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Staff:	K. Sirkin-A
Staff Report:	7/31/15
Hearing Date:	8/13/15

STAFF REPORT: REGULAR CALENDAR

Application No:	**1-15-0204**
Applicant:	**Eureka Ready Mix**
Location:	River mile 14 on the lower Eel River, on the "Hauck Bar," off of Fowler Lane, west of Highway 101, Alton area of 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.
Staff Recommendation:	Approval with Conditions

SUMMARY OF STAFF RECOMMENDATION

The applicant proposes to conduct seasonal extraction of up to 150,000 cubic yards of gravel aggregate per year, for five years, from the Hauck Bar, at river mile 14 on the lower Eel River, just below its confluence with the Van Duzen River in the Alton area of Humboldt County. The Hauck Bar has been mined for sand and gravel on an ongoing basis since the 1950's. Eureka Ready Mix has been mining gravel from the site since 1981. Gravel would be extracted using a variety of methods, including but not limited to, narrow skims, inboard skims, secondary channel skims, and wet trenching. To facilitate gravel transport and the reclamation of extraction areas the applicant proposes to install seasonal railroad flatbed crossings over low-flow river channels. The proposed annual extraction amount of 150,000 cubic yards is proposed as an upper limit, is consistent with the Humboldt County Programmatic Environmental Impact Report (PEIR) for the lower Eel River and is based upon evaluation of data collected under the PEIR and Interim

Management Programs. In any given year, project extraction volumes, locations, and methods would be submitted by the project consultants for annual review and approval by local, state, and federal agencies, consistent with the terms and conditions of their prior authorizations. including the County of Humboldt, California Department of Fish and Wildlife, and the U.S. Army Corps of Engineers. See Exhibit 4 for full project details.

The major coastal act issue raised by this application is whether the proposed gravel extraction activities will be conducted in a manner that will protect environmentally sensitive habitat areas (ESHA) and riverine resources within and adjacent to the project site consistent with Sections 30230,30231, 30233, and 30240 of the Coastal Act.

Staff believes that, with the recommended conditions described below, the proposed gravel extraction operation has been limited to ensure that: (1) no dredge or fill activities will occur within ESHA; (2) only stream alterations that will improve fish habitat will be undertaken; and (3) permissible development will avoid significant degradation of adjacent ESHA. The development as conditioned is consistent with limitations and protocols for lower Eel River gravel extraction projects developed by a multi-agency review team of local, state, and federal agencies pursuant to the U.S. Army Corps of Engineers approval process. The limitations and protocols are based in part on information and recommendations from the National Marine Fisheries Service and U.S Fish & Wildlife Service developed as part of formal consultation process on threatened and endangered species required by the Federal Endangered Species Act. Staff believes that the proposed project as conditioned is consistent with the requirements of Sections 30230, 30231, 30233, 30236 and 30240 of the Coastal Act, as well as all other applicable policies of the Coastal Act.

The motion to adopt the staff recommendation of approval of Coastal Development Permit (CDP) 1-15-0204 with special conditions is found on page 4.

TABLE OF CONTENTS

APPENDICES

EXHIBITS

Note: The following 3 exhibit are included in a combined exhibit packet prepared for CDP Application Nos. 1-15-0204, 1-15-0205, and 1-15-02077, attached separately

I. MOTION AND RESOLUTION

The staff recommends that the Commission adopt the following resolution:

Motion:

*I move that the Commission **approve** Coastal Development Permit 1-15-0204 pursuant to the staff recommendation.*

Staff recommends a **YES** vote on the foregoing motion. 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:

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

This permit is granted subject to the following standard conditions:

1. **Notice of Receipt and Acknowledgment**. 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 period 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 or 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.

III. SPECIAL CONDITIONS

This permit is granted subject to the following special conditions:

1. Extraction Limitations. Extraction of material shall occur within the date limitations prescribed by Special Conditions 4, 5 and 11 and 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 in the U.S. Army Corps of Engineers (Corps) Letter of Permission Procedure 2015 (LOP-2015) Public Notice dated March 3, 2015 (No. 2007-00857-N). 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 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 U.S. Army Corps of Engineers (Corps), and (3) the long-term average sustained yield based on estimates of mean annual recruitment, as utilized by the County of Humboldt Extraction Review Team (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. <u>Seasonal Crossings.</u> Any proposed crossing of the low flow channel or secondary channels during gravel extraction shall be subject to the following requirements:

(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. 6.

3. Annual Gravel Extraction Plan.

A. PRIOR TO THE START OF EACH YEAR'S GRAVEL EXTRACTION OPERATIONS, the permittee 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, 7, and 8 and is prepared in conformance with the requirements of the Corps Letter of Permission Procedure 2015 (LOP-2015) Public Notice dated March 3, 2015 (No. 2007-00857-N);

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 1:6,000 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 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 Corps Letter of Permission Procedure 2015 (LOP-2015) Public Notice dated March 3, 2015 (No. 2007-00857-N);

6. The results of biological monitoring report data required by the Corps Letter of Permission Procedure 2015 (LOP-2015) Public Notice dated March 3, 2015 (No. 2007-00857-N);

7. 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) Provisions demonstrating that:

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

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

      (iii) 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:

      (iv) 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

8. 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 California Department of Fish and Wildlife (CDFW).

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. **Protection of Western Snowy Plover.** No gravel extraction activities shall occur during the Western snowy plover nesting season (between March 1 and September 15).

5. **Protection of Western Yellow Billed Cuckoo.** No gravel extraction operations shall occur during the yellow billed cuckoo breeding season (between April 30 and September 15).

6. **Extraction Season.**

   A. No gravel extraction operations shall occur prior to September 15.

   B. All extraction and reclamation must be completed by October 15th of each season. The Executive Director may approve up to a 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 CDFW, the Corps, 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.

7. **Resource Protection.** The gravel extraction and processing operations shall not disturb or remove any of the established riparian vegetation habitats 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.

8. **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. 6. All other portions of 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.

9. **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.

10. **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 FWS 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.

11. **Authorized Development Termination Date.** The gravel operations authorized by this permit shall terminate on December 31, 2019. Continued gravel operations after that date shall require a new coastal development permit.

12. **Final Army Corps of Engineers Approval of LOP-2015**. PRIOR TO COMMENCEMENT OF ANY DEVELOPMENT AUTHORIZED BY THIS COASTAL DEVELOPMENT PERMIT, the permittee shall provide to the Executive Director a copy of the final LOP issued by the Corps. The permittee 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.

13. **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 Corps 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.

IV. FINDINGS AND DECLARATIONS

The Commission hereby finds and declares as follows:

A. PROJECT DESCRIPTION

The applicant proposes to conduct seasonal extraction of up to 150,000 cubic yards of aggregate per year, for five years, from the Hauck Bar, at river mile 14 on the lower Eel River just below its confluence with the Van Duzen River in the Alton area of Humboldt County. Gravel aggregate will be extracted from two main extraction areas within the larger Hauck gravel bar.

The first area is located on the northern Van Duzen River delta. The other 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 (Exhibit 3). 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 location of summer crossings would be based upon river morphology and avoidance of sensitive riverine habitat elements. Historically, crossings have been placed on the Eel River at the west end of the Fowler Lane haul road (western extension of Highway 36) and at the south end of the upper haul road where it meets the Van Duzen River channel. See Exhibit 4 for full project details. Estimated abutment fill volume would be less than 400 cubic yards total for both ends of the crossing. Upon bridge removal, all fill materials would be removed from the wetted channel and abutment areas would be reclaimed to pre-crossing conditions.

The proposed annual extraction amount of 150,000 cubic yards is (a) proposed as an upper limit, (b) is consistent with the Humboldt County Programmatic Environmental Impact Report (PEIR) for the lower Eel River, and (c) is based upon evaluation of information and data that has been collected under the PEIR and existing Interim Management Programs. In any given year, project extraction volumes, locations, and methods would be submitted by the applicant for approval by local, state, and federal agencies, including the County of Humboldt, California Department of Fish and Wildlife (CDFW), and the Army Corps of Engineers (Corps). Annual assessments and site evaluations would be used to determine (1) where aggregate could be excavated without causing long-term river bed degradation, (2) the levels and volume of recruitment, and (3) appropriate extraction volumes. No mining would occur at any location until after specific mining and reclamation plans are developed and approved on the basis of annual environmental assessments and monitoring of the proposed project site.

Proposed gravel extraction operations would utilize 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 habitat enhancement (See Appendix B for detailed extraction methods). The annual mining would include one or more of the above methods, depending on factors such as extraction site location, salmonid habitat enhancement needs, annual replenishment of aggregate, and other environmental factors. Most gravel extraction operations would utilize the traditional skimming extraction method. Traditional skimming extraction areas 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 activities in areas containing woody vegetation would be managed 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 vegetation and by maintaining horizontal buffers around vegetation patches in a manner that would reduce erosion.

The project proposes to maintain extraction area 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-2015 and the terms and conditions of NOAA-Fisheries.

On-bar stockpiling of aggregate would occur in designated areas that would be delineated during the pre-extraction agency site visits. Any on-bar stockpiling would be temporary until transport to the processing facility could be coordinated. Extraction operations conducted after October 15th in any given mining year would maintain reclaimed conditions at the end of each working day and temporary stockpiles would be no larger than the volume of aggregate that could be removed from the bar surface during the current work day.

