet trenching is the improvement of fish habitat, and the best feasible mitigation measures have been provided to minimize or avoid significant adverse environmental effects.

F. Protection of Environmentally Sensitive Habitat Areas

Section 30240 of the Coastal Act states that environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values and that development in areas near such sensitive habitat areas shall be sited and designed to prevent significant adverse impacts to these areas.

As discussed above in the section on permissible uses for dredging of wetlands and open coastal waters, the proposed project as conditioned will not adversely affect environmentally sensitive habitat either within or outside of the bank-full channel of the river. As conditioned, the proposed gravel mining project will not result in significant cumulative adverse impacts on sensitive fish species consistent with the requirements of Sections 30231 and 30233 of the Coastal Act. In addition, mining is limited by the provisions of **Special Condition No. 1**, which prohibit mining in those portions of the gravel bars where the riparian vegetation has reached a size and extent where there is an expectation of appreciable habitat values for nesting, forage and cover of wildlife being afforded. Furthermore, none of the riparian habitat along the banks of the river will be disturbed by the extraction operation itself. Existing haul roads through the riparian areas must be used to truck gravel from the bar to the stockpiling and processing facility. **Special Condition No. 6** requires that the proposed project not disturb or remove any of the established riparian vegetation at the site and prohibits the cutting of new haul roads through the habitat. Moreover, to help prevent potential impacts to the habitat afforded to nesting snowy plovers, **Special Condition No. 4** requires that gravel extraction operations avoid western snowy plover habitat by, among other means, either not commencing until after the nesting season (after

September 15), or commencing only after a biologist approved by the FWS has surveyed the site for three consecutive days and either found no plovers or nests, or has found some but will continue to conduct daily surveys to ensure a 1,000-foot buffer area is maintained around the nests that have been found. The FWS recommends this protocol to avoid disturbance of the western snowy plover. The requirements of Special Condition No. 4 will ensure that gravel operations will not be performed in western snowy plover nesting sites or otherwise disturb this threatened species.

Therefore, the Commission finds that the project as conditioned is consistent with Section 30240 of the Coastal Act, as the project will avoid significant adverse impacts to the environmentally sensitive habitat areas found on the site.

G. Protection of Visual Resources

Section 30251 of the Coastal Act provides in applicable part that the scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall: (a) be sited and designed to protect views to and along the ocean and scenic coastal areas, and (b) be visually compatible with the character of surrounding areas.

This portion of the river is not readily visible from Highway 101. The upper portions of the project site southern limit may be viewed for a brief period by vehicles that generally travel at speeds of 60 mph and greater on Highway 101 near the Van Duzen River Bridge. The general public would not recognize extraction areas from this viewpoint and may, at the most, observe a scraper working on the bar. Partial views of the bankfull channel can also be gained from Grizzly Bluff Road west of the channel area. This lightly traveled county road runs between the towns of Ferndale and Rio Dell.

The gravel extraction area and processing facilities are generally not visible from Highway 101 or any other public coastal viewing areas. The extraction operation has existed at the site for many years, and the proposed project will not be any more prominent than the gravel extraction that has occurred at the site in the past. Therefore, the Commission finds that the proposed project is visually compatible with the character of the area as gravel extraction operations here and in the vicinity have long been a part of the view shed.

Therefore, the Commission finds that, as conditioned, the proposed project is consistent with the visual resource policies of Section 30251 of the Coastal Act, as the project is compatible with the visual character of the surrounding area and will not block views to and along the coast.

H. Public Access

Coastal Act Section 30210 requires in applicable part that maximum public access and recreational opportunities be provided when consistent with public safety, private property rights, and natural resource protection. Section 30211 requires in applicable part that development not interfere with the public's right of access to the sea where acquired through use (i.e., potential prescriptive rights or rights of implied dedication). Section 30212 requires in applicable part that public access from the nearest public roadway to the shoreline and along the

coast be provided in new development projects, except in certain instances, such as when adequate access exists nearby or when the provision of public access would be inconsistent with public safety. In applying Sections 30210, 30211, and 30212, the Commission is limited by the need to show that any denial of a permit application based on these sections, or any decision to grant a permit subject to special conditions requiring public access, is necessary to avoid or offset a project's adverse impact on existing or potential public access.

The project site is located between the first public road (Highway 101) and the sea (the Eel River is considered to be an arm of the sea in this area).

Recreational use of the river in this particular section of the river is very limited, largely because there are very few access points to the river. The principal public access use of the project site that does occur is by fishermen who use the river channel for recreational fishing. Other public access and recreational uses of this stretch of the river include canoeing and recreational boating. The prime fishing season occurs in the spring or wet season when gravel extraction is not occurring. To the extent that canoeists and boaters do use the river channel during the extraction season, the Commission attaches **Special Condition No. 2** which will ensure that any truck crossings of the channel installed by the applicants will not block passage down the river. The condition requires that any proposed seasonal crossing of the low flow or secondary channels that can be expected to maintain flow year round shall be of the railroad flatcar variety rather than culverted fill crossings. The condition also requires that the flatcar crossing be installed in such a manner that a minimum three-foot vertical clearance is maintained above the surface of the water so that canoes and kayaks are able to pass through such a crossing.

Due to the significant adverse impacts that vehicle use on the gravel bars has on the federally threatened western snowy plover, the FWS proposes including in its Biological Opinion prepared for the Corps LOP-2009 term and conditions aimed at minimizing vehicle impacts. The FWS is requiring that vehicle use in suitable plover habitat shall be minimized during the plover nesting season (March 1-September 15), and that access roads owned, controlled, or utilized by commercial gravel operators shall be gated and locked during the plover nesting season when no active extraction and hauling is occurring (including at night). This requirement has been included as part of **Special Condition No. 4**, which specifies various measures to protect western snowy plover in the project area, as discussed in Findings IV-D and IV-E above. The condition imposed by the Commission requires that the gates be designed to block vehicular access only and shall allow for pedestrian access, unless the applicant obtains additional authorization from the Commission to block pedestrian access. This condition will keep the vehicles that adversely affect the plovers off of the bars during the plover nesting season while protecting pedestrian access to the river consistent with the access policies of the Coastal Act. If the applicant desires to install gates that block pedestrian as well as vehicular access, the applicant must apply for additional authorization from the Commission so that the Commission can evaluate whether such gates in the specific location proposed would block the public's right of access inconsistent with the access policies of the Coastal Act.

Thus, as conditioned, the project will not significantly affect the fishermen, canoeists or other recreational boaters. Furthermore, gravel extraction operations have been occurring at the site

for many years. The continued extraction authorized by this permit will not create any additional burdens on public access than have existed in the past. The project will not create any new demands for fishing access or other public access use.

The project as conditioned would have no significant adverse effect on public access. The Therefore, the Commission finds that the project, as proposed without new public access, is consistent with the public access policies of the Coastal Act.

I. State Lands Commission Review

The project is located in the bed of the Eel River, a navigable river, between the ordinary high water marks. As such, the State of California may hold a public trust easement and other property interests at the site. Any such property interest would be administered by the State Lands Commission. To assure that the applicant has a sufficient legal property interest in the site to carryout the project and to comply with the terms and conditions of this permit, the Commission attaches **Special Condition No. 8** which requires that the applicant submit evidence that any necessary authorization from the State Lands Commission has been obtained prior to issuance of the permit.

J. CHERT Review

Pursuant to the Corps LOP permit procedures and the County of Humboldt's surface mining regulations, in-stream gravel mining projects within Humboldt County are required to be assessed for potential direct and cumulative to riverine resources by an independent scientific panel known as the County of Humboldt Extraction Review Team, or "CHERT." The CHERT in turn makes specific recommendations to the County and the Corps with regard to appropriate actions that should be taken on the mining applications. Often during the review of mining plans for the upcoming mining season, CHERT may make constructive recommendations to the applicants in the interest of designing a mining proposal that will avoid and/or minimize significant adverse impacts to river resources. These recommendations may involve changes to the amount of gravel proposed to be extracted, the specific location(s) of the extraction area(s), or the proposed mining techniques. To ensure that the project recommended for approval by CHERT is the same project that was reviewed under this permit by the Commission, and to ensure that extraction does not exceed the extraction limits established under Special Condition No. 1, the Commission attaches **Special Condition No. 3-A-(4)**, which requires the applicant to annually submit to the Executive Director for written review and approval a copy of the pre-extraction mining plan review comments obtained from the CHERT as part of the final gravel extraction plan as well as evidence that the final gravel extraction plan is consistent with all recommendations of CHERT and all terms and conditions of this permit.

K. Department of Fish and Game Review

The project requires an annual Section 1603 Streambed Alteration Agreement from the Department of Fish and Game. Therefore, to ensure that the project area reviewed by the Department of Fish and Game each year is the same project area that was reviewed under this permit by the Commission, and to ensure that extraction does not exceed the extraction limits

established under Special Condition No. 1, the Commission attaches **Special Condition No. 9**, which requires that prior to commencing each year's gravel operations, the applicant submit a copy of the Section 1603 agreement approved by the Department of Fish and Game. The condition requires that any project changes resulting from the agency's approval not be incorporated into the project until the applicant obtains any necessary amendments to this coastal development permit.

L. Regional Water Quality Control Board Review

The project requires a Water Quality Certification (WQC) from the North Coast Regional Water Quality Control Board pursuant to Section 401 of the Clean Water Act. The Board issued WQC Order No. R1-2005-0011 (dated June 21, 2005) for gravel extraction activities during the 2009 extraction season, but the certification expires on June 21, 2010. Therefore, to ensure that the necessary approvals from the Board are in place for the 2010 through 2014 extraction seasons proposed to be covered by this coastal development permit, and to ensure that extraction does not exceed the extraction limits established under Special Condition No. 1, the Commission attaches **Special Condition No. 10**, which requires that prior to commencing each year's gravel operations, the applicant submit a copy of a WQC approved by the Board. The condition requires that any project changes resulting from the agency's approval not be incorporated into the project until the applicant obtains any necessary amendments to this coastal development permit.

M. Annual U.S. Army Corps of Engineers Review

The project is within and adjacent to a navigable waterway and is subject to the authority of the U.S. Army Corps of Engineers under Section 404 of the Federal Water Pollution Control Act (33 USC 1251 et seq.) and Section 10 of the Rivers and Harbors Act (33 USC 403). Pursuant to the Federal Coastal Management Act, any approval granted by a federal agency for activities that affect the coastal zone must be consistent with the coastal zone management program for that state. To ensure that the project ultimately approved by the Corps each season is the same as the project specified in the annual gravel extraction plan approved by the Executive Director pursuant to Special Condition No. 1 herein, the Commission attaches **Special Condition No. 11**, which requires the applicant, prior to commencing gravel extraction operations each year, to demonstrate that all necessary approvals from the Corps for the approved gravel extraction, as conditioned herein, have been obtained. The condition requires that any project changes resulting from the agency's approval not be incorporated into the project until the applicant obtains any necessary amendments to this coastal development permit. The Commission also attaches **Special Condition No. 12** to specify a permit termination date of November 1, 2013, which corresponds to the project termination date listed in the Endangered Species Act Section 7 consultation submitted by the Corps to NOAA-Fisheries.

N. Final U.S. Army Corps of Engineers LOP-2009 Approval

As discussed above, the project requires review and authorization by the U.S. Army Corps of Engineers. Pursuant to the Federal Coastal Zone Management Act, any permit issued by a federal agency for activities that affect the coastal zone must be consistent with the coastal zone management program for that state. Under agreements between the Coastal Commission and the

U.S. Army Corps of Engineers, the Corps will not issue a permit until the Coastal Commission approves a federal consistency certification for the project or approves a permit. The Corps is permitting the proposed gravel operations under its Letter of Permission Procedure 2009 (LOP-2009). To ensure that the project ultimately approved by the Corps is the same as the project authorized herein, the Commission attaches **Special Condition No. 13**, which requires the applicant to submit to the Executive Director evidence of the Corps' approval of the project prior to commencement of construction. The condition requires that any project changes resulting from the Corps' approval not be incorporated into the project until the applicant obtains any necessary amendments to this coastal development permit.

O. Final Biological Opinions

The project requires final Biological Opinions being issued by the NOAA-Fisheries and the U.S. Fish and Wildlife Service. As discussed above, the Biological Opinions are being prepared as a result of formal consultations between the U.S. Army Corps of Engineers (Corps) and NOAA-Fisheries and FWS pursuant to Section 7 of the Federal Endangered Species Act. The NOAA-Fisheries BO is expected to be finalized by the end of August 2009, and the FWS BO is expected to be finalized by the middle of August 2009. To ensure that the project ultimately approved by the agencies is the same as the project authorized herein, the Commission attaches **Special Condition No. 14**, which requires the applicant to submit, prior to permit issuance, final Biological Opinions in support of the gravel extraction authorized by this permit and that are consistent with all terms and conditions of this permit. The applicant shall inform the Executive Director of any changes to the project required by the agencies. Such changes shall not be incorporated into the project until the applicant obtains a Commission amendment to this coastal development permit, unless the Executive Director determines that no amendment is legally required.

P. California Environmental Quality Act

The County of Humboldt, as the lead agency, adopted a Programmatic Environmental Impact Report (PEIR) to describe and analyze the potential environmental effects resulting from the gravel extraction operations in the lower Eel and lower Van Duzen Rivers in 1992.

Section 13906 of the California Code of Regulation requires Coastal Commission approval of a coastal development permit application to be supported by findings showing that the application, as modified by any conditions of approval, is consistent with any applicable requirements of the California Environmental Quality Act (CEQA). Public Resources Code Section 21080.5(d)(2)(A) of CEQA prohibits a proposed development from being approved if there are feasible alternatives or feasible mitigation measures available, which would significantly lessen any significant effect that the activity may have on the environment.

The Commission incorporates its findings on conformity with Coastal Act policies at this point as if set forth in full. These findings address and respond to all public comments regarding potential significant adverse environmental effects of the project that were received prior to preparation of the staff report. As discussed herein in the findings addressing the consistency of the proposed project with the Coastal Act, the proposed project has been conditioned in order to

be found consistent with the policies of the Coastal Act. As specifically discussed in these above findings which are hereby incorporated by reference, mitigation measures which will minimize all adverse environmental impact have been required. These required mitigation measures include requirements that limit extraction to avoid environmentally sensitive habitat areas, rare and endangered species, migratory fish, and extractions that could lead to changes in river morphology. As conditioned, there are no feasible alternatives or feasible mitigation measures available, beyond those required, which would substantially lessen any significant adverse impact that the activity would have on the environment. Therefore, the Commission finds that the proposed project, as conditioned to mitigate the identified impacts, can be found consistent with the requirements of the Coastal Act and to conform to CEQA.

V. EXHIBITS:

1. Regional Location Map
2. Vicinity Map
3. Aerial Photo of Gravel Operations on the Lower Eel and Van Duzen Rivers
4. Detailed Project Description

Note: The following six exhibits are included in a combined exhibit packet prepared for CDP Application Nos. 1-09-005, 1-09-006, 1-09-011, and 1-09-022, attached separately.

A. CHERT Analysis of Eel River Cross Sections at Gravel Mining Sites, 1997-2007
B. Western Snowy Plover Biological Assessment (Winzler & Kelly, March 12, 2009)
C. Salmonid Biological Assessment (Alice Berg & Associates, May 6, 2009)
D. NOAA-Fisheries Preliminary Conclusions and Draft Terms & Conditions
E. August 13, 2004 NOAA-Fisheries Biological Opinion for gravel operations on the lower Eel River during the 2004-2008 gravel extraction seasons
F. September 6, 2005 Fish and Wildlife Service Biological Opinion for gravel operations on the lower Eel River during the 2005-2008 gravel extraction seasons

APPENDIX A

STANDARD CONDITIONS

1. Notice of Receipt and Acknowledgement. The permit is not valid and development shall not commence until a copy of the permit, signed by the permittee or authorized agent, acknowledging receipt of the permit and acceptance of the terms and conditions, is returned to the Commission office.

2. Expiration. If development has not commenced, the permit will expire two years from the date on which the Commission voted on the application. Development shall be pursued in a diligent manner and completed in a reasonable amount of time. Application for extension of the permit must be made prior to the expiration date.

3. Interpretation. Any questions of intent of interpretation of any condition will be resolved by the Executive Director of the Commission.

4. Assignment. The permit may be assigned to any qualified person, provided assignee files with the Commission an affidavit accepting all terms and conditions of the permit.

5. Terms and Conditions Run with the Land. These terms and conditions shall be perpetual, and it is the intention of the Commission and the permittee to bind all future owners and possessors of the subject property to the terms and conditions.

APPENDIX B

GRAVEL EXTRACTION METHODS DESCRIBED IN THE U.S. ARMY CORPS OF ENGINEERS LETTER OF PERMISSION PROCEDURE (LOP) 2009

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 LOP 2009, 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 Skims**: 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.

- 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.
- 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, lacking transitional vegetation colonization, grasses and shrubs. Area may contain sparse patches of widely scattered individual woody plants.

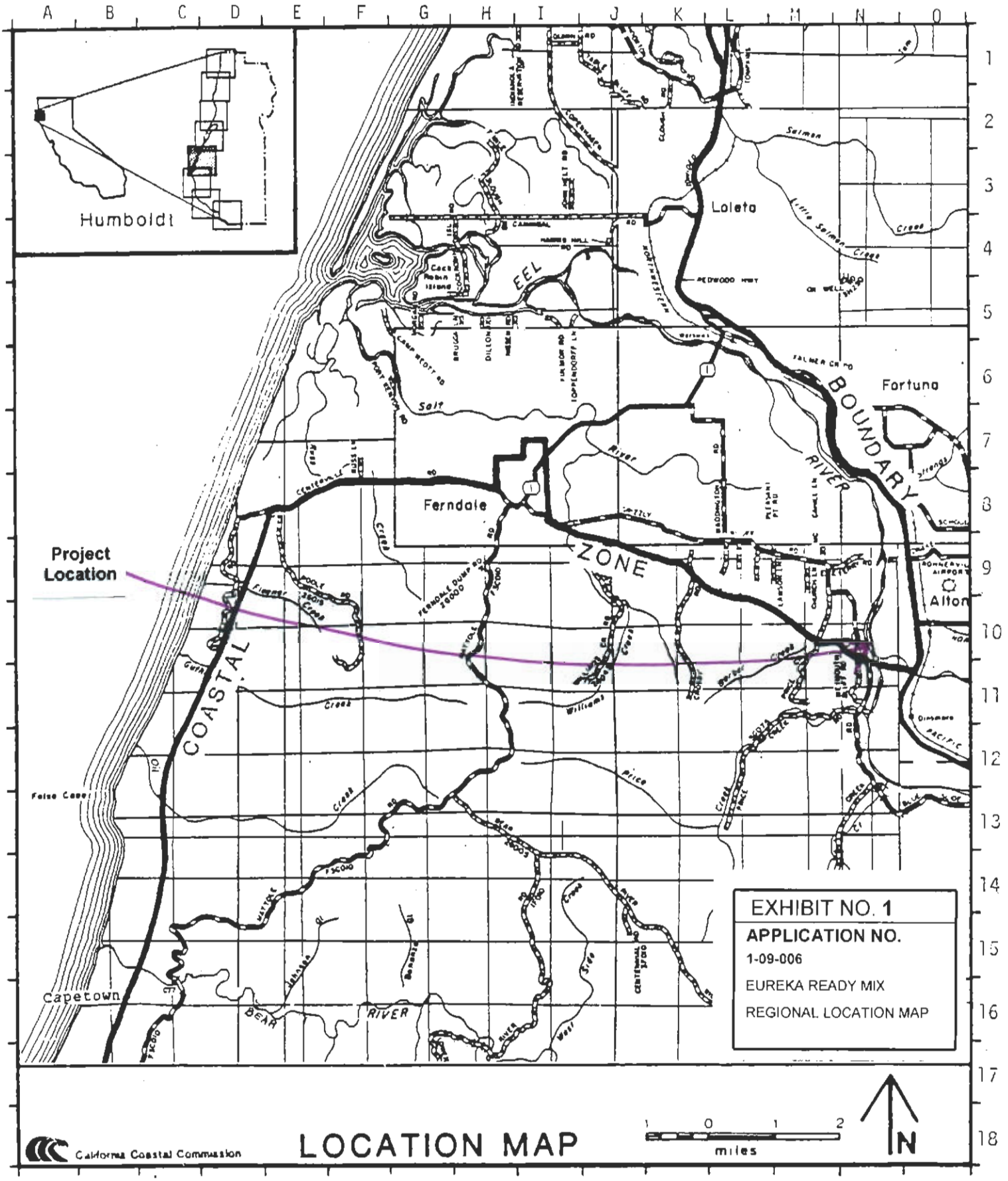
Wetland pits

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.