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 and the yellow-billed cuckoo during their breeding seasons. Extraction operations would be completed in any given mining year by October 31st at the latest. 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 CDFW. 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.

To access areas of the bar, the applicant is also seeking authorization to construct seasonal crossings over secondary or overflow channels of the lower 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 that would be determined annually by a qualified fisheries biologist in consultation with the reviewing resource agencies.

B. ENVIRONMENTAL SETTING

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 in the project area is 1,900 feet, and summer fog influences river water temperatures. 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 drift boats for commercial shipping. Historical analyses of gradient and riffle conditions in the lower Eel provides additional evidence that the river is severely aggraded relative to historic conditions. The lower 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.

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, 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 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 (Exhibit No. 2). The Hauck Bar has been mined for sand and gravel on an ongoing basis since the 1950's. Eureka Ready Mix has been mining gravel from the site since 1981. The gravel extraction 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 parcels extend 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. 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. 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 Corps after the disastrous 1964 floods on the Eel River. This terrace area west of the levee is covered by riparian habitat and pasture land. 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.

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.

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.

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 (ESA) 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*). Although these species have not been detected, the Western Yellow-billed cuckoo (*Coccyzus americanus*), a federally-listed threatened species, has been detected in the larger concentrations of riparian vegetation that are adjacent to the project site. Federally listed in 2014, the yellow-billed cuckoo has been observed in the lower Eel River area since 2000, and may be utilizing the riparian forest areas along the river as breeding habitat.

In general, the riparian zone along the lower Eel River provides migration routes and breeding habitat 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 Southern Oregon – Northern California Coasts Evolutionarily Significant Unit of coho salmon (SONCC coho) is currently listed as a threatened species in areas between Punta Gorda and the California-Oregon border under the both the Federal Endangered Species Act (ESA) and the state of California Endangered Species Act (CESA). SONCC coho salmon were listed by the federal government in May of 1997, with critical habitat designated in May of 1999. Additionally, California Coastal Chinook salmon were federally listed as "threatened" in September of 1999, with critical habitat designated in February of 2000. Finally, North Coast steelhead trout were listed as "threatened" in June of 2000.

The lower Eel River, including the project area, is mainly utilized by anadromous fish as a migration route to and from the upstream spawning grounds. In addition, the lower Eel River provides 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 (Stillwater 2015)[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." [page 36].

Other fish species in the river that are listed by the CDFW as "species of special concern" include coastal cutthroat trout (*Oncorhynchus clarki*) and Pacific lamprey (*Lampetra tridentata*). The Northern population of Green sturgeon (*Acipenser medirostris*) is dually listed under CESA and the ESA.

[1] Stillwater Sciences. 2015. Biological Assessment for Aggregate Extraction Operations in the Eel, South Fork Eel, Van Duzen, and Trinity Rivers, Humboldt County, California. Prepared for Mercer-Fraser, Randall Sand and Gravel, Eureka Ready Mix, Tom Bess, Jack Noble, Leland Rock, Wallan and Johnson, and Klamath-Trinity Aggregates.

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).

C. BACKGROUND

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. 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 Van Duzen Rivers are interrelated in the sense that all of the gravel bars derive their material from the same upstream sediment sources. The Eel River is considered to be 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. 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 in turn can erode adjacent riparian and other habitat areas, interfere with fishery resources, undermine bridge supports, and cause other significant adverse impacts if not properly managed.

Regulation History

Humboldt County. Gravel mining operations on the Eel River require the approval of a number of different local, state and federal agencies. The initiation of coordinated review of gravel mining began in 1991, when to comply with environmental review requirements under the California Environmental Quality Act (CEQA), Humboldt County prepared a PEIR that described and analyzed the potential environmental effects resulting from the ongoing gravel removal operations in the lower Eel and Van Duzen River watersheds. The PEIR was certified in July 1992 and is still used in the management of gravel extraction projects in the area today.

Subsequent to the adoption of the PEIR, Humboldt County began regulating gravel operations through a comprehensive monitoring and management strategy that was established to control the cumulative impacts of approved gravel operations on riverbed degradation and bank erosion. At the heart of the strategy is an administrative approval process that annually reviews the proposed extraction plans, including proposed methods and locations of extraction. Additionally, the strategy includes a long-term monitoring component that provides data for use when making annual decisions on where and how much gravel can be removed from the lower Eel and Van Duzen Rivers without adversely affecting the rivers. The monitoring program involves periodic biological surveys, annual cross-sections and thalweg profiles, and annual aerial and ground photography at each gravel operation site. The information is then complied and compared to previous year's data to determine quantities of gravel recruitment, changes in channel morphology, and potential impacts on wildlife and fisheries.

In addition to the monitoring component of the approval process, the County has established an extraction review team (CHERT) to provide the County and other agencies with scientific input

on on-going gravel operations. CHERT is composed of independent fluvial morphologists, hydrologists, biologists, and botanists and the group has the authority to review all annual gravel extraction plans and identify the need for changes to those plans as deemed necessary by the monitoring data. CHERT plays an active role in the annual approval process, and works with the gravel mining operators to establish annual extraction quantities and extraction methods that comply with local, state and federal regulations and permit requirements.

U.S. Army Corps of Engineers (Corps). In addition to local government approval, the gravel extraction operations on the lower Eel and Van Duzen Rivers require authorization from the Corps. To coordinate and expedite this process for the numerous in-stream gravel extraction operations in Humboldt County, the Corps adopted a Letter of Permission (LOP) procedure for authorization of such projects. The LOP procedure includes incorporation of the County's CHERT review process. An applicant who wants to be covered by the LOP must submit annual gravel plans and monitoring information to the Corps for approval under the procedure. LOP's have been issued for gravel extraction operations since 2002, with the last LOP authorization expiring following the 2014 gravel extraction season.

With the expiration of LOP 2009, the planning process for a new LOP procedure began in the spring of 2014. In March of 2014, the Corps issued a new LOP procedure notice (No. 2007-0857-N), 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 2015-1. The new LOP 2015 announcement is very similar to LOP 2009 in its terms and conditions. See Appendix B for a list of the LOP 2015 gravel extraction terms and limitations.

National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (FWS). As with all "federal actions" that might adversely impact rare, threatened, and endangered fish and wildlife species, the LOP process is subject to consultations with the applicable natural resource trust agencies as required under Section 7 of the Endangered Species Act (ESA). Consultations are conducted by the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (FWS) who are the trust agencies responsible for species listed under the ESA. Section 7 of the ESA 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.

The consultation process consists of the applicant developing a biological assessment (BA) that details the current status of the fish and wildlife species in the subject area, as well a preliminary assessment of the likely effects of the action on those species. The BA is then submitted to the resource agencies assigned the responsibility for protecting the ESA-listed species. Following review and analysis of the information provided in the BA, the agencies issue a Biological Opinion (BO) regarding impacts of the proposed action on listed fish and wildlife species, in this case, gravel extraction operations. In past gravel extraction operation approvals, the Commission has relied upon the BOs issued by the agencies when considering gravel extraction operation

permit applications. NOAA's consultation covers the following threatened and endangered species: Southern Oregon/Northern California Coho salmon (*Oncorhynchus kisutch*), California Coastal Chinook salmon (*Oncorhynchus tshawytscha*), and Northern California steelhead trout (*Oncorhynchus mykiss*). The Southern Oregon – Northern California Coasts Evolutionarily Significant Unit of coho salmon (SONCC coho) is currently listed as a threatened species in areas between Punta Gorda and the California-Oregon border under the both the Federal Endangered Species Act (ESA) and the state of California Endangered Species Act (CESA). SONCC coho salmon were listed by the federal government in May of 1997, with critical habitat designated in May of 1999. Additionally, California Coastal Chinook salmon were federally listed as "threatened" in September of 1999, with critical habitat designated in February of 2000. Finally, North Coast steelhead trout were listed as "threatened" in June of 2000.

The FWS has been providing consultation on the western snowy plover since it was listed as threatened in 1993, and on the Lower Eel River since plovers were first discovered nesting on Eel River gravel bars near Fernbridge in June of 1996. Since the last consultation that was performed in 2009, the Western Yellow-billed cuckoo has been listed as threatened (August 2014) and critical habitat for the species has been proposed in the Lower Eel and Van Duzen Rivers in areas including the project site. In response to this listing, the Corps has requested consultation on both the western snowy plover and the western Yellow-billed cuckoo under the current LOP procedure.

The consultations provide critical evidence that proposed gravel mining operations on the Lower Eel and Van Duzen Rivers will not result in significant adverse impacts on threatened and endangered species. In past actions on coastal development permits for gravel mining on the Lower Eel and Van Duzen Rivers, the Commission has relied upon the biological opinions to find consistency of the gravel mining projects with the Coastal Act.

Coastal Commission Permits. Over the past two decades, the Commission has issued at least 30 permits for gravel extraction operations on the lower Eel and Van Duzen Rivers, as summarized in Appendix C. In general, actual annual extraction volumes in the lower Eel River have been lower than the annual approved volumes over the last decade. See Appendix C for extraction volume information. Gravel extraction operations have historically varied with market demands and river conditions. Actual annual extracted volumes have consistently been lower than approved volumes. From 1997 through 2014, a total of 3,366,790 cubic yards of aggregate was extracted from the Lower Eel River (averaging 187,044 cubic yards annually), which is only 65 percent of the total approved volume of 5,193,634 cubic yards. Appendix C shows the volume of gravel approved for extraction and actually extracted at the Eureka Ready Mix site. Between 2004 and 2014, a combined total of 464,124 cubic yards was extracted from the Eureka Ready Mix site, with an annual average of 42,193 cubic yards.