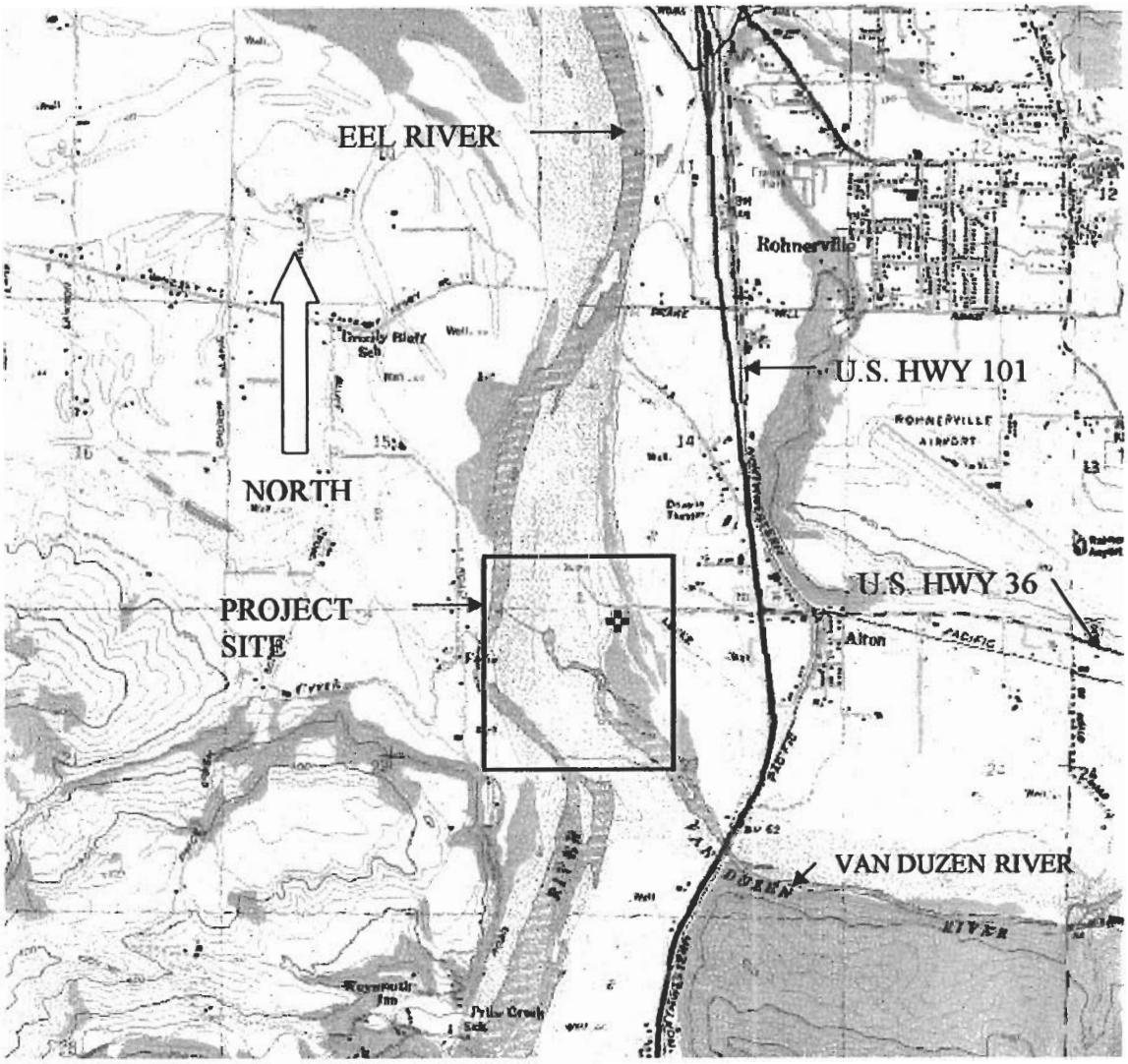
Trenching

- **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.



County of Humboldt



PURPOSE: Vicinity Map

DATUM:

ADJACENT OWNERS:

SCALE:

EUREKA READY MIX - 2008
HAUCK BAR EXTRACTION SITE

IN: Eel River
AT: Alton, California
COUNTY: Humboldt
Application By: Paul Kraus

EXHIBIT NO. 2
APPLICATION NO.
1-09-006
EUREKA READY MIX
VICINITY MAP

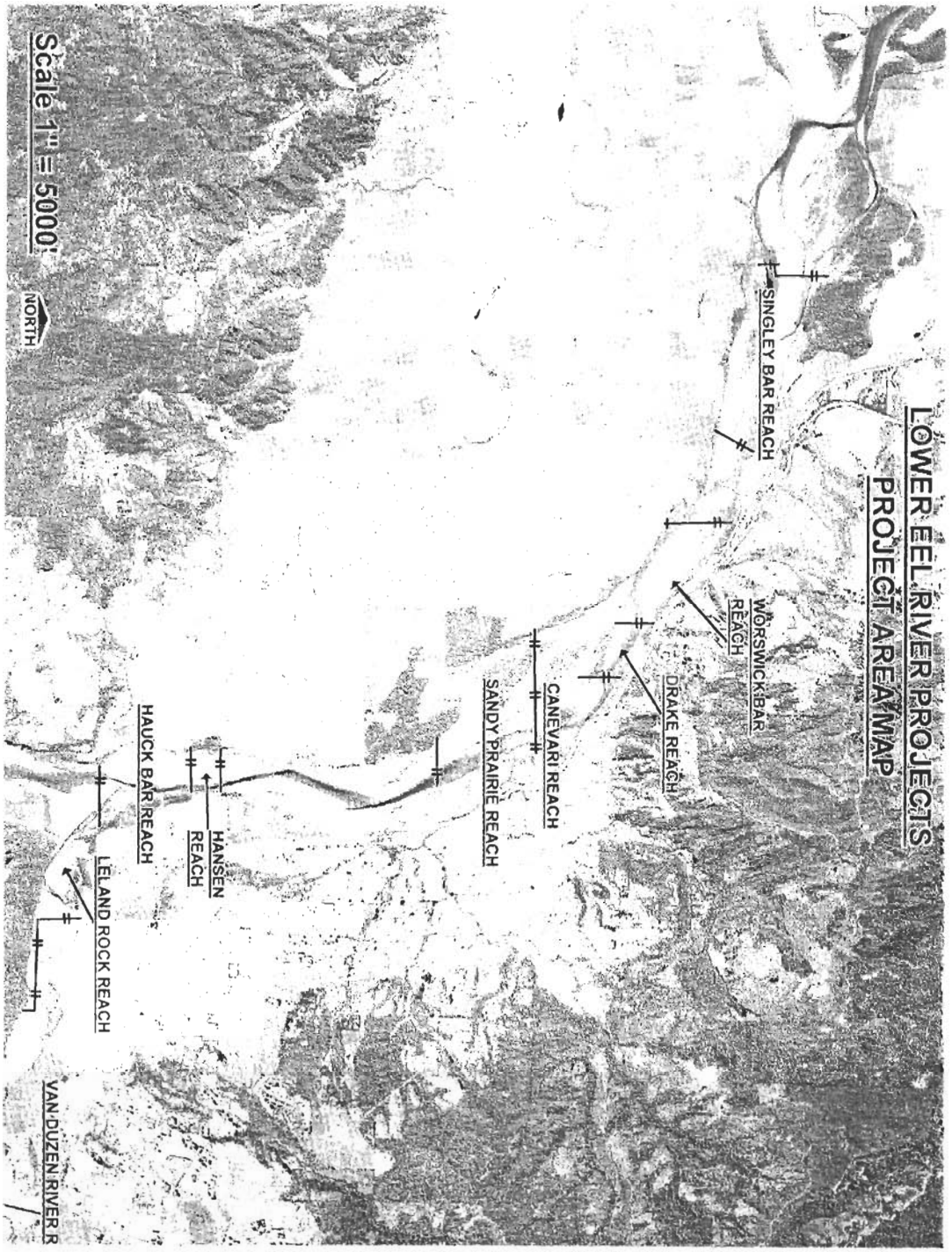


Figure 1. Lower Eel River Aggregate Extraction Operations.

EXHIBIT NO. **3**

APPLICATION NO.

1-09-006 - EUREKA READY MIX

AERIAL PHOTO OF GRAVEL OPERATIONS ON THE LOWER EEL & VAN DUZEN RIVERS (1 of 2)

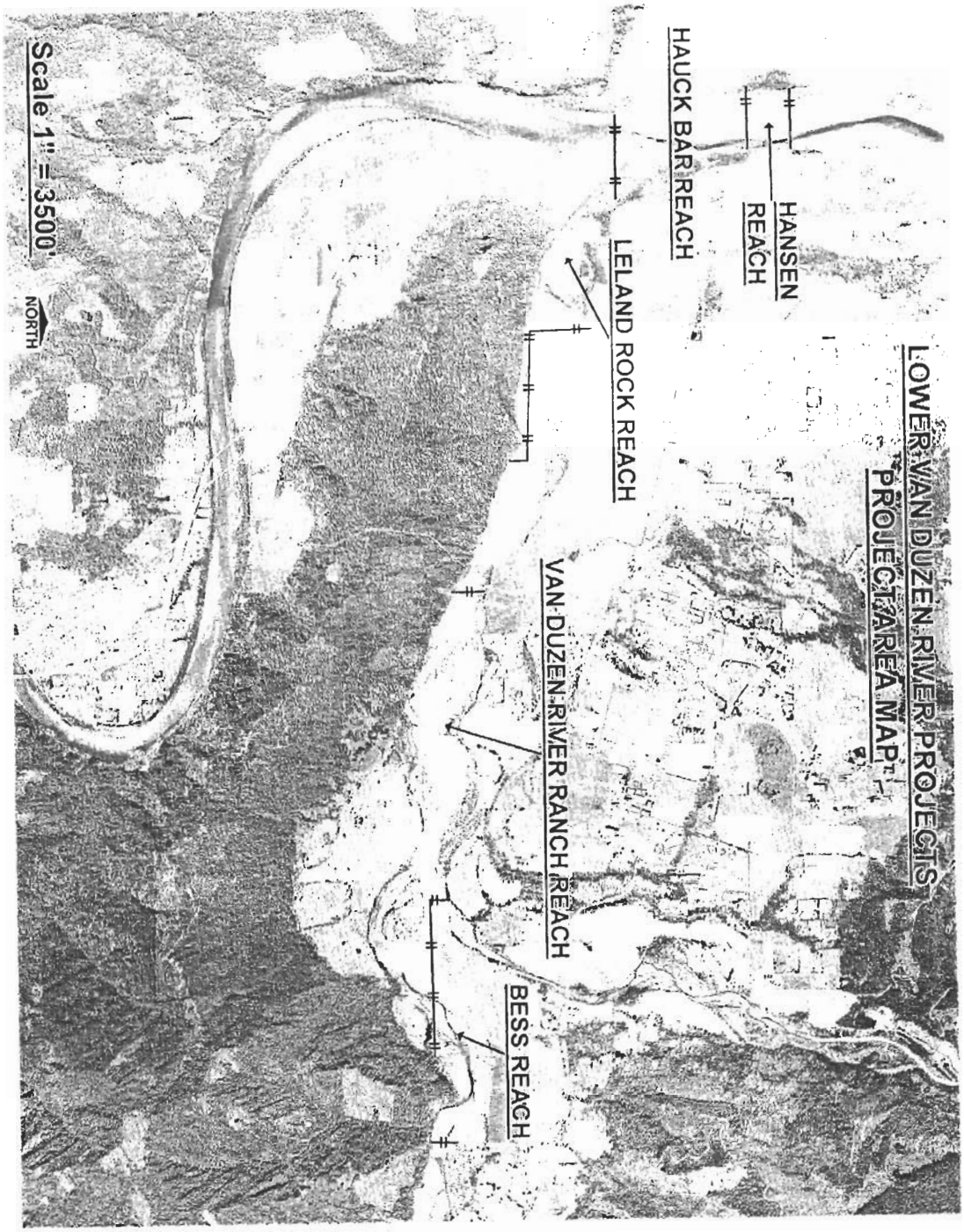


Figure 2. Lower Van Duzen River Aggregate Extraction Operations.

Eureka Ready Mix Concrete Company, Inc,
California Coastal Commission
2008 Permit Application
Hauck Gravel Bar, Eel River
January 2, 2009

EXHIBIT NO. 4
APPLICATION NO.
1-09-006
EUREKA READY MIX
DETAILED PROJECT DESCRIPTION (1 of 29)

SECTION II. PROPOSED DEVELOPMENT

1. The project area consists of those areas of the subject parcels west of the Sandy Prairie Levee (APN's 106-221-001, 201-261-001, 201-261-006 & 201-221-009) and within the primary permit jurisdiction of the California Coastal Commission. See attached 2008 mapping.

2. Project Site Description

The Hauck bar is located at River Mile 14 on the Eel River immediately downstream of the Van Duzen River confluence at the upstream extent of the broad, low-gradient floodplain of the Eel River. The site is leased by Eureka Ready Mix Concrete Company, Inc. (ERM), for the commercial extraction of river run aggregate. Operations at the Hauck bar have been ongoing and continuous since the early 1950's.

Humboldt County Land Use classification of the project parcels and surrounding area is Agricultural Exclusive with combining zones of Flood, Archaeological, Stream and Riparian Area and Transitional Agricultural lands. The project parcels consist of the bank full channel area contained between the Sandy Prairie and Grizzly Bluff levees and surrounding floodplain terraces. Due to the dynamic processes of erosion and sedimentation, the area of Ordinary High Water and related geomorphic features of the site are subject to annual change.

The Eel River flows north through the project parcels, parallel with Highway 101. Large flood events of 1956 and 1964 prompted the construction of the Sandy Prairie Levee and Grizzly Bluff Levees that protect the alluvial upland where the Eel River leaves the coastal mountain valleys and enters the broad alluvial delta.

The Van Duzen River enters the Eel River from the east at the upstream project limit, contributing to the large sediment depositional zone of the confluence. The meeting of the two rivers has resulted in accumulation of sediment creating a flat-water extending nearly one-mile upstream along the Eel River. Bar height within the project site measures up to eighteen feet above the summer low-flow water surface.

Mature riparian forest consisting of cottonwood, willow and alder extend the length of the property between the right-bank levee and the bankfull channel area. A single looped haul road, branching from Fowler Lane, provides access to the extraction areas of the

site. Summer crossings are generally located at narrow riffle areas of the main or secondary channels providing access to aggregate deposits west of the wetted channel.

Sparse transitional vegetation, consisting of coyote brush, willow and an occasional cottonwood, dot the higher elevation bar and terrace surfaces. Sparse strands of young willow also colonize the main, low-flow channel fringe through the project reach. Colonization of willow, alder and cottonwood (age <15 years) form a narrow band along the left bank levee and channel margin. Barber Creek enters the Eel River channel through a rock levee, mid-way along the left bank forming narrow summer ponds along the toe of the levee within left bank secondary channel. Barber creek flows subsurface to waters of the Eel River for six to seven months of the year.

The proposed project involves obtaining a five-year permit for the continued extraction of river-run aggregate from the naturally replenished deposits of the Eel River within the project area as shown and described in the attached application (see attached information and mapping).

The proposed project activities are outlined below and described later in detail.

1) Annual Extraction Season (schedule of operations)
2) Extraction Considerations
3) Extraction Methods
4) Summer Crossings
5) Temporary Stockpiling of Aggregate
6) Haul Road Maintenance
7) Annual Reclamation Process
8) Extraction Design and Approval Process
9) Annual Monitoring
10) LWD Management
11) Annual Salmonid Habitat Assessment

1) Annual Extraction Season

Planning for the annual extraction process begins in the late spring with the scheduling of a spring photographic series of the river. Once winter flows recede and stabilize, during late April or early May, the aerial photographic series is taken. The stereoscopic color photographs are utilized for project base mapping and biological monitoring.

In the spring, when the river level drops to a point where gravel deposits become exposed, the operator and consultant conduct a field review of the project site to identify areas of potential extraction. Potential extraction sites are identified on the spring aerial photograph. County of Humboldt Extraction Review Team (CHERT) and multi-agency field review takes place following the operator/consultant field review.

Following the CHERT, Multi-Agency site review, the operator's river consultant surveys the proposed extraction site(s) and develops the annual extraction plan from the topographic data, site review field notes and photographic information. The extraction designs, consisting of cross-sections of the proposed extraction area, surveyed monitoring cross-sections, extraction narrative, extraction plan photograph and volume calculations are submitted to DFG and the Corps for approval.

Upon receipt of permits and prior to the operator entering the areas of the bank-full channel, the river consultant marks the boundaries of the approved annual extraction area(s) and provides grade control points throughout the area so that equipment operators can control the depth, slope and extent of operations. Extraction area dimension information is transferred from electronic Autocad drawings of the final extraction plans to points in the field during extraction site staking. Horizontal and vertical buffers are field verified during extraction site staking and grade setting operations. The perimeter of the extraction site, including the upstream and downstream extents are delineated by staking or painting of the bar surface.

In addition to physical site delineation and placement of grade control points, the operator's river consultant conducts daily inspection of the site, checking the progress of operations and reviewing compliance with approved plans and permit conditions.

For Humboldt County, extraction is permitted to take place between June 1st and October 31st. However, extraction activities on the Lower Eel River cannot commence until after the Snowy Plover breeding season, at the earliest, July 22nd. Specific dates, terms and conditions pertaining to operations within Snowy Plover habitat areas will be accepted for the project through consultation with the U.S. Fish and Wildlife Service during the USACOE permit process.

When the operator nears completion of extraction, the river consultant reviews the site, checks final grade and recommends final grading of the extraction surface, if needed, to ensure extraction plan compliance and proper site drainage.

Following extraction and site grooming, the Multi-Agency site review personnel are notified and a final site review can be scheduled. The purpose of the review is to assess the site for additional end of season reclamation and recommend minor grading, if needed, to ensure site drainage compliant with the approved extraction plan.

Post-extraction surveys of the site are conducted following extraction to generate comparative sets of monitoring and extraction area cross sections showing pre and post extraction topography. The comparative cross-sections are utilized for long-term monitoring of elevation trends and for the identification and minimization of short-term effects that can be caused by extraction processes. The cross-sections are also used to calculate extracted aggregate volumes, verify extraction plan compliance and evaluate replenishment of material in the proceeding year.

In late September or early October a second aerial photographic series is taken. This post-extraction, stereoscopic photograph series captures the river channel at its lowest flow and provides an aerial view of annual extraction works. The stereoscopic photos are used for vegetation assessments, fisheries habitat mapping, evaluation of extraction limits, monitoring and study of river morphology as well as for future project planning and archival purposes.

Extraction operations are typically permitted until late October depending upon weather conditions. Extraction operations are generally required to cease with the onset of the fall rainy season. Operations on the Lower Eel River, requiring placement of temporary crossings are required to remove the crossings by October 15th. An extension to the October 15th date may be granted by DFG and NOAA Fisheries based upon location and method of crossing construction.

2) Extraction Considerations

If high flows from the previous winter replenish the exposed bar surfaces of the site, opportunity for bar skimming of the replenished deposits will be available. Other extractions such as narrow skims, secondary channel skims, dry trenching or alcoves may also be implemented during the term of the permit. When annual replenishment is not prevalent due to less than moderate winter flow, when significant changes in the channel planform occur, or to protect and maintain salmonid habitat, alternative extraction locations and methods will be considered.

Since 2002, the primary means of extraction at the Hauck Bar has contained a salmonid habitat improvement or restorative component. The majority of the effort has been for the benefit of upstream salmonid migration by development of a fish passage channel through the Van Duzen River delta. The annual multi-agency/operator coordinated project benefits both the fish and the site operator. Extraction planning documents show that since 2002, 65% of the Hauck Bar volume has come from restorative extraction efforts.

a. Protection of Transitional Vegetation

Extraction areas containing woody vegetation will include design elements to protect the vegetation from removal by the extraction processes. This will continue to be achieved through the following sequence of considerations:

1) Adjusting extraction boundaries to avoid the vegetation complex.

2) Maintaining buffer areas around vegetation patches with pointed tapers on the upstream and downstream (flow-direction) ends to streamline the buffers with the flow direction and reduce erosion.

3) Transplanting of vegetation in alternative areas where depth to ground water and location will better insure survival.

4) Provide mitigation and monitoring for direct loss of "Qualifying Vegetation".

Transplanting and/or proposed mitigation for direct loss of woody vegetation will require biologic review and subsequent approval by the State (DFG) and Federal (NOAA and USF&WS) resource agencies.

b. Channel Plan Form Considerations

Channel plan form is also considered during the pre-season review and extraction area selection and incorporated into extraction design. Extractions are typically located on the inside of meanders, on point bars or side channel bars. The head of the bar, upstream riffle and channel cross-over are preserved by locating extractions on the lower two-thirds of bars downstream of such features. Minimum extraction floor elevations shall be designed to maintain at least 20-inches of depth over riffles. Extractions from deposits bordering dry secondary channels shall be designed with minimum extraction floor elevations no less than one-foot above the adjacent secondary channel thalweg.

Confined stream depth at riffle crests is a critical element for fall migration passage of large salmonids. Spawning depths for large salmon have been noted between 6 and 14-inches (NOAA 2002). Maintaining channel confinement to the elevation of the 35% exceedence flow of the Eel River (3,800 cubic feet per second passing the USGS Scotia gage (SCO), will be required by this application.

3) Extraction Methods

There will be several types of extraction processes employed for the project depending upon extraction site location, salmonid habitat protection needs, annual replenishment of aggregate and other environmental factors. Project extraction methods include narrow skims, low terrace extractions, wet and dry trenching, wetland pits, alcoves and secondary channel excavations.

a. Traditional Extractions - Skimming

Skimming operations are typically located on the downstream two-thirds of point or side channel bar features that generally replenish with aggregate during moderate to high flow winter events. This provides a reasonably predictable supply of material for continued annual operations. Equipment is not permitted to enter the wetted-channel during bar skimming except during summer crossing installation and removal activities. Vertical and horizontal buffer requirements (offsets) accompany all extraction plans and are

designed to maintain a separation between the extraction activities and the wetted channel, maintain channel confinement and preserve edge water habitat.

Extraction slope for skimming operations is generally dictated by the gradient between breaks in slope of the adjacent river channel. The downstream gradient of the final extraction surface of a skim may represent a straight grade between riffle crest elevations, producing a greater vertical offset at the head of pools and along flat runs between the riffles.

An alternative to the flat cross-slope and downstream extraction gradient is to provide a compound slope that drops both downstream and toward the adjacent channel. The compound slope helps to maintain channel confinement and site drainage where river gradient is minimal.

Bar skimming is generally conducted with scrapers (earth-movers), large rubber-tired, self-loading vehicles. The scrapers travel on established haul roads to the designated extraction sites where they excavate material in lifts by making longitudinal passes through the extraction area removing six to eight inches of aggregate during each pass. The scrapers hold anywhere from fifteen to twenty cubic yards of material that is transported to the upland processing facility.

Front-end loaders are also used in skimming, generally on smaller extraction areas. Use of front-end loaders requires 10-wheel dump trucks, end-dumps or belly-dumps to transport the aggregate from the extraction site to the upland processing facility. Excavators and large off-road dump trucks are used for excavation of the Van Duzen fish channel or in parallel trenching operations that may occur adjacent to the Eel River channel.

Implementation of narrow skims, with a maximum width of up to one-third of point or side channel bars, are an effective extraction method for minimizing potential channel widening, and for promoting annual replenishment. The narrower extractions may be designed with a lower final surface and can be extended further upstream towards the head of the bar. Narrow skims reduce split-channel or braiding potential and have a reduced extraction footprint.

Extraction may also occur within areas of terrace deposits when replenishment of aggregate is not sufficient on lower elevation, exposed bar surfaces. Terrace mining can be utilized to supplement traditional bar skimming during drought conditions and is not recommended as a first choice if available material exists on lower elevation exposed bar surfaces. Terrace deposits are replenished during higher than average flows events and thus do not serve as a continuously available aggregate source. Patches of woody vegetation present within terrace skims are avoided and protected as described above (see Protection of Riparian Vegetation). Low terrace extractions should be designed with a downstream slope, cross-slope or compound slope to maintain appropriate drainage. The configuration, location and base elevation should be complimentary to surrounding features such as meander scars or secondary channels. As with traditional

bar skimming, cut slopes and transitions from extraction to surrounding topography should be gradual and complimentary to existing features and river flow direction. At the Hauck bar, low terrace extraction opportunities are currently limited to the southeast and southwest portions of the channel area (see site photograph).