D. STANDARD OF REVIEW

The project area is bisected by the boundary between the retained CDP jurisdiction of the Commission and the CDP jurisdiction delegated to Humboldt County by the Commission through the County's LCP. 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. All of the gravel extraction activities and proposed summer crossings are within the Commission's jurisdiction. Therefore, as required by Public Resources Code Section 30519(b) and Commission regulation section 13166(c), the standard of review that the Commission must apply to the project is the Chapter 3 policies of the Coastal Act.

E. OTHER AGENCY APPROVALS

State Lands Commission

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 holds 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 carry out the project and to comply with the terms and conditions of this permit, the Commission attaches Special Condition No. 9 which requires that the applicant submit evidence that any necessary authorization from the State Lands Commission has been obtained prior to commencement of any development related to the construction of summer bridge crossings.

Humboldt County

Humboldt County Use Permit

The County approved a renewal of the Conditional Use, Coastal Development and Surface Mining permit (CDP-10-02/CUP-10-01/SMP-10-01/RP-10-01) on February 2, 2012. The renewal will expire on July 22, 2026.

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 CHERT. The CHERT in turn makes specific recommendations including recommendations that 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 annual gravel extraction plan recommended for approval by CHERT each year is the same as the annual gravel extraction plan 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.

California Department of Fish and Wildlife (CDFW)

The project requires a Section 1603 Streambed Alteration Agreement from the CDFW. The applicant received the approved agreement (#1600-13-0355) on June 19, 2014. The agreement is for a five-year term and expires on January 31, 2019.

Regional Water Quality Control Board

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. 2003-0017-DWQ for gravel extraction activities on June 9, 2015, expiring on June 1, 2020.

U.S. Army Corps of Engineers (Corps)

Final LOP-2015 Approval
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). As discussed above, the project requires review and authorization by the Corps. 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 Corps, 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 2015 (LOP 2015). The Corps posted the LOP 2015 for public comment on March 3, 2015. 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.

Annual Review
Permittees using the LOP will be required to submit annual gravel plan and monitoring information to the Corps for approval prior to each year's gravel extraction activities. To ensure that the annual gravel extraction plan 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. 13, 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. 11 to specify an authorization termination date of November 1, 2019, which corresponds to the project termination date listed in the ESA Section 7 consultation submitted by the Corps to NOAA-Fisheries.

U.S. Fish and Wildlife (FWS) and NOAA-Fisheries (NMFS)
The project requires final Biological Opinions being issued by the NOAA-Fisheries and the FWS. As discussed above, the Biological Opinions are being prepared as a result of formal consultations between the Corps and NOAA-Fisheries and FWS pursuant to Section 7 of the ESA. The NOAA-Fisheries BO is expected to be finalized by the end of July 2015, and the FWS BO is expected to be finalized by the early September 2015. To ensure that the project ultimately

approved by the agencies is the same as the project authorized herein, the Commission attaches Special Condition No. 10, 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.

F. REVIEW OF EEL RIVER IN-STREAM GRAVEL EXTRACTION PROJECTS UNDER THE COASTAL ACT

Several coastal resource protection policies of the Coastal Act apply to gravel extraction projects along the Eel River. The applicant's gravel extraction project is typical of most of the gravel extraction operations on the lower Eel River in that it includes (a) traditional skimming of gravel bars that are dry and exposed in the summer but inundated during high winter flows, (b) trenching of gravel bars that may extend into the wetted channel even during the dry season, (c) the placement of gravel along the edges of secondary channels to create abutments for seasonal railroad flat car crossings for vehicles used in the gravel extraction operations, and (d) stockpiling, staging, and/or processing operations in upland areas adjoining the river and adjacent to existing riparian areas. As discussed in the findings below, the skimming of gravel bars outside ESHA constitutes permissible fill and dredge of seasonal wetlands pursuant to Section 30233. The limitations of both Section 30233 and 30240(a) prohibit the skimming of the gravel bar in locations containing environmentally sensitive habitat area such as nesting habitat for the Western snowy plover, or developed riparian habitat. The trenching of gravel bars containing ESHA that extends into the wetted channel may only be authorized if it is a permissible alteration of a river or stream as set forth in Section 30236. Finally most of the elements of the gravel extraction operation are adjacent to various kinds of ESHA, including salmonid habitat within the waters of the river, nesting snowy plover habitat on the gravel bars, riparian habitat on the bars and along the river banks, and yellow billed cuckoo breeding habitat within some of the afore-mentioned riparian habitat. As such, these elements of the gravel extraction operations are subject to the requirements of Section 30240(b) that development adjacent to ESHA be sited and designed to prevent impacts which would significantly degrade those areas and shall be compatible with the continuance of those habitat and restoration areas.

For the reasons discussed in the findings below, the Commission reviews (a) development undertaken outside ESHA involving the skimming of the dry gravel bars and the placement of gravel along the edges of secondary channels to create abutments for seasonal railroad flat car crossings under Section 30233 in Finding G, "Gravel Extraction Operations Within Riverine Wetlands," below, (b) the trenching of gravel bars containing ESHA that extend into the wetted channel under Section 30236 in Finding H, "Development Within Coastal River and Streams," below, and (c) all of the elements of the gravel extraction operations that are adjacent to ESHA in the mitigation discussion of Finding G and in Finding I, "Protection of Environmentally Sensitive Habitat Areas.

G. GRAVEL EXTRACTION OPERATION WITHIN RIVERINE WETLANDS

The proposed development involves the extraction of sand and gravel from the lower Eel River. Sections 30230, 30231, and 30233 of the Coastal Act address the protection of wetlands from the impacts of development such as gravel mining activities. These sections require, in part, that marine resources (including salmonids) and coastal wetlands be maintained, enhanced, and where feasible restored. Sections 30230 and 30231 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 of the Coastal Act 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. In addition, the temporary installation of gravel abutments for seasonal crossings of secondary channels to gain access to extraction areas partially within flat water areas of these channels is a form of filling a wetland.

Section 30233 of the Coastal Act allows the dredge and fill of wetlands for mineral extraction outside ESHA, stating 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 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.*

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.

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.

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 and temporary filling for the mining of gravel aggregate materials. Mineral extraction 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 activities will avoid environmentally sensitive areas, the proposed gravel extraction operation is consistent with the use limitations of Section 30233(a)(5).

The multi-year gravel operation proposes to use a variety of extraction techniques that have been established by the previous Corps LOP and recommended by NOAA Fisheries as techniques that would avoid significant impacts to salmonids. 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 wetted river channel. The sole exception is the wet trenching technique, which would involve diverting the stream flow to a secondary channel location and then excavating sediment directly from portions of the channel. 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. Although the wet trenching technique would involve excavation within salmonid ESHA habitat, and thus would not be permissible under Section 30233(a)(5) , the Commission evaluates this aspect of the proposed development under Section 30236 of the Coastal Act in Section IV-G of the findings below because the wet trenching method proposed is a permissible alteration of a river or stream proposed for the improvement of fish habitat.

There are various types of environmentally sensitive habitats around 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 habitat that is breeding habitat for the federally threatened western Yellow-billed cuckoo 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) exposed gravel bars adjacent to the flowing water that provide 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. For example, as discussed further below, as part of the gravel extraction operations, the applicant also proposes to install seasonal crossings with piled-up gravel abutments that could extend into shallow flat-water portion of the channel. Although these flat water areas are wetlands and inundated even during the summer months, the flat water areas do not support threatened salmon species or other threatened or endangered species and are not considered ESHA under the Coastal Act. Descriptions of the habitats in the project area and their use by wildlife are found in the Findings Section IV-B, "Environmental Setting: Habitat Types & Special-Status Species," of this report.

i. No Dredge or Fill of Flowing River Channel 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 macroinvertebrates 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 federal- and state-listed salmonids.

The perennially-inundated areas within the river also meet the second criterion in that diversion, dewatering, fill, and dredging activities for gravel extraction, such as proposed by the applicant, can quickly disturb and degrade the affected habitat areas the mining activities come in contact with. Trenching can also destabilize the river channel and cause erosional impacts that can degrade the perennially inundated areas within the river on a more permanent basis long after the initial excavation work is completed.

In past permit actions the Commission has previously determined that such riverine perennial channels that support 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 salmonid species and other aquatic life forms. Therefore, the Commission has generally applied the environmentally sensitive area designation only to the portions of the river containing live flow.

Not all portions of the river containing live flow during the summer-early fall gravel mining season necessarily qualify as environmentally sensitive. Although salmonids are found in the lower Eel at most times of the year, the edges of the shallow flat-water areas do not support 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 salmonid species. Instead, salmon pass through the area during migration periods to spawn further upstream. 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 juvenile 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 shallow reaches of long pools are avoided by juvenile salmonids since they do not have the necessary oxygen and food concentrations, lack cover, and do not provide relief from higher water temperatures.

More specifically, the use of the lower Eel River by threatened salmonid species has been established during surveys performed pursuant to the Corps LOP process and has been documented in previous Biological Opinions prepared for the proposed gravel operations. The site-specific surveys provide a basis for demonstrating that salmonids do not inhabit the shallow flat-waters of the lower Eel River during the summer months though the results cannot be generalized to other river systems where no such surveys have occurred. Therefore, the Commission finds that during the summer and early fall, the edges of the shallow flat-water areas of the lower Eel River channel are not environmentally sensitive, as they do not provide juvenile salmonid habitat.