Extraction from within the confines of existing overflow channels has been implemented to provide velocity refuge for wintering salmonids. Generally, secondary channel extractions are located downstream of the head of the secondary channel and are designed with gradual slopes transitioning to the skim surface in order to prevent headcutting and possible main channel capture. Base elevations for the extractions have a traditional downstream gradient to provide appropriate drainage and can be linked to other features such as wetland pits or alcoves.

Alcove and pit extractions provide a limited source of aggregate but provide fisheries habitat benefits by adding to the complexity of the river channel. Proposals for alcoves, pits or other habitat/channel enhancement projects will be reviewed and approved by NOAA Fisheries and DFG staff prior to submittal to the Corps.

b. Wetland Pits

Wetland pits are also a secondary extraction alternative. They are a form of terrace mining and should only be utilized during seasons of low annual replenishment on exposed bar surfaces. Pits are typically located in areas away from the active channel on surfaces inundated by 3 to 5 year flow events. Pits areas are generally located in low terrace areas, downstream of the head of bars and off-channel. The area of the pit should not exceed approximately 10 percent of the bar surface area to avoid the risk of channel capture. If it can be accomplished, pits should be located to take advantage of existing vegetation for cover and shade and should be designed to promote vegetative growth around the pit perimeter.

The pond-like features can be excavated in stages over the course of two or more seasons, if desired. Generally, small pits are excavated in one season. If a pit is to be excavated in phases, the first phase may involve removal of material to an elevation just above the ground water table over the design footprint of the pit. If the second phase of excavation is not completed within a year or two, vegetation may colonize within the pit, precluding further excavation. Excavation below ground water, typically eight to ten feet, may be completed in the following year or during subsequent low-flow, low replenishment seasons. Shallow slopes are cut one to two feet above and to a point one to two feet below the water surface to allow for colonization of hydric plants and provide a safe means of exiting the pit should an animal enter the water.

On the Lower Eel River, wetland pits have not been an applied extraction method as gravel replenishment and available aggregate deposits are plentiful. At the project site, the opportunity for pit extractions is limited to the low terrace along the east side of the channel at the Van Duzen River confluence.

c. Alcoves

Alcove extractions are a form of fisheries enhancement extraction that provides cold water refugia during low flow conditions and reduced velocity refuge during moderate flow events. Alcoves are located near the downstream end of point or side channel bars in locations that contain similar, but naturally limited features. Enlargement of the features can improve habitat conditions for rearing juveniles and migrating and wintering adult salmonids. Placement of Large Woody Debris (LWD) within alcoves can improve the habitat complexity of the feature by the addition of cover and shade important to the survival of salmonid species.

During alcove excavation, the floor elevation of the feature is sloped in the downstream direction and can either be left at elevations above the low flow channel (for alcoves providing moderate flow velocity refuge) or may tap into the thalweg elevation of the adjacent channel (for alcoves providing summer cold water refugia and rearing habitat). Minimization of turbidity associated with alcove excavation is controlled by first excavating of the interior, upstream portion of the feature and leaving a natural berm of gravel at the downstream end. Removal of the gravel berm takes place after sediment has settled from water within the excavated section of the alcove. Some suspended sediment is released into the adjacent channel when the gravel berm is removed, however, the minor release of sediment is of short duration. Alcove extractions supply a limited volume of aggregate material, but provide benefit to the salmonid life cycle.

d. Salmonid Habitat Enhancement and Restoration

Trenching can be an effective tool for the enhancement of salmonid migration corridors and in providing cold water refuge adjacent to the wetted channel. NOAA Fisheries has encouraged the use of trenching on the Lower Eel River and within the Van Duzen River Delta to assist salmonid migration through desiccated bar areas. Trenching adjacent to the low flow channel can also provide adult holding habitat. This proposal will also include the opportunity to add habitat elements, such as root wads, logs, boulder and brush to the channel under the direction of the California Department of Fish and Game and NOAA Fisheries.

A migration trench is essentially a designed channel mimicking a natural channel and that permits salmonid migration and water flow through a desiccated reach of a stream. Meander and slope may be designed into the channel to control velocity and provide resting areas for fish. LWD may also be placed within the channel to provide cover and refuge for salmonids during upstream migration. Connection of the design channel at the upstream end should be carefully planned so that the existing channel area is not significantly diminished and that low, pulse flows do not encourage fish migration into channel areas incapable of providing cover and protection from predation, or upstream passage. The upstream connection to the existing channel should most likely form a narrow riffle to prevent pool dewatering.

In the 2002-2008 extraction seasons a migration trench, designed by NOAA Fisheries, and has been implemented through cooperative efforts of the Eureka Ready Mix and Leland Rock operations. The migration trench provides safe migration passage from the Eel River, through Van Duzen River Delta. The Van Duzen River Delta at the Eel River confluence is aggraded causing the Van Duzen River to flow subsurface during the late summer and fall. The migration channel is a success and will provide a salmonid migration route for the Van Duzen River over the term of the permit. NOAA fisheries and DFG consider the Van Duzen River migration trench to be a significant and necessary habitat enhancement project.

The actions authorized by this permit and under the USACOE Letter of Permission process (LOP) are expected to include certain activities at or near gravel extraction sites, during the extraction season, that will help improve salmonid habitat. The specifics of such habitat improvement activities shall be determined as part of the multiagency pre-extraction design review and those activities shall be consistent in scope, size and cost impact as restoration activities that have occurred in the past under the existing LOP. These activities have included but have not been limited to, trenching designed to improve migratory conditions, alcove construction, placement of large woody debris, targeted willow planting and construction of wetland pits to improve future riparian vegetation conditions.

4) Summer Crossings

At the Hauck bar, seasonal crossings are necessary to access aggregate deposits located west of the wetted-channel. Historically, the crossing has been placed at the west end of the main haul road. In order to locate the crossing at a "fish friendly" location in order to minimize placement of fill within the wetted channel, location of the crossing may be altered.

Temporary crossings are typically constructed using two 58-foot railroad flat cars positioned side-by-side for the bridge deck, placed on abutments of river run, or washed gravel. Brow logs or large concrete blocks are utilized to front, or stabilize abutment fill and decrease encroachment of the aggregate fill into the wetted-channel.

Summer crossings are located at points of the channel where potential spawning sites are not projected to occur. The Lower Eel River is characterized as a salmonid holding, rearing and migration corridor and is too low in the watershed to be considered a reach where productive spawning occurs. Appropriate crossing locations, identified annually by a fisheries biologist, are typically narrow, steep gradient riffles, with low flow velocities above 3 feet per second or shallow low-gradient runs. Temporary summer crossings shall be located away from pool tails or riffle crests. Constriction of the channel at the bridge site can cause an increase in velocity and also provide cover that may attract salmonids. Channel constriction can be avoided if bridges are properly located and constructed so that the maximum free span is made available for flow passage.

Abutment fill can be minimized by properly locating the crossing and utilizing abutment stabilization structures such as brow logs or large concrete blocks. These removable structures can be placed within edge water areas and gravel fill can be placed immediately behind the structures minimizing disturbance to the wetted-channel.

The abutment stabilization structures are removed from the channel without excavation or significant disruption of the channel substrate. Removal of the gravel abutments and smoothing of the abutment areas to surrounding topography minimizes the direct physical and visual impacts caused by construction of the temporary structure. Abutment fill materials shall be removed from the bridge location and either hauled to the processing facility or distributed within the extraction area.

5) Temporary Stockpiling of Aggregate

During excavation aggregate may be moved from one location within an extraction area and piled temporarily until transport to the processing facility can be coordinated. On-bar stockpiling of aggregate may occur within an area designated for extraction or within an area shown on the extraction site plan and approved during the annual Multi-Agency review process. All temporary stockpiles shall be located away from the wetted-channel and removed by the October 15th seasonal reclamation period. Stockpiles consist of homogeneous, river-run gravels. Extraction operations take place in the dry summer season, eliminating the need for runoff control or the risk of sediment release to the wetted-channel.

6) Haul Road Maintenance

At the start of extraction operations, the site operator grades the haul roads providing access to the approved extraction sites. The temporary haul routes typically cross unmined bar surfaces for access to approved extraction sites. These temporary access routes require periodic grading to maintain safe and efficient travel.

Dust watering of haul roads is daily activity throughout the dry extraction season. Periodic grading of haul road surfaces is needed to maintain a smooth travel way during operations. Haul routes within the normally inundated channel area are naturally reclaimed by winter flow events and accompanying redistribution of sediment.

Operations utilize existing established haul routes to the maximum extent possible, except for portions of haul roads crossing regularly inundated bar surfaces. New haul roads, being proposed through areas containing significant riparian vegetation, will require mitigation to compensate for temporary or permanent loss of riparian habitat. Vegetated areas shall be evaluated by a qualified botanist and compensatory mitigation shall be included with the accompanying extraction proposal. New haul roads and compensatory mitigation shall be approved by the permitting agency prior to the applicant conducting the clearing and grading activity.

7) Annual Reclamation Process

During the extraction season, reclamation takes place as a part of the extraction process. Grade control points are located throughout the extraction site, providing the site operator with the ability to achieve final extraction design grades without the need for extensive post-extraction grading. When grading is utilized as a method to smooth and reclaim the extraction site, a scraper or loader may be used to make long, longitudinal passes, contouring the surface of the extraction site.

Berms and depressions created by the excavation process are smoothed to prevent potential fish stranding and promote a predictable flow pattern over the site upon inundation.

Head of bar buffers and shallow slope angles of 6:1 or less at or near the upstream end of extraction areas prevent scour of the extraction surface.

The permitting agencies will be notified of extraction and seasonal reclamation completion and a post-extraction site visit is conducted by permitting agency staff to review the site for extraction plan compliance and recommend additional reclamation.

Operations conducted after October 15th is required to maintain reclaimed conditions at the end of each working day. This involves grooming and smoothing the extracted portions of the site on a daily basis. If operations cannot be completed before the end of the extraction season, the excavated portion of the site is graded smooth.

The termination of extraction operations coincides with the onset of fall rain and rise in the river stage that inundates extraction sites and prompts the upstream migration of adult salmonids. By November 1st , all seasonal reclamation tasks must be completed and equipment and vehicles must be removed from the channel area.

8) Extraction Design and Approval Process

Following the multi-agency, pre-extraction site review described above, the operators' river consultant/surveyor collects topographic information at the proposed extraction locations in order to develop the annual extraction plans. The extraction plan guidelines provide the parameters the consultant uses to develop the final extraction plan, such as vertical and horizontal offset from the wetted-channel, vegetative buffers, minimum and maximum slopes, etc.

Once approvals are received, demonstrating that the extraction plan meets the limitations and guidelines of permitting agencies, extraction may commence.

Extraction plans will include: a project description, a color aerial photograph showing all temporary structures and areas of proposed activity, drafted extraction area cross-sections showing original ground line, proposed extraction grades and limits of excavation,

extraction quantity calculations and surveyed full-channel monitoring cross-sections passing through extraction areas.

9) Annual Monitoring

The action of removing aggregate from the river channel in an unmanaged way has the potential to produce effects that can lead to significant alteration of river hydrology and associated habitats. It is through implementation of the conditions and limitations developed during site plan development coupled with monitoring processes that the potential effects are avoided and/or minimized. Physical monitoring is needed to track sediment inventory, bed elevation and area, bank erosion, etc.

Biological monitoring is necessary to track habitat conditions relative to extraction effects and to provide a study and feedback mechanism upon which future extraction practices are based. This form of adaptive management leads to improved protection of sensitive habitat within the riparian corridor.

a. Physical Monitoring

In order to track geomorphologic response to extraction and to develop and design excavations, complimentary to natural features that minimize effects to the hydrologic regime and sensitive habitats, site investigation and physical surveys of the project reach and extraction areas must be conducted and the data from the surveys must be analyzed.

Full-channel monitoring cross-sections spaced through the project reach are surveyed annually. The full-channel monitoring cross sections provide an annual picture of bed elevation and geomorphologic changes within the project reach and permit the assessment of long-term trends and changes associated with flood events and extraction processes. Temporary cross sections that pass through extraction areas are surveyed prior to and after excavation activities in order to show extent of excavation, estimate volume of aggregate removed and to establish a baseline for the following season.

b. Monitoring Cross Sections

Monitoring cross sections comprise the basis for the physical monitoring of extraction operations. Comparative sets of monitoring cross section lines are developed from annual surveys of the full-channel area. The monitoring lines have permanently monumented end points out of the channel area, referenced to common horizontal and vertical survey control grids.

On the Eel River, the full-channel monitoring cross-sections are tied by survey to common horizontal and vertical datum. The monitoring cross section data sets are utilized to track changes in channel characteristics, such as areas of extraction, sediment deposition or bank erosion. The CHERT has produced historic analysis

of the monitoring cross-section data sets for the Lower Eel and Van Duzen Rivers summarizing the channel response to extraction operations under the Adaptive Management process.

c. Extraction Cross Sections

Extraction cross sections are generally shorter, closer spaced, temporary survey lines used to provide an enhanced topographic relationship of the proposed extraction area, and river features surrounding the extraction site. They are used for extraction planning, during on-site layout of grade control and for operator reference to the approved extraction plan.

Extraction cross sections can be comprised of portions of monitoring cross sections and temporary cross sections located between monitoring cross sections, depending upon the monitoring cross section layout and spacing.

Extraction planning requires additional cross sections to be surveyed for operator grade control, calculation of extraction volumes and extraction plan compliance. Extraction areas less than 500 feet in length shall have a minimum of three (3) cross sections for extraction plan development and grade control. The three cross-sections may consist of monitoring and/or supplementary extraction sections. Extraction areas greater than 500 feet in length shall require a minimum of five (5) cross-sections for extraction plan development and grade control.

Information collected during extraction plan surveys shall include, but is not limited to: water surface elevation, silt lines, vegetation limits, grade control points and 35% flow elevation markings. These physical control elements are utilized by the river consultant to establish appropriate vertical and horizontal channel offsets for maintenance of channel confinement and drainage characteristics through extraction reaches.

Other forms of physical monitoring include regular site visits and periodic surveys by the river consultant during extraction operations to check grade of extraction sites and keep operators informed of extraction area features and final grades.

d. Site Investigations

Prior to developing the annual extraction plan, the operator's consultant reviews the project site to delineate areas of potential extraction, evaluate alternatives for extraction, define conceptual limits of operations and obtain rough estimates of available material. Notes are taken regarding areas of established vegetation within extraction areas and channel features that will require protection during the planning process.

During site surveys for extraction planning, additional notation is made regarding specific extraction site features that will require avoidance or planning considerations during extraction plan development such as adjacent wetlands, crossing location and management of LWD.

Once the extraction plans are in preliminary form, the operator's consultant visits the site with the preliminary plans (aerial photograph and extraction plan cross sections) to visually check the plan against the site features to ensure that the design features and extraction plan limits are complimentary to the natural topography and flow paths.

During extraction operations, periodic site visits are conducted by the operator's consultant to continually inform operators of plan limits and requirements, check extraction progress and reestablish grade control.

2. Biological Monitoring

In addition to the physical monitoring, biological monitoring is conducted throughout the project areas. The monitoring has been a requirement of the U.S. Army Corps of Engineers and the Humboldt County Interim Monitoring Program for Gravel Extraction on the Lower Eel and Van Duzen Rivers (IMP). Biological monitoring has been conducted for Amphibian and Reptiles, Avian species and fisheries. Biological investigation has confirmed the presence of several threatened and endangered (T&E) species within the action areas and has resulted in the adaptive development of conservation measures and operational mitigations to ensure protection of critical habitat and survival of the species listed as threatened or endangered. On all rivers, the primary species of concern are Southern Oregon/Northern California Coasts (SONCC) Coho salmon *(Oncorhynchus kitsutch)*, California Coastal Chinook salmon *(Oncorhynchus, tshawytscha)*, Northern California (NC) steelhead *(Oncorhynchus, mykiss.* On the Lower Eel and Van Duzen Rivers, the Western Snowy Plover (*Charadrius alexandrinus nivosus)* is also present.

a. Fisheries

On-going fisheries monitoring has provided data on run-timing, water temperature, redd location and distribution, habitat unit typing and distribution, juvenile stranding potential, noise and heavy equipment effects, effects related to summer crossing installation and removal activities, turbidity associated with trenching, as well as opportunity for habitat improvement and refinement of vertical offsets. The biological data has been used to improve the design and location of extractions and better define the operational season for the protection of sensitive species.

The project area contains the following federally listed species and their designated critical habitat:

Southern Oregon/Northern California coast (SONCC) coho salmon *(Oncorhynchus kitsutch),* California Coastal (CC) Chinook salmon *(O. tshawytscha)* and Northern California (NC) steelhead *(O. mykiss).*

b. Birds

Annual avian species study and monitoring, conducted in association with gravel extraction operations has been conducted since 1996. The annual surveys provide a continuous record of species utilizing the riparian areas during the spring, summer and fall and have resulted in the identification of and mitigation for several T&E species, most notably the Western Snowy Plover which inhabits gravel bar areas of the Lower Eel River during the months of April – August. This long-term survey effort will permit the determination of: habitat range, population fluctuation, species presence/absence, migrant use, T&E and species of concern use and appropriate operational mitigation for the protection of T&E species.

Over the last ten years of observations, the Willow Flycatcher *(Empidonax trallii)* has been detected within the riparian forest of the project site. The Willow Flycatcher is as a threatened species by the California Department of Fish and Game. Continued survey effort during the breeding season (June 15th to July 30) is being conducted to further define the species area and extent of use.

Monitoring, continued study, avoidance and operational consideration for T&E and species of special concern are included for the operation.

The U.S. Fish and Wildlife Service Consultation for Authorization of In-Stream Gravel Mining on the Eel River is currently being developed and will be forwarded as soon as received. Contact Mr. Jim Watkins of the U.S. Fish and Wildlife Service for information at (707) 822-7201.

c. Vegetation

Riparian vegetation has also been assessed and monitored to provide calculation of gain, loss and area of specific habitat type throughout the extraction reaches and contiguous non project areas. Currently and historically, extraction activities have been designed to avoid vegetated areas. Vegetation loss and resultant gains are not specific to individual gravel operations or extraction bars. The river plan-form is highly variable within the alluvial reaches which greatly influences vegetation patterns (Golec, 2001). Dynamic changes in riparian vegetation structure typically occur as a result of high flow events which reshape the riparian

landscape. Periods of recolonization and recovery occur during the period between high-flow events. Historic upland development and agricultural conversion have lead to destruction of historic forests surrounding the project (Biological Assessment of the Hauck bar, 1996, Pieper and Theiss, 1996).

d. Amphibians & Reptiles

In 1997, surveys for amphibians and reptiles were conducted in conjunction with requirements of U.S. army Corps of Engineers, LOP 96-1. Relatively few amphibians or reptiles were observed within extraction areas, before, during or after extraction operations. Vertical and horizontal extraction offsets presented adequate protection to various life stages of species utilizing the near-channel areas. Results of the study concluded that natural variability of sites would make it difficult to establish reference sites for comparison of future surveys (NRM 1997).

Species of Special Concern found within the project area include:

Yellow legged frog *(Rana aurora aurora),* and Red legged frog *(Rana aurora).* In 1996, the Red legged frog was detected at the site by Pieper and Theiss, however, in 1997 no detections of this specie were made.

10) Large Woody Debris Management

Loss of large woody debris has been attributed to increased access to the river channel as a result of extraction operations. Access to the Hauck bar is by a single access road from Highway 101 that is gated and locked during non-operational hours. The river area can be accessed from other locations not in the control of the property owner or site operator. Areas of the project site below the OHW line are subject to a public trust easement, where public presence cannot be legally restricted by the property owner or site operator if access is gained through legal means. Public access to the channel area does not permit the degradation of the environment; however, there is no effective enforcement system in place to prevent real or perceived environmental degradation caused by public activities.

Under the current regulatory controls, protection of LWD is problematic. USF&WS conditions to protect the snowy plover do not allow activities such as, presence of heavy equipment or alteration of the channel area prior to July 22 on the Lower Eel River. In the late summer when extraction activities are permitted to occur, there may only be one or two months whereby operators may protect bar areas that are subject to year-round public access and LWD removal. There are no provisions which allow operators to enter the channel area to collect, stockpile, or relocate LWD to areas where it is not subject to removal by the public.

11) Annual Salmonid Habitat Assessment

Prior to extraction planning a project site Salmonid Habitat Assessment is conducted by a qualified fisheries biologist. The purpose of the assessment is to identify and delineate salmonid spawning, adult holding and Age 2+ steelhead habitat of the project site on aerial photographs for use during extraction planning process. A narrative describing habitat elements, protection measures and conclusions are provided. The narrative provides guidance for the appropriate location of temporary crossings, and extractions. The habitat assessment is a tool developed by the ERM consultant and NOAA Fisheries in 2003 to identify essential habitat and minimize the effects of extraction on essential habitat elements.

SECTION II-continued:

3. The annual cost associated with the proposal is estimated to be $75,000.00.

4. There are no structures or portions of the development that rise above the elevation of the gravel bar surfaces. The project site is located within the bank full channel of the Eel River. Elevations within the channel are 10-30 feet below surrounding upland elevations.

5. Not Applicable.

6. Not Applicable.

7. The project area within Coastal Commission jurisdiction is approximately 150 acres. The area is subject to change based upon natural river processes.

8. The primary activity, extraction of aggregate, may result in annual removal of up to 150,000 cubic yards of aggregate from the flood-washed deposits of the Eel River Channel. Maximum cut within extraction areas may reach twelve-feet. Extracted aggregate will be hauled to the Fowler Lane processing facility.

   Summer crossing construction may result in placement of up to 500 cubic yards of fill for abutment construction.

   Technical reports, which apply to the project site, include the Final Supplemental Environmental Impact Report and Reclamation Plan for the Eureka Sand and Gravel Company Hauck Bar, Eel River (3/20/97), Biological Assessment for SONCC Coho Salmon, CC Chinook Salmon and NCS that may be affected by Gravel Extraction Operations in Humboldt County, Stillwater '09) and the Final Program Environmental Impact Report on Gravel Removal from the Lower Eel River (7/02/92).