None of the proposed extraction techniques except “wet trenching” described below in Section IV-G 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 CHERT gravel mining recommendations 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 and adult holding habitats do not exist. NOAA-Fisheries and CHERT annually review the proposed bridges placement and determine where the bridges 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.

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 No. 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. No Dredge or Fill of Riparian Vegetations Environmentally Sensitive Habitat

The Coastal Commission has previously determined 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. 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. 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. Riparian areas also 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 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 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 can eliminate more stands of riparian 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 habitat.

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 riparian areas 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 the CDFW 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. The one restriction of the Corps LOP for gravel mining on the Eel River concerns riparian vegetation and 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 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 limits mineral extraction in wetlands and open coastal waters differently than Section 30233 of the Coastal Act 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. Conversely, the Corps can allow mineral extraction in an environmentally sensitive area so long as mitigation is provided. 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 CDFW 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. No Dredge or Fill of Exposed Gravel Bars Environmentally Sensitive Habitat

Another form of environmentally sensitive habitat that has the potential to occur 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. Overall, population numbers, nests, and fledged chicks are dropping. Compared to 2006 high totals of 50 birds and 44 nests on Humboldt County beaches and 18 birds with 13 nests on the lower Eel River gravel bars, there were 42 birds and 59 nests on the beaches and 0 birds with 0 nests on the Lower Eel River in 2014. Results from surveys upstream from Leland to Sandy Prairie bars from 2010 to 2014 resulted in no snowy plovers detections. There appears to be a shift from the 2001 high of 39 birds and 39 nests on the lower Eel River to a preference for the local beaches for breeding.

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 not commence until after September 15. Special Condition No. 4 will ensure that gravel extraction operations that could harm plovers are not conducted during the entire plover nesting season between March 1 and September 15.

iv. 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).

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 determined that there are no feasible less environmentally damaging alternatives to the project as conditioned by Special Condition Nos. 1-13. 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.

i. No Project Alternative

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.

ii. Obtaining Sand and Gravel from Quarry Operations

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 PEIR there are few quarries in the vicinity where it would be economically feasible to obtain material of sufficient quality and quantity as compared 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.

iii. 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 materials to upland rock quarries. However, extracting gravel from these terrace deposits would create its own adverse environmental impacts. Much of the 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 habitats. 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.

iv. 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 avoid the dredge or fill of wetlands within ESHA. Additionally, 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.

v. 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).

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 extraction 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. Potential 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:

i. Measures To Avoid Significant Degradation of Fisheries Habitat

Gravel extraction activities undertaken within the flowing river channel in the form of trenching have the potential to have both direct and indirect adverse impacts on threatened salmonid species through:(a) water quality degradation associated with increased turbidity and sedimentation; (b) fish injuries and or mortality 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 fish to concentrate in trench excavations that afford little or no cover from predators and poachers.

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 ESA. 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 downstream 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 higher discharges. 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, 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 juvenile rearing habitat by impeding or altering channel stream flow dynamics.

The impacts of gravel mining operations on 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 geomorphology together with the cumulative adverse impacts on sensitive fish species from all of the various gravel mining operations occurring along the river. An assessment of the significant adverse indirect and cumulative impacts of gravel mining operations along the lower Eel River on sensitive fish species is discussed within the Biological Opinion issued by NOAA-Fisheries (Appendix D).

The Corps formally requested that NOAA-Fisheries prepare a Biological Opinion to analyze the LOP Procedure 2015 for proposed gravel extraction on Humboldt County rivers over the next five years (through 2019). The draft Biological Opinion reportedly will be finalized by the end of August 2015 and is expected to contain salmonid protection measures similar to both the Commission's prior approval at the subject site and the prior Biological Opinion relating to the

protection of salmonids along the lower Eel River. Through the LOP process, mitigation measures have been developed for abutments that enter the wetted channel. During construction, the gravel mining 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 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. Based on the biological information collected as part of the consultation, NOAA-Fisheries staff indicates in discussions with Commission staff that the 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.

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 attaches Special Condition Nos. 1 and 3 which incorporate specific elements of the proposed LOP 2015. These elements have been identified by NOAA-Fisheries as important for minimizing impacts to channel form and function, as well as protecting fish habitat.

During their consultation, NOAA-Fisheries reviewed the extraction methods and techniques described in LOP 2015 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, none of the above methods would 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 threatened salmonid species habitat, 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 NOAA Fisheries Staff recommendations and Corps permit requirements.

The use of vertical offsets of the gravel extraction area from the low flow channel of the river 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 and river flows for spawning, migration, and other life-cycle habitat needs. Artificially introducing large amounts of

sediment at times of the year when natural entrainment is otherwise low would 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 to the beginning of significant movement of fine bed load material in the river that occurs during winter months. The general benefit of increased skim floor elevations is that effects associated with sediment inputs are reduced as the elevation of the skim floor increases. The applicant 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 draft 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 CDFW Section 1600 Streambed Alteration Agreements issued for gravel extraction at the project site, CDFW 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 are lowest. CDFW can choose to extend the operations until November 1 if dry weather conditions prevail. The 2015 NOAA-Fisheries Biological Opinion is also anticipated to allow for completion of gravel mining operations by October 15, with similar extensions to November 1 if possible.

Therefore, the Commission attaches Special Condition No. 6 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 conditions are forecasted and the permittee has received all necessary approvals to extend gravel operations from CDFW, the Corps, and NOAA-Fisheries.

NOAA-Fisheries staff also is of the opinion that the proposed gravel mining is not likely to destroy or adversely modify SONCC coho salmon designated critical habitat (Exhibit D). To ensure this opinion and the other recommendations of NOAA Fisheries staff has not changed in a manner inconsistent with the Commission's approval by the time the Biological Opinion are issued, the Commission attaches Special Condition No. 10, 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 amendments to the coastal development permit.

Therefore, the Commission finds that as conditioned, the proposed gravel mining project would avoid significant disturbance of sensitive fish species consistent with the requirements of Sections 30231, 30233, 30236 and 30240 of the Coastal Act.

ii. Measures to Avoid Significant Degradation of River Morphology

As discussed above, a potential 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, the river may spread across the bar during higher flows, thereby reducing the depth of the channel and may result in channel migration or channel "braiding." Channel braiding can also result in 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 applicant proposes to extract an amount of gravel that is small relative to the overall permitted gravel mining activity along the Eel River, approval of extraction operations without consideration of potential effects on river morphology could cause bed degradation and riverbank erosion.

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). 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 found 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 interim management plan specifically addresses preventing local over-extraction and avoiding/minimizing mining methods that cause aquatic and riparian habitat damage" (page 2). The report concludes that "…we did not discern any large scale, persistent adverse 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).

More recently, channel profiles taken following the 2013 gravel mining season show modest amounts of fill and scour within the active channel area of the lower reach of the Eel River as compared to channel profiles taken in 2009. The reworking of the low flow channel, as seen in the more recent channel profiles, is not an unexpected occurrence in a semi-unconstrained alluvial channel. The higher elevation channel margins and channel banks of the monitoring cross sections appear stable in profile as these areas are not subject to regular inundation and

flow energy that generates scour and fill. The higher elevation alluvial surfaces of the site are also protected by herbaceous and woody vegetation which tends to reduce high flow energy and provide armoring of the surface sediments. Therefore, the comparative data depicts a stable channel form that is not being adversely affected by gravel mining operations at the site.

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 staff that gravel operations conducted in accordance with the LOP-2009 procedures would 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-2015 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-2015 will be used to help preserve channel form and minimize bank and bar erosion that would degrade fishery habitat. Special Condition No. 1 limits the use of gravel extraction techniques to those recommended by NOAA-Fisheries. In addition, 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 annual gravel extraction plans be submitted for the review and approval of the Executive Director and section (A)(4) of that condition requires that the submitted plans be consistent with the recommendations of CHERT. These requirements will ensure that disturbance of the active channel will be avoided.

iii. Measures to Avoid Significant Degradation of Environmentally Sensitive Riparian Vegetation

To ensure that disturbances to riparian habitat are prevented, 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. 7, 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, significant degradation of all of the adjacent environmentally sensitive riparian vegetation in the vicinity of the project will be avoided.

iv. Measures To Avoid Significant Degradation of Western Snowy Plover

The western snowy plover (*Charadrius alexandrinus nivosus*) was listed as a threatened species by the 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 CDFW 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 individuals have been found on the gravel bars from early April until early September. Overall, population numbers, nests, and fledged chicks are dropping. Compared to 2006 high totals of 50 birds and 44 nests on Humboldt County beaches and 18 birds with 13 nests on the Lower Eel River gravel bars, there were 42 birds and 59 nests on the beaches and 0 birds with 0 nests on the Lower Eel River in 2014. Results from surveys upstream from Worswick Bar from Leland to Sandy Prairie bards from 2010 to 2014 resulted in no snowy plovers detections. There appears to be a shift from the 2001 high of 39 birds and 39 nests on the Lower Eel River to a preference for the local beaches for breeding (LACO 2015). 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 directly contributed to 41 percent of Eel River plover nest failures over the previous four years.

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 significant degradation of plover habitat, the Commission attaches Special Condition No. 4. Special Condition No. 4 requires that gravel mining shall not start before September 15. 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 degradation of the western snowy plover habitat.

v. Measures to Avoid Significant Degradation of yellow billed cuckoo habitat

The western Yellow-billed Cuckoo (*Coccyzus americanus*) was listed as a threatened species by the U.S. Fish and Wildlife Service (FWS) in 2014 and is also listed as a California Endangered Species and a U.S. Forest Service Region 5 Sensitive Species. Critical habitat for the species was proposed by the FWS in 2014 and is not yet finalized. Critical habitat in the Lower Eel River

was proposed in 2014 and if designated would comprise an 8-mile long continuous segment of willow-cottonwood riparian vegetation from west of the town of Fortuna (Sandy Prairie) downstream to a point in the estuary (Cock Robin Island) of the lower Eel River in Humboldt County, California. Proposed designated critical habitat for this species consists of riparian stands of more than 37 acres and more than 325 feet in width. 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 yellow-billed cuckoo during the breeding season when the birds are present constitute ESHA.

Proposed gravel mining activities will require the use of heavy equipment, and vehicles, all of which introduce high levels of noise and human activity into the environment that could disrupt potential yellow-billed cuckoo habitat within the riparian areas. Disturbance from human presence or activities during the breeding season may potentially disrupt yellow-billed cuckoos essential breeding behaviors in adjacent riparian areas that may be used for breeding by causing (1) abandonment of the breeding effort by failure to initiate nesting or to complete incubation; (2) noise disruption of the established breeding territory; and (3) frightening adults from utilizing potential nesting areas. Potential effects depend on frequency, timing, location and intensity of activities.

Because the Yellow-billed cuckoo is a federally listed threatened species, the FWS coordinates with the Corps to provide guidance and regulatory review to gravel extraction operators on the lower Eel River. The FWS is developing as part of the Federal Endangered Species Act biological consultation process with the Army Corps of Engineers on the Corp's proposed issuance of the proposed LOP for proposed gravel extraction operations over the next five year on the lower Eel River. The biological opinion is not anticipated to be issued until mid-September, 2015. In the absence of more specific recommendations that may be contained in the biological opinion that is ultimately issued, to avoid the significant degradation of yellow-billed cuckoo habitat, the Commission attaches Special Condition No. 5. Special Condition No. 5 requires that no gravel mining operations shall be allowed during the yellow billed cuckoo breeding season (April 30 – September 15).

vi. Measures to Avoid Significant Adverse 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, 7, and 8. Special Condition No. 1 requires the applicant to perform the mining project on the exposed gravel bar in order 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 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. 7 prohibits placing any material into the river during gravel extraction activities. Special Condition No. 8 requires that all materials be promptly removed from the river bar 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.

vii. 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 6 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. 7 and 8 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 30230, 30231, and 30233 of the Coastal Act.

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 30230, 30231, and 30233 of the Coastal Act.

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 30230, 30231, and 30233 of the Coastal Act.

H. 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 undertaken in an annual gravel extraction plan if authorized by NOAA-Fisheries and CDFW, 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 encourages the use of trenching on the lower Eel and lower Van Duzen Rivers to assist salmonid migration through dry river reaches. A migration trench is essentially a designed channel mimicking a natural channel, which permits salmonid migration and water flow through a dry 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 or downstream emigration. 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 restrictions described above, including but

not limited to, written approval of the proposed wet trenching from NOAA-Fisheries and/or the CDFW.

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. Such extraction is consistent with Section 30236, provided that the best mitigation measures feasible also are incorporated into the project. Special Condition Nos. 1, 3, 6, 7, and 8 discussed above require use of the best feasible extraction standards and limitations, methods of extraction, and the timing of extraction to avoid and minimize significant adverse environmental effects on salmonid habitat.

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.

I. PROTECTION OF ADJACENT ENVIRONMENTALLY SENSITIVE HABITAT AREAS

Section 30240(b) of the Coastal Act states that development in areas adjacent to environmentally sensitive habitat 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 areas. 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.

As discussed above in Finding G, "Gravel Extraction Operations within Riverine Wetlands," the proposed annual extraction operations as conditioned will not be performed within environmentally sensitive habitat either within or outside of the bank-full channel of the river. Although the gravel extraction operations will not be performed directly within ESHA, the development will occur adjacent to several kinds of ESHA as discussed above, including sensitive salmonid habitat in the river, possible western snowy plover habitat in areas of the gravel bars that will be restricted from gravel mining activities, riparian habitat that has become established on the gravel bars and along the banks of the river, and those portions of the riparian habitat that may be used by the yellow billed cuckoo for breeding. As conditioned, the approved gravel extraction operations will be sited and designed to prevent significant disruption of these ESHA habitats.

i. Salmonid Habitat

As discussed in detail within the above referenced Finding F, the gravel extraction operations as conditioned will avoid significant degradation of sensitive fish species consistent with the requirements of Sections 30230, 30231, 30233, 30236 and 30240 of the Coastal Act.

ii. Riparian Habitat

Gravel extraction operations have been conducted adjacent to the riparian habitat along the lower Eel River for several decades. In April of 2009, McBain and Trush conducted a study of woody riparian vegetation trends of the Eel and Van Duzen Rivers for the period of 1995-2008 that demonstrates that the riparian habitat along the river continues to thrive in the presence of the adjacent gravel extraction operations. The Hauck Bar project area was included in the 2,800 acre study area that extended from Fox Creek on the Van Duzen River to Fernbridge on the Eel River. The study results concluded that over the period of study (1995-2008), the combined percent acreages of the open riparian categories (floodplain, woodland, and terrace) remained relatively stable, suggesting that gravel extraction did not have a detectable effect on overall woody riparian vegetation acreage. The study also noted that the total area of annual extraction within the lower Eel River study area was quite small and therefore changes in vegetation acreage relative to the size of the lower Eel River extraction reach and study area are likely undetectable. The combined area of proposed extraction operations within the lower Eel River study area would remain at low levels during the five-year period of authorization of this coastal development permit.

A comparison of photos of the project site between 2009 and 2014 shows that vegetation density and overall area have increased significantly at the project site between 2009 and 2014. To ensure that the gravel extraction operation continues to avoid significant degradation of adjacent riparian habitat, Special Condition No. 1, prohibits 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, Special Condition No. 7 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. Existing haul roads through the riparian areas must be used to truck gravel from the bar to the stockpiling and processing facility.

iii. Yellow Billed Cuckoo Habitat

The yellow billed cuckoo may use the riparian areas adjacent to gravel mining operations along the lower Eel River. Breeding habitat may exist in areas adjacent to gravel operations and haul roads that have been previously established. The western Yellow-billed Cuckoo (*Coccyzus americanus*) was listed as a threatened species by the U.S. Fish and Wildlife Service (FWS) in 2014 and is also listed as a California Endangered Species and a U.S. Forest Service Region 5 Sensitive Species. Critical habitat for the species was proposed by the FWS in 2014 and is not yet finalized. Critical habitat in the Lower Eel River was proposed in 2014 and if designated would comprise an 8-mile long continuous segment of willow-cottonwood riparian vegetation from west of the town of Fortuna (Sandy Prairie) downstream to a point in the estuary (Cock Robin Island) of the lower Eel River in Humboldt County, California. Proposed designated critical habitat for this species consists of riparian stands of more than 37 acres and more than 325 feet in width. According to the 2015 biological assessment prepared for the Lower Eel River gravel mining projects, riparian habitat adjacent to the project site appears suitable in size and width to meet minimum size requirements for a yellow-billed cuckoo breeding area. 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 yellow-billed cuckoo during the breeding season when the birds are present constitute ESHA.

Proposed gravel mining activities will require the use of heavy equipment, and vehicles, all of which introduce high levels of noise and human activity into the environment that could disrupt potential yellow-billed cuckoo habitat within the riparian areas. Disturbance from human presence or activities during the breeding season may potentially disrupt yellow-billed cuckoos essential breeding behaviors in adjacent riparian areas that may be used for breeding by causing (1) abandonment of the breeding effort by failure to initiate nesting or to complete incubation; (2) noise disruption of the established breeding territory; and (3) frightening adults from utilizing potential nesting areas. Potential effects depend on frequency, timing, location and intensity of activities.

Because the Yellow-billed cuckoo is a federally listed threatened species, the FWS coordinates with the Corps to provide guidance and regulatory review to gravel extraction operators on the lower Eel River. The FWS is developing as part of the Federal Endangered Species Act biological consultation process with the Army Corps of Engineers on the Corp's proposed issuance of the proposed LOP for proposed gravel extraction operations over the next five year on the lower Eel River. The biological opinion is not anticipated to be issued until mid-September, 2015. In the absence of more specific recommendations that may be contained in the biological opinion that is ultimately issued, to avoid significant degradation of yellow-billed cuckoo habitat, the Commission attaches Special Condition No. 5. Special Condition No. 5 requires that no gravel mining operations shall be allowed during the yellow billed cuckoo breeding season (April 30 – September 15).

iv. Western Snowy Plover Habitat

As discussed above in Finding G, "Gravel Extraction Operations within Riverine Wetlands," the endangered western snowy plover will sometimes nest on the gravel bars within the Eel River. Gravel operations could lead to plover mortality if nesting plovers are present during the gravel extraction operation.The plover nesting season begins in March and ends by mid-September. The end of the plover nesting season coincides closely with the end of the breeding season for the yellow billed cuckoo, which as described above runs from April 30 to mid-September. The prohibition imposed by Special Condition No. 5 against commencing gravel extraction operations prior to September 15 to avoid significant impacts to the Yellow billed cuckoo will also protect nesting plovers. To ensure that gravel extraction operations that could harm plovers are not conducted during the full plover nesting season (which begins two months prior to the Yellow billed cuckoo breeding season), Special Condition No. 4 requires that no gravel extraction operations occur during the plover nesting season, i.e. between March 1 and September 15.