9. Not Applicable.

Additional Project Information

Eel River Hydrology

The drainage area of the Eel River above Scotia covers 3,113 square miles. An additional 36 square miles of drainage area lies between Scotia and the Van Duzen confluence. Inclusive of the Van Duzen river watershed, the total area contributing runoff to the Lower Eel River equals approximately 3,542 square miles. Average annual runoff (1911-2001) is estimated at 5,286,000 acre feet (USGS, 2002). For the same period, the mean annual discharge at the USGS Arcata gauging station (I.D., SCO, #11477000) was 7296cfs. Exceedance flows for the same period are as follows:

10 percent exceedance flow	17,900cfs
50 percent exceedance flow	1390cfs
90 percent exceedance flow	104cfs

For the 2001 water year, the peak flow was 59,000cfs. Mean annual discharge was 2584cfs and exceedance flows were as follows: (USGS 2001 Hydrologic Data Report)

10 percent exceedance flow	5740cfs
50 percent exceedance flow	623cfs
90 percent exceedance flow	51cfs

Stream flow for the Eel River has been measured at the Scotia Gauge located at the Highway 101, A.S. Murphy Memorial Bridge over the Eel River since 1911. The Scotia gauging station is located approximately six-miles upstream of the mouth of the Van Duzen River and project site. Historic flow and discharge data for the Scotia gage station is available through the California Data Exchange Center at http://cdec.water.ca.gov/river/rivcond.html and through the USGS at http://waterdata.usgs.gov/nwis/rt (CDEC, Nov. 2008 & USGS, Nov. 2008).

Annual Extraction and Extraction Methods

Over the last sixteen years, 1993 to 2008, extraction volumes ranged from 12,844 cubic yards in 2003 to 100,703 cubic yards in 1997. The annual average volume of material extracted during the period from 1993 to 2008 was approximately 48,236 cubic yards or approximately 32% of the current permitted volume.

Eureka Ready Mix has conducted operations at the Hauck bar since 1981. Documentation of extraction from the project area dates to 1951. The record of extraction was sporadic until 1971 and extraction volumes ranged from 0 to 56,900 cubic yards. The average annual extraction volume during reporting years prior to 1971, based upon the available data equaled 14,450 cubic yards.

Extraction after 1969 is well documented and continuous. The range of extraction for the period of 1971-2002 is from 15,852 cubic yards in 1996 to 155,041 cubic yards in 1978 (Hauck FSEIR March 20, 1997).

Table 1, Hauck bar Permitted Volumes and Extracted Volumes 1993-2008

YEAR	APPROVED VOL. YD3	EXTRACTED VOL. YD3	% EXTRACTED
1993	60,000	59,200	101%
1994	60,000	54,700	91%
1995	60,000	53,210	89%
1996	51,119	15,852	31%
1997	148,593	100,703	68%
1998	65,710	28,448	43%
1999	70,250	42,671	61%
2000	63,500	39,608	62%
2001	60,000	39,990	67%
2002	66,764	56,554	85%
2003	13,329	12,844	96%
2004	87,025	75,719	87%
2005	69,560	56,196	81%
2006	40,747	37,698	93%
2007	33,323	32,508	98%
2008	70,310	65,881	94%
TOTALS	**1,020,230**	**771,782**	70%
AVERAGE	**61,889/yr.**	**48,236/yr.**	**76%**

Mean Annual Recruitment

The Eel River has the highest recorded average annual suspended-sediment yield per square mile of drainage area of any river of its size or larger in the United States (Brown &Ritter, 1971).

For this application, two estimates of Regional Sediment Yield were prepared for the Eel River Basin based upon estimates by Brown and Ritter (1971) and are used to construct a sediment budget for the Eel River Drainage above the Van Duzen River confluence. The estimate utilizes a similar process as that used for the Van Duzen River in the Addendum to the Cumulative Impact Evaluation, Response to Comments, FSEIR, for the Van Duzen River Ranch Gravel Extraction Project, prepared by the CHERT, April 27, 2000.

In the Brown and Ritter study, two estimates of total sediment yield per square mile were provided: one for the water years of 1958-1967, that included the 1964 flood (10,080 tons/mi^2/yr) and another estimate for the period of 1958-1964, excluding the 1964 flood (4,330 tons/mi^2/yr). Converting these values to cubic yards (dividing by 1.4, or 104 ponds per cubic foot, CHERT 1993, 1998 & 2000) and calculating the proportion of total sediment yield composed of bedload, using

9% of total sediment yield as the bedload fraction, produces 648 cy/mi^2/yr with, and 278 cy/mi^2/yr without the 1964 flood.

The Eel River Drainage area above Scotia equals approximately 3,113 square miles. Adding the area between Scotia and the Van Duzen Confluence produces an area of approximately 3,149 square miles: multiplied by the two bedload values provides a MAR range of 2,040,600 cy/yr with, and 875,400 cy/yr without the 1964 flood and a median MAR value of 1,458,000 cy/yr.

Annual average bedload sediment yield at Scotia (Brown & Ritter 1971)		Mean Annual Recruitment (MAR) for the **Eel River above the Van Duzen** (Basin area of 3149 square miles)			*Eel River permitted volume
Low Estimate	High Estimate	Low	High	Median	1,490,000 cy
278 cy/mi^2/yr	648 cy/mi^2/yr	875,400 cy	2,040,600 cy	1,458,000 cy	73% of High MAR

*Excludes Van Duzen Operations

Annual average bedload sediment yield at Bridgeville (Kelsey 1977)		Mean Annual Recruitment (MAR) for the **Lower Van Duzen River** (Basin area of 430 square miles)			Van Duzen permitted volume
Low Estimate	High Estimate	Low	High	Median	220,000 cy
315 cy/mi^2/yr	469 cy/mi^2/yr	135,000 cy	202,000 cy	168,500 cy	109% of High MAR
TOTALS Van Duzen & Eel Rivers	------	**1,010,400**	**2,242,600**	**1,627,000**	**1,710,000 76% of High MAR**

Brown and Ritter also produced long term average suspended sediment discharge estimates at Scotia for the period of 1911-1914 and 1917-1967 and arrived at a value of 23,000,000 tons/yr. Utilizing the 9% fraction of bedload to suspended load and a conversion of 1.4 tons/cy provides a bedload estimate of 1,478,600 cy/yr for the period. The result of this long term estimate of annual bedload is comparable to the median MAR for the Eel River above the Van Duzen River confluence. This estimate would be less any suspended load contribution from tributaries and mass wasting occurring within the area between Scotia and the Van Duzen confluence.

During the period of 997 to 2001 combined extraction volumes for the Eel and Van Duzen River have ranged between 20% and 35% of the permitted volume, between 21and 37% of the median MAR presented above and approximately 64% of the volume approved by CHERT.

Extraction Limitations and Guidelines

A. Project extraction operations will be subject to the following Limitations: The project will comply with the conditions of the final Corps permit if conditions therein are in conflict with the Limitations and Guidelines listed below.

Excavation: Excavation for gravel mining purposes shall not occur in the active channel. Extraction floor elevations shall maintain a vertical offset of the 35% exceedence flow of the Eel River as measured at the USGS Scotia gage. This offset is known as the vertical buffer. The extraction plan shall describe the offset utilized. The exception to this limitation shall be the implementation of fisheries enhancement projects that may involve trenching, alcove development or other alterations for the improvement of habitat conditions or the prevention of direct or potential direct species or habitat impacts.

Traditional skimming operations shall be confined to the downstream two-thirds of point bars. Narrow skims may encroach into the upper third of bars.

Extraction boundaries shall maintain a 10-foot minimum setback from the toe of exposed or actively eroding banks. Extraction cuts following the setback line shall be groomed to slopes of 3:1 or flatter.

Gravel removal shall maintain a minimum distance of 500 feet from public infrastructure such as bridges, dams, water intakes, etc. located in, over, or immediately adjacent to the river without the written consent to conduct excavation activities within the setback by the owner of the structure.

Operating Period and Hours: Operating hours shall be limited to Monday through Saturday, 7:00 a.m. to 6:00 p.m., or as limited in the operational restrictions set forth by the local Lead Agency (County of Humboldt) within the project Reclamation Plan document.

Unless this permit is specifically modified, gravel extraction activities shall not commence until June 1, and shall cease by November 1 of each year.

Excavation areas and related areas of disturbance must be regraded before water levels rise in the rainy season and shall be completed by October 15th of each year when possible. Continuance of operations after October 15th shall be permitted for areas without summer crossings as long as dry conditions persist and active extraction sites shall be maintained in a reclaimed condition at the end of each working day. This will involve the smoothing of berms and slopes and the filling of depressions that may lead to ponding of water and potential fish stranding. The site shall be free draining, sloping downstream, or downstream and toward the river channel in the form of a compound slope.

During the reclamation period, a rise in flow of one-foot, measured at the site, above the summer low-flow, coupled with the prediction of continued precipitation (more than 24-hours of predicted precipitation), will cause cessation of extraction operations and immediate seasonal reclamation. Post-extraction surveys will also be initiated by this indicator. ERM will monitor the NOAA River Forecast Center website at www.cnrfc.noaa.gov, utilizing the predicted flow as the gage to halt or continue operations.

Monitoring and extraction surveys for areas not subject to active extraction operations shall be completed by October 15th, leaving only those areas of active operations to end of season surveys.

Stockpiles: Temporary storage of excavated material may occur on the gravel bar within areas of excavation or as designated on the annual site plan. On bar temporary stockpiles must be removed by October 1. Operations after October 1 shall maintain a reclaimed condition of the mine site at the end of each day.

Temporary on-bar stockpiles must avoid wetland areas and established woody vegetation. Temporary stockpiles located outside of extraction areas shall maintain a 25-foot minimum offset from wetlands, the wetted channel and streamside vegetation. Stockpile sites shall be field delineated by the operator's consultant as shown on the submitted final extraction site plan and must meet the environmental protection criteria established herein.

Haul Roads: Haul routes shall follow established routes whenever possible. Haul roads shall be shown on the annual pre-extraction photograph/site plan. Proposal for new haul routes shall be shown and listed as such on the annual extraction plan and described in text within the annual pre-extraction proposal. The Corps may require environmental assessment, compensatory mitigation and monitoring for new haul road construction proposals.

Summer Crossings: Temporary summer bridges shall be removed by October 15th on the Eel River unless an extension is granted by the Corps, DFG and NOAA Fisheries.

When practical, temporary bridges shall be located at points of the channel where potential spawning is not expected to occur. Appropriate sites for temporary crossings are delineated in the annual Salmonid Habitat Assessment. Temporary bridge sites shall be located away from pool tails or riffle crests where optimal water velocity and spawning substrate exist. Installation and removal activities should take place early in the extraction season to prevent of minimize impacts associated with salmonid migration timing and redd development. As advised by NOAA Fisheries, June 15th is the earliest date for bridge installation in Humboldt County.

Crossings of the main channel shall be limited to two crossings for installation and removal operations if at all practicable. In the case that alternative materials are used for

abutment installation (washed cobble, concrete blocks, brow logs, ...), additional trips through the channel may be required.

Heavy equipment shall not be used in the wetted channel except for crossing installation and removal activities, or for authorized habitat enhancement or restoration projects.

The size and number of stream crossings must be kept to a minimum. All stream crossings of the main channel shall be spanned to the maximum length possible using railroad flatcars or clear span bridges. Culvert crossings may be utilized in secondary channel crossings, but will require approval from the Corps, DFG and NOAA Fisheries. Proposed crossing type and crossing location shall be clearly shown and described in the annual pre-extraction proposal. Gravel abutments shall be constructed of aggregate material, free of silt, fines and other debris that may impact the wetted channel. Gravel abutments shall be removed from the live stream as part of seasonal reclamation, unless effects to water quality override the need for abutment removal. Abutment areas shall be graded to substantially conform to their original topography and blend to surrounding areas.

Culvert crossings may be utilized in certain circumstances where size and nature of crossing dictates that culverts are more appropriate and listed fish will not be affected. Culvert crossings shall be shown on the spring aerial and described in the pre-extraction proposal. Culvert crossing proposals must be accompanied reviewed and approved by a qualified fisheries biologist.

Riparian Vegetation: All riparian vegetation and wetlands shall be avoided to the maximum extent possible. Any qualifying riparian vegetation or wetland that is to be disturbed by extraction operations must be clearly identified on the annual pre-extraction site plan. Woody vegetation that is part of a contiguous 1/16 acre complex or greater, or is at least two-inches in diameter at breast height (DBH) subject to disturbance as a result of extraction activities must be mitigated. This definition will be considered "Qualifying Vegetation". Mitigation for impacts to woody vegetation shall not be required for the maintenance of existing haul roads or brushing of survey monitoring lines related to extraction works. Maintenance is defined as routine limbing of vegetation and removal of encroaching vegetation that will conflict with continued use of exiting works and travel ways. Maintenance does not permit the covering or removal of mature vegetation or qualifying vegetated areas larger than those defined above.

Extraction activities shall maintain a 10-foot minimum buffer between the edge of extraction and edge of the canopy of mature riparian vegetation. In instances where patches of qualifying vegetation are present within extraction areas, a minimum five-foot horizontal buffer from the edge of the canopy shall be maintained parallel with the flow direction of the channel. The length of the tapered upstream and downstream buffer shall be equal to the corresponding end width of the vegetation canopy, or drip line. Extraction cuts around patches of vegetation shall be sloped at a minimum of 3:1. The upstream and downstream buffers shall be tapered with the flow direction to minimize scour potential.

Vertical Offset: Extraction floor elevations shall maintain a vertical offset of the 35% exceedence flow. This is represented by a flow of 3800 cfs as measured at the Scotia gage on the Eel River.

Miscellaneous: Extractions such as trenching or fisheries enhancement projects may be approved by NOAA fisheries, DFG and the Corps; however, these alternative extraction methods shall be evaluated and approved by a fisheries biologist and hydrologist prior to submittal to the Corps.

Extraction Considerations

If flows from the previous winter bring sediment, replenishing exposed bar surfaces, opportunity for bar skimming of replenished deposits will be available. Other extractions such as narrow skims, secondary channel skims, dry trenching or alcoves may also be implemented during the term of the permit. When annual replenishment is not prevalent due to less than moderate winter flow, or significant changes in the channel planform, or to protect and maintain salmonid habitat, alternative extraction locations and methods will be considered.

Channel Plan Form Considerations

Channel plan form and associated sensitive habitat is also considered during the Multi-agency site review and appropriate conditions to minimize effects are incorporated into extraction design. Extractions are typically located on the inside of meanders, on point bars or side channel bars. The head of the bar, upstream riffle and channel cross-over are preserved by locating extractions on the lower two-thirds of bars downstream of such features. Skims located along the outside of meanders should be avoided or limited in size and depth unless more aggressive extraction will result in fisheries habitat improvement, or in other beneficial effects to channel form and function. In the case of spit flow, skim floor elevations may need to be increased or extractions terminated upstream of the split flow condition to provide additional channel confinement.

Protection of Woody Vegetation

Extraction areas containing woody vegetation will include design elements to protect the vegetation from removal by extraction processes, and low to moderate flow events. This is achieved through the following sequence of considerations:

1) Adjusting extraction boundaries to avoid the vegetation complex.

2) Increasing extraction floor elevations in the areas containing woody vegetation.

3) Maintaining buffer areas around vegetation patches with pointed tapers on the upstream and downstream ends of the buffers to streamline the buffers with the flow direction.

4) Transplanting of vegetation to areas where depth to ground water and location is similar or that will insure survival.

5) Provide mitigation and monitoring for direct loss of "Qualifying Vegetation".

C. Extraction activities shall comply with the following Guidelines:

Cross sections, maps and associated calculations, such as extraction volumes, must be prepared by qualified individuals. Where required by state law, site surveys, extraction plans and associated calculations shall be conducted by, or under the direction of a State of California licensed land Surveyor or Professional Engineer licensed to conduct such activities.

Monitoring cross-sections shall be maintained for each project reach. Monitoring cross-sections are topographic surveys of the river channel from permanently monumented points in order to document annual and long-term changes in river morphology at extraction sites. Monitoring cross-sections also aid in extraction planning. Annual monitoring cross sections have been surveyed at the site since 1993.

Extraction area cross sections are generated from surveys through temporary monuments set within or near the proposed extraction area and are utilized for design of extractions, calculation of extraction volumes and extraction compliance monitoring. Extraction cross sections are referenced by survey to monitoring lines. Monitoring lines can be used as extraction cross sections.

1. Standards for Monitoring Cross Sections

Number and layout of monitoring cross sections for each of the project sites have been previously established. See enclosed project site plan.

All Monitoring and extraction cross sections shall be surveyed to a common horizontal and vertical datum. The horizontal coordinate system for all sites shall be NAD83. The vertical datum for all sites shall be NAVD88.

Annual monitoring cross section surveys shall capture all breaks in channel bed topography and extend completely across the wetted channel, capturing the thalweg, water surface, vegetation breaks, silt lines, high water marks and other features of the river channel.

Cross sections shall extend to the top of banks, out of areas of expected disturbance by flow events of less than ten-year magnitude. The ten-year flood terraces areas may be represented by mature riparian vegetation 4-inches in diameter at breast height or larger.

Monitoring cross sections shall be surveyed from the same location each year. Modification of monitoring cross section spacing and alignment must be proposed to, reviewed and approved by CHERT and the Corps prior to implementation.

Cross sections may be surveyed in any manner practical to the site surveyor as long as data accuracy standards are maintained and cross sections are submitted in a form acceptable to the reviewing agencies.

Pre-extraction cross sections need only include those portions of each cross section that can be safely surveyed. If the river level rises following initial cross section surveys causing a redistribution of sediment along the cross section, the portion of the effected cross section shall be resurveyed.

All monitoring cross sections shall be surveyed each extraction season capturing the topography of the channel bed across the entire length of the cross section affected by the previous winter flows.

2. Standards for Extraction Zone Cross Sections

Number and layout of extraction cross sections for project duration shall conform to the following guidelines:

A baseline or centerline for the proposed extraction oriented to the long axis of the extraction and adjacent river channel shall be established. Equally spaced cross sections from the extraction baseline shall be oriented so that they are perpendicular to the river channel.

A minimum of three extraction cross sections shall be provided for each extraction area that is less than 500 feet in length. For extraction areas greater than 500 feet in length, a minimum of five equally spaced cross sections shall be required.

The spacing of extraction cross sections shall not exceed 250 feet. Shorter intervals may be required to maintain operator grade control through the extraction process.

Extraction cross sections shall be spaced appropriately through the extraction site to appropriately capture the topography and to produce reasonably accurate volume estimates. Operator grade control should also be a primary consideration during extraction cross section layout.

The head and tails of extraction areas should be represented in the cross section layout and volume estimates. Ends of extraction falling outside of the cross section layout shall be estimated and included in the extraction volume estimates.

Extraction cross sections shall be surveyed prior to extraction, after extraction is complete, used to design extraction areas and as a basis for calculation of extraction volumes.

Extraction cross sections require the placement of control points and collection of topographic data necessary to define the extraction area and maintain grade control during extraction operations. Extraction cross sections shall be staked and clearly identified in the field.

Extraction cross sections shall be tied by survey to the horizontal and vertical datum of the site monitoring cross sections.

The spring and fall extraction cross sections shall at a minimum extend to the water surface where extractions are located adjacent to a wetted channel.

3. Preparation (plotting) of Cross Sections

All cross sections shall be prepared according to the following criteria:

Submitted cross sections shall be surveyed and plotted to the nearest one-tenth (0.1) of a foot and should include:

End points and ground elevation at end points;

All obvious breaks in slope across the channel bed and banks;

35% exceedence flow markings, high water marks and water surface elevations on both banks if surveyable and discernible;

Survey control points located on cross sections;

Identification of vegetation breaks

Elevations, control points, water surface elevations, silt lines, design elevations, etc. shall be clearly legible on the plotted sections.

River discharge and date of survey from the nearest USGS gage shall be shown in the cross section legend.

Breaks in slope through the wetted channel shall be shown on the post season plots.

All cross sections shall be plotted at the same horizontal and vertical scales. All cross sections must have a vertical exaggeration of 10 times the horizontal scale. Scales to be used for cross sections shall be one-inch to 100-feet horizontal and one-inch to 10 feet vertical.

Monitoring cross sections greater than 800 feet in length shall be plotted on 11-inch by 17-inch paper. Cross sections greater than 15-inches in length shall be cut and stacked so that the entire cross section is represented on one page. The location of the cut and stack of cross sections shall be at a consistent distance from the zero (0), or left end point form year to year.

Cross sections shall be plotted so that the right bank of the river as you face downstream is located at the right side of the plotting sheet.

The zero (0) distance of the cross sections shall be located at the originally established left end point (left hand monument of the cross section as you face downstream). Should bank erosion occur to the left of the original zero point, negative distances shall be assigned to monitoring line stationing left of the original zero point.

Cross sections shall be plotted on grid paper, where the grid logically corresponds to the scale at which the cross section is plotted. At a minimum, elevation grid lines shall be drafted at even five-foot intervals. A minimum grid of two squares per inch horizontally and vertically shall be plotted.

Cross sections shall have clearly labeled vertical and horizontal axes. Each cross section shall have its own horizontal and vertical axis to facilitate measurement of distances and elevations (rather than a single vertical axis along the bottom of the page for a group of cross sections).

Plotting of spring cross sections shall include the current year's spring cross section overlain on the previous year's spring and fall cross section (if any). Cross section areas proposed for extraction shall be shaded or hatched and be legible when copied. Water surface shall be shown as a dashed line and easily distinguishable from topographic lines.

For post extraction cross section data, all monitoring cross sections which overlap the extraction area shall include the current year's post extraction cross section data overlain on the current year's pre-extraction cross section along with the approved design line.

The most recent survey shall be shown as a heavy solid line; the next recent survey shall be shown as a light solid line and the extraction proposal as a dashed line different from the line type used to designate the water surface. Line type shall be maintained consistent from year-to-year.

Spring cross sections shall include the spring cross section data overlain on the approved prescription. The proposed area of extraction should be lightly shaded or hatched so that it is apparent on copied prints.

Post extraction cross sections shall show the spring and fall topography, if extraction operations altered the channel cross section. Actual area of extraction (altered area) shall be shaded or hatched and noted as extraction during the current year.

4. Volume Estimates

Net cross section area change from pre to post-extraction shall be calculated for each cross section. Estimation of extracted volume for the entire extraction area shall be calculated from the net end area change from the pre and post-extraction cross sections utilizing the double end area method or equally accurate, accepted engineering volumetric calculation method. Calculation methods other than double end area shall be approved by the Corps prior to use. Volume calculations shall include the head and tail of extraction areas located outside of the area covered by cross section lines.

All measurements and calculations shall be included and verified by a licensed California Land Surveyor or appropriately authorized Professional Engineer.

5. Project Site Maps

Site maps shall be prepared on color aerial photographs from the current extraction year. Site maps should show the river channel and all proposed work and structures associated with the propose extraction. Site maps shall have a horizontal scale of approximately 1-inch to 500 feet.

Monitoring cross section lines shall be accurately located and labeled on site maps.