In permits previously granted for gravel extraction operations along the Eel River, the Commission has allowed for the possibility for gravel extraction to begin prior to the close of the plover nesting season on September 15 if plover surveys were to demonstrate that no plover nests exist within the gravel extraction area. These allowances for earlier commencement of gravel extraction were based on FWS recommendations contained in biological opinions prepared by FWS at that time. The new FWS biological opinion anticipated to be issued by mid-September may contain similar allowances for earlier commencement of gravel extraction.

However, as Special Condition No. 5 already prohibits commencement of gravel extraction prior to September 15 in order to protect the yellow billed cuckoo, which was only recently listed federally as a threatened species in 2014, allowances for earlier commencement of gravel extraction cannot be made even though under certain circumstances earlier commencement of extraction would not result in significant adverse impacts to the plover.

Therefore, for the reasons discussed above, the Commission finds that the project as conditioned will be sited and designed to prevent impacts which would significantly degrade adjacent ESHA and will be compatible with the continuation of these habitat areas consistent with Section 30240(b).

J. 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 be (a) sited and designed to protect views to and along the ocean and scenic coastal areas, and (b) visually compatible with the character of surrounding areas.

This portion of the river is not readily visible from Highway 101. The gravel extraction area and processing facilities are generally not visible from Highway 101 or any other public coastal viewing areas. The upper portions of the project site's 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. However, 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.

To the extent that gravel extraction operations are visible from public vantage points, 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. 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.

K. 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 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 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 and yellow billed cuckoo, the FWS proposes including in its Biological Opinion for the Corps LOP-2015 term and conditions aimed at minimizing vehicle impacts to either species. The FWS is requiring that vehicle use in suitable plover habitat and yellow-billed cuckoo breeding habitat shall be minimized during the plover nesting and cuckoo breeding 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). In addition to these terms and conditions, as discussed above, the Commission attaches Special Condition Nos 4 and 5, which prohibits commencement of gravel extraction prior to September 15 to avoid impacts to the newly listed yellow billed cuckoo.

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

L. 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 Commission's administrative regulations 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). 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 Coastal Commission's review and analysis of CDP applications has been certified by the Secretary of Resources as being the functional equivalent of environmental review under CEQA. As a responsible agency, the Commission conducted its analysis of the potential impacts of the proposed development that the Commission is authorized by the Coastal Act to review. The Commission has reviewed the relevant coastal resource issues associated with the proposed project and has identified appropriate and necessary conditions to assure protection of coastal resources consistent with the requirements of the Coastal Act. The staff report discusses the relevant coastal resource issues with the proposed development. All public comments received to date have been addressed in the staff report, including staff's oral presentation and the findings adopted by the Commission. The Commission incorporates its findings on Coastal Act consistency at this point as if set forth in full. As conditioned, there are no additional feasible alternatives or feasible mitigation measures available, beyond those required, which would substantially lessen any significant adverse environmental effect that approval of the proposed project, as modified, would have on the environment. Therefore, the Commission finds that the proposed repair and maintenance project can be found to be consistent with the Coastal Act and CEQA Section 21080.5(d)(2)(A).

APPENDIX A

SUBSTANTIVE FILE DOCUMENTS

Application File for Coastal Development Permit No. 1-15-0204

Final Program Environmental Impact Report (EIR) on Gravel Removal from the Lower Eel River, adopted 1992, and Supplemental EIR, certified July 24, 1992

Biological Assessment for Aggregate Extraction Operations in the Eel, South Fork Eel, Van Duzen, and Trinity Rivers, Humboldt County, California. Stillwater Sciences, February 2015

Lower Eel River Gravel Mining and Extraction Activities Biological Assessment (Western Snowy Plover and Yellow Billed Cuckoo), prepared by Gary S. Lester, LACO Associates February 28, 2015

Analysis of Eel River Cross Sections at Gravel Mining Sites, 1997-2007, prepared by County of Humboldt Extraction Review Team (CHERT), January 2009

Humboldt County certified Local Coastal Program.

APPENDIX B

GRAVEL EXTRACTION METHODS, TERMS AND LIMITATIONS DESCRIBED IN THE U.S. ARMY CORPS OF ENGINEERS LETTER OF PERMISSION PROCEDURE LOP 2015-1

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.

Gravel extraction terms and limitations set forth in proposed LOP 2015-1

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 an 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.
- In addition to the alternative extraction techniques listed above, narrow skims that are adjacent to the low flow channel but provide for protection of the adjacent cross-over riffle by limiting extraction to the areas away from the entire riffle will also be considered for the lower Eel River on a case-by-case basis. These narrow skims may have a minimum vertical offset of 2 feet above the water surface elevation of the low flow channel. Narrow skim widths will be determined on a site specific basis, but narrow skims must: (1) not increase channel braiding; (2) not lower the elevation at which flows enter secondary channels; (3) avoid the higher portions of the annually inundated bar surface; and (4) must promote channel confinement. The CHERT recommendation shall include a summary of the reasoning, along with sufficient biological, hydrological, and sediment transport rationale to support the recommended width.

APPENDIX C

Table 1. Summary of gravel operations in the coastal zone on the Lower Eel and Van Duzen Rivers.

Location (Bar and 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
Sandy Prairie Plant B (RM 10-11)	Mercer-Fraser; Canevari Timber Co.	1-94-006 1-94-006-A1 1-94-035 1-00-009 1-03-014 1-04-020	200,000
Sandy Prairie Plant A (RM 11-12	Mercer-Fraser	1-09-022 1-09-022-A1	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	150,000

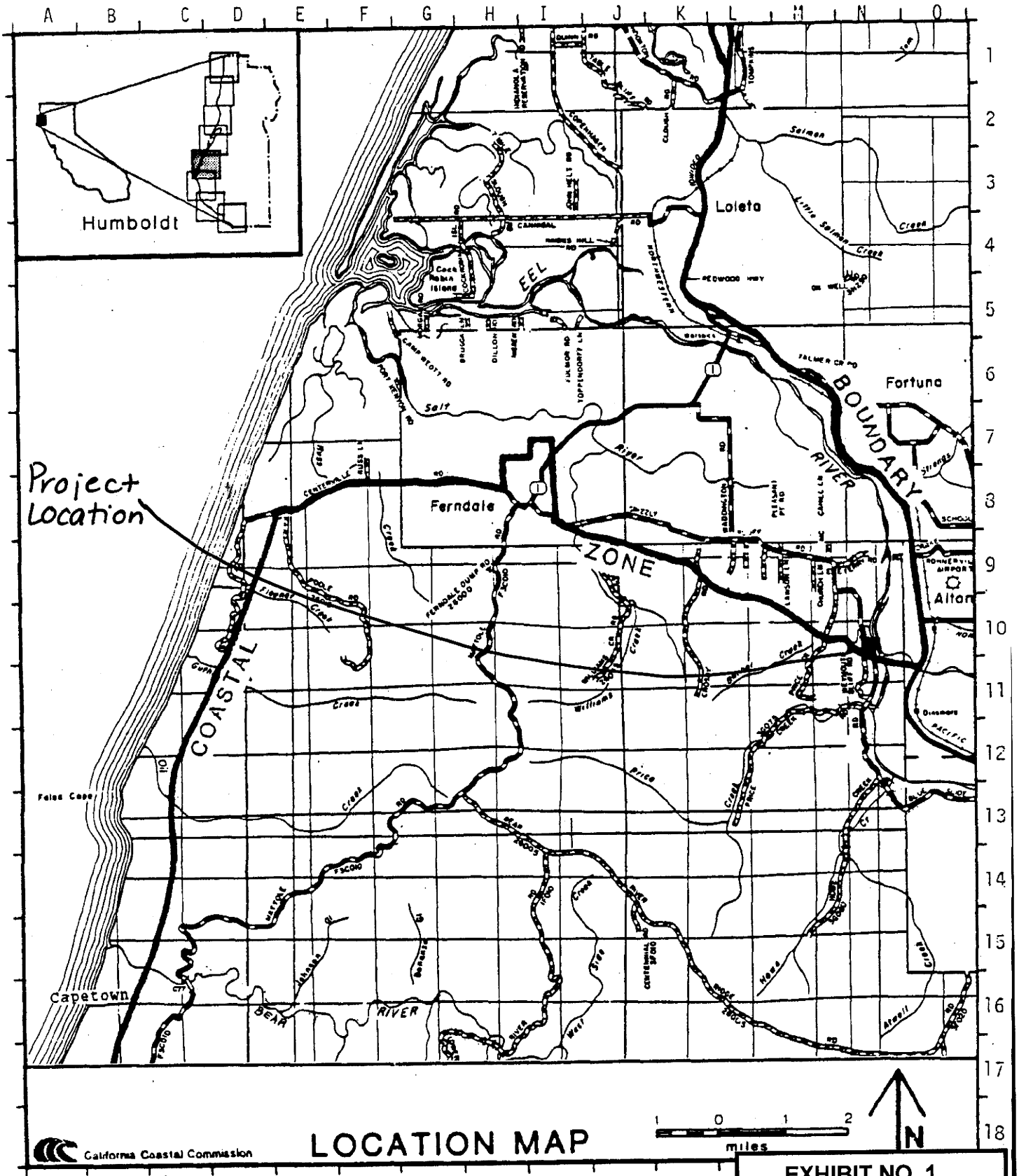
		1-06-006 1-09-006-A1	
Near the confluence of Van Duzen & Eel Rivers (up to Van Duzen RM 0.7)	Rock & Dwelley	1-96-068 1-02-006 1-03-048 1-04-045 1-09-021 1-09-021-A1	100,000

Table 2. Approved and extracted gravel mining volumes in the Lower Eel River (excluding Rock and Dwelley operation on the Lower Van Duzen River) since 1997 (CHERT 2014).

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
2008	237,955	215,760	91
2009	229,386	106,467	46
2010	208,286	188,730	91
2011	301,537	214,730	71
2012	226,520	188,994	83
2013	176,477	80,918	46
2014	127,671	97,232	76
Totals	**5,193,634**	**3,366,790**	**65**
Years	**18**	**18**	**--**
Averages	**288,535**	**187,044**	**65**

Table 3. 2004-2014 CHERT-approved versus actual extracted gravel volumes for the Eureka Ready Mix project site (CHERT 2014).

Year	Approved Volume (cubic yards)	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
2009	79,137	72,918	82
2010	39,043	33,992	88
2011	27,428	26,632	99
2012	18,838	20,848	110
2013	12,525	10,789	78
2014	34,756	30,606	88
Totals	**512,471**	**464,124**	**91**
Years	**11**	**11**	**--**
Averages	**46,588**	**42,193**	**91**



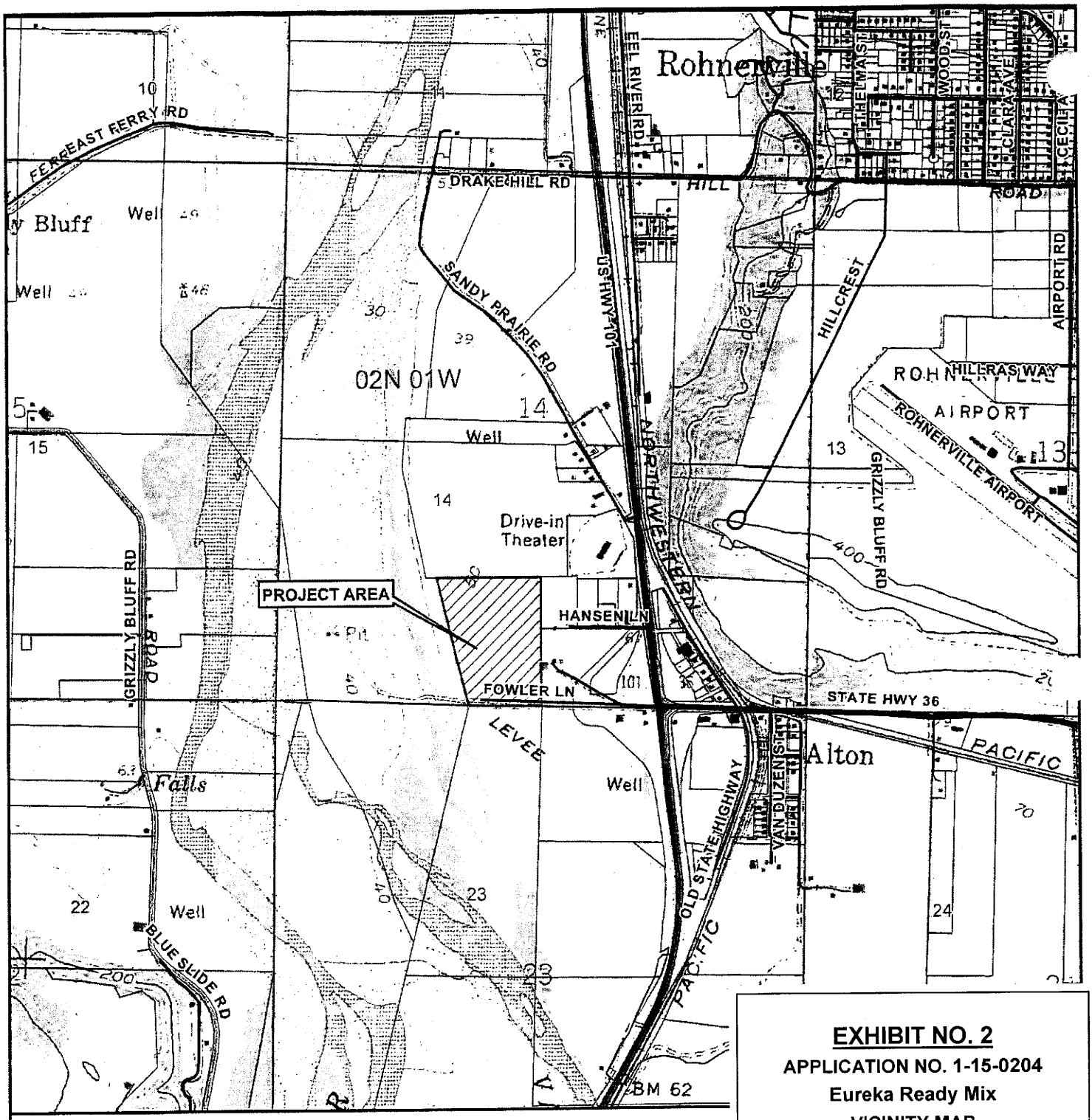
California Coastal Commission

LOCATION MAP

County of Humboldt

EXHIBIT NO. 1

APPLICATION NO.
1-15-0204
Eureka Ready Mix
REGIONAL LOCATION MAP



Project Area =

TOPO MAP

EXHIBIT NO. 2

APPLICATION NO. 1-15-0204

Eureka Ready Mix

VICINITY MAP

PROPOSED EUREKA READY MIX
COASTAL DEVELOPMENT PERMIT, CONDITIONAL USE PERMIT,
RECLAMATION PLAN & SURFACE MINING PERMIT
ALTON AREA
CDP-10-02/CUP-10-01/RP-10-01/SMP-10-01
APN: 201-221-009
T02N R01W S14 H B & M

This map is intended for display purposes and should not be used for precise measurement or navigation. Data has not been completely checked for accuracy.

0 500 1,000 1,500 2,000 Feet

EXHIBIT NO. 3

APPLICATION NO. 1-15-0204

Eureka Ready Mix

AERIAL PHOTO OF PROJECT LOCATION

Project Area =

AERIAL MAP

PROPOSED EUREKA READY MIX
COASTAL DEVELOPMENT PERMIT, CONDITIONAL USE PERMIT,
RECLAMATION PLAN & SURFACE MINING PERMIT
ALTON AREA
CDP-10-02/CUP-10-01/RP-10-01/SMP-10-01
APN: 201-221-009
T02N R01W S14 H B & M

This map is intended for display purposes and should not be used for precise measurement or navigation. Data has not been completely checked for accuracy.

N

0 250 500 750 Feet

Eureka Ready Mix Concrete Company, Inc,
California Coastal Commission
2015 Permit Application
Hauck Gravel Bar, Eel River
February 18, 2015

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 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 Hauck Bar property 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.

Access to the gravel bar area is by the western extension of Highway 36 at Alton, California. The western extension of Highway 36 is known as Fowler Lane. Fowler Lane ends at the entrance to the Eureka Ready Mix industrial yard, and from this point west to the Eel River channel, access to the project area is gained by a private, unpaved ranch road.

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 bankfull channel area located between the Sandy Prairie and Grizzly Bluff levees. 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 in the winter of 1956 and 1964 prompted the construction of the Sandy Prairie Levee and Grizzly Bluff Levees. The levees protect the expansive bottom land of the upper Eel River delta. Gravel bar height within the project site measures up to eighteen feet above the summer low-flow water surface.

The Van Duzen River enters the Eel River from the east at the upstream project limit, contributing to the large sediment depositional zone at the confluence of the two rivers.

EXHIBIT NO. 4
APPLICATION NO. 1-15-0204
Eureka Ready Mix
PROJECT DESCRIPTION
1 of 16

Mature riparian forest consisting of cottonwood, willow and alder extend the length of the project area between the east-bank levee and the bankfull channel area. A single looped haul road, branching from the private ranch road at the east edge of the Eel River channel, provides access to the Van Duzen River and upstream extraction areas. Summer crossings when needed, 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 mid-channel 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 <20 years) form a narrow band along the west bank levee and channel margin. Barber Creek enters the Eel River channel through the Grizzley Bluff rock levee, mid-way along the left bank, forming shallow summer ponds along the toe of the levee within left bank secondary channel. Barber creek flows subsurface to waters of the Eel River for about six months of the year (June to December).

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.

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

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

1) Annual Extraction Season *(Schedule of Operations)*

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 addition to physical site delineation and placement of grade control points, the operator's river consultant conducts regular 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. Over the last ten years extraction has rarely started before September 1. Specific dates, terms and conditions pertaining to operations within Snowy Plover and Yellow Billed Cuckoo habitat areas will be developed for the project through consultation with the U.S. Fish and Wildlife Service during the USACOE Letter of Permission process.

2) Extraction Design and Approval Process

In the early summer, when the river level drops to a point where gravel deposits become exposed, a multi-agency field review of the project site is conducted to identify areas of potential extraction. The multi-agency review involves the site operator and the river consultant and representatives from the County of Humboldt Extraction Review Team (CHERT), National Marine Fisheries Service, California Department of Fish and Wildlife, U.S. Army Corps of Engineers and The California Water Quality Control Board.

Following the Multi-Agency site review, the operator's river consultant surveys the identified extraction sites and develops the annual extraction plan from the topographic data, site review field notes and aerial photographs. The extraction plan, consisting of cross-sections of the proposed extraction area, surveyed monitoring cross-sections, extraction narrative, aerial photograph and extraction volume calculations are submitted to CHERT, California Department of Fish and Wildlife (CDFW), National Marine Fisheries Service (NMFS) and the U.S. Army Corps of Engineers (USACOE) for approval. The agencies review the extraction plan and provide comment and needed corrections to the consultant. The consultant makes the required changes and resubmits the extraction plan to the agencies for final authorization.

Upon receipt of final authorization and prior to the operator entering the areas of the bank-full channel, the river consultant marks the boundaries of the extraction area(s) and provides grade control points so that equipment operators can control the depth of cut, design slopes and limits of work. Extraction area design information is transferred from electronic Autocad drawings of the final extraction plans to points in the field during extraction site staking. The perimeter of the extraction site, including the upstream and downstream extents are delineated by staking or painting of the bar surface.

Following excavation activities, post-extraction cross section surveys of the site are conducted following gravel removal to generate comparative sets of monitoring and extraction area cross sections that show the 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 and verify extraction plan compliance.

In 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 footprint. 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 required to cease with the onset of the fall rainy season. When temporary crossings are used to access gravel deposits, their removal must occur by October 15th. An extension to the October 15th date may be granted by CDFW and NMFS based upon location, method of crossing construction and adherence to a river flow and weather monitoring plan.

3) Extraction Considerations

When 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. Historically, bar skimming has been the primary extraction method at the site, however, over the last ten (10)+ years, development of a salmonid migration channel through the Van Duzen River delta has been a sustained annual extraction. 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.

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 actions:

1) Adjusting extraction boundaries to avoid the vegetation.

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

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

b. Channel Morphology Considerations

Channel morphology is also considered during the pre-season review and extraction area selection process and incorporated into extraction designs. Extractions are typically located 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 skim 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 (NMFS 2009). For skimming operations, maintaining channel confinement at or above the elevation of the 35% exceedence flow [3,800 cubic feet per second passing the USGS Scotia gage (SCO) for the Eel River, and 500 cfs passing the USGS Bridgeville gage (BRI) for the Van Duzen River] will be required.

4) Extraction Methods

There will be several types of extraction methods 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 bar skimming, wet and dry trenching, alcoves and secondary channel excavations.

a. Gravel Bar Skimming

Skimming operations are typically designed within 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 gravel 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) required of all extraction plans are designed to maintain a separation between the extraction activities and the wetted channel, to maintain channel confinement and preserve edge water habitat.

Extraction floor elevations for skimming operations are generally dictated by the gradient between breaks in slope of the 35% flow elevation of the adjacent river channel. The water surface of the 35% flow is marked by the operator's river consultant during the

recession of the spring flow and the marks are used to set the design elevations of the extraction surface. Extraction surfaces must be designed to be free draining, by sloping surfaces downstream, toward the adjacent channel, or sloping both downstream and toward the adjacent channel.

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

Front-end loaders are also used in skimming operations, generally on smaller extraction areas. Use of front-end loaders require the use of 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 salmonid migration channel, large skims 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 smaller extraction footprint compared to traditional bar skimming.

Extraction may also occur within areas of terrace deposits when replenishment of aggregate is not sufficient on lower elevation, exposed bar surfaces. Terrace skimming 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 long-term, sustainable aggregate source. Patches of woody vegetation present within terrace skims are avoided and protected as described above (see Protection of Riparian Vegetation). 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 alcoves.

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

c. Alcoves

Alcove extractions are a form of fisheries enhancement extraction that provide 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. If removal of the gravel berm is part of the extraction plan, removal takes place after sediment has settled within the excavated section of the alcove. A minor amount of sediment may be 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. NMFS has encouraged the use of trenching on the Lower Eel River and within the Van Duzen River Delta to assist salmonid migration through flat, dry channel areas. Trenching adjacent to the Eel River 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 and trees to the channel under the direction of the CDFW and NMFS.

A migration trench is essentially a designed channel that contains low to moderate flows permitting salmonid migration through a flat, braided stream. Meander and slope are designed into the channel to control velocity and provide holding 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.

Near the Eel River channel connection at the downstream end of the fish channel, a temporary migration barrier, consisting of three 36-inch diameter culverts, is installed to prevent the upstream migration of salmonids before flow from the Van Duzen watershed can sustain migration and spawning. Screening is secured to the downstream ends of the culverts to keep upstream migrants within the Eel River until flow from the Van Duzen River naturally breaches the migration barrier.

In the 2002-2014 extraction seasons the migration trench has been implemented through cooperative efforts of the Eureka Ready Mix and Leland Rock operations. CDFW and NMFS are instrumental in selecting the location and providing design input for the feature. The migration trench provides effective fish passage from the Eel River to the Van Duzen River watershed. The Van Duzen River Delta at the Eel River confluence is aggraded which causes the Van Duzen River to flow subsurface during the late summer and fall. The NMFS and CDFW consider the Van Duzen River migration trench to be a significant and necessary habitat enhancement project.

The actions provided in this application and permitted under the USACOE Letter of Permission process (LOP) will include certain activities at or near gravel extraction sites, during the extraction season, that will help improve salmonid habitat. The specifics of habitat improvement activities shall be determined relative to site conditions and as part of the multiagency pre-extraction design review. Habitat improvement activities shall be consistent in scope, size and cost impact as restoration activities that have occurred in the past under the existing LOP. Habitat improvement activities have included, but have not been limited to, trenching designed to improve migratory conditions, alcove construction, placement of large woody debris and riparian planting.

Since 2002, extraction operations at the Hauck Bar have included the design and excavation of a salmonid migration channel through the Van Duzen River delta. The primary goal of the project is to provide effective salmonid migration and passage upstream to productive spawning areas. The annual project is coordinated through the efforts of The CDFW, NFMS and the upstream land owner/operator. An integral part of the design involves the location and placement of a temporary migration barrier that prevents salmonids from entering the Van Duzen River system until natural flows can support their safe migration upstream. The migration barrier consists of three 36-inch diameter culverts placed in a gravel berm and fitted with screening on the downstream ends. The barrier is typically placed within the dry Van Duzen River channel near the confluence with the Eel River. Several pre-planning site visits with CDFW and NMFS personnel are required to review conditions and identify the most suitable location for the feature.

5) Summer Crossings

At the Hauck Bar, temporary channel crossings are necessary to access aggregate deposits located west of the wetted-channel. Historically, crossings have been placed at the west end of the main haul road over the Eel River and at the south end of the project area, to cross the Van Duzen River. Temporary crossings are placed at locations that minimize placement of fill and disruption of sensitive habitat within the wetted channel. Bridge locations are evaluated and selected by NMFS and CDFW fisheries biologists during pre-extraction agency site visits.

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 salmonid spawning or holding is not likely 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 fisheries biologists, 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 a localized 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 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. Crossing locations are reviewed during the post-extraction agency site visits to evaluate reclamation and operator permit compliance.

6) Temporary Stockpiling of Aggregate

During excavation, aggregate may be moved from an extraction area and piled temporarily until transport to the processing facility can be coordinated. 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. All temporary stockpiles shall be located away from the wetted-channel and removed by October 15th. 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 from stockpiled material.

7) Haul Road Maintenance

At the start of extraction operations, the site operator grades the haul roads to the extraction areas in order to provide safe and efficient access. The temporary haul routes follow historic roads and may 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 a 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 channel area are naturally reclaimed by winter flow events.

Operations utilize existing established haul routes to the maximum extent possible, except for portions of haul roads crossing 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.

8) 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. Following extraction, smoothing of the site is conducted.

When extraction is complete, permitting and resource protection agency personnel are notified and a post-extraction site visit is conducted to review the site for extraction plan compliance and to recommend additional reclamation as needed.

Operations after October 15th are required to maintain reclaimed conditions at the end of each working day. This involves grooming and smoothing the extracted portions of the

site. If operations cannot be completed before the end of the extraction season, the excavated portion of the site is graded smooth.

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 seasonal reclamation, 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 undertake minor grading, as needed, to ensure site drainage compliant with the approved extraction plan.

9) 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, contained in the USACOE Letter of Permission (LOP), provide the parameters the consultant uses to develop the final extraction plan, such as the vertical and horizontal offset from the wetted-channel, vegetative buffers, minimum and maximum slopes, etc.

Prior to approval of the annual extraction plan, permitting and resource protection agencies review the draft proposal, provide comment and request amendment to the proposal if necessary. The operator's consultant makes changes to the plan, incorporating the agency amendments, has the proposal reviewed, stamped and singed by a licensed engineer or surveyor and resubmits the final proposal for authorization.

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

At a minimum, extraction plans will include: a project description, a color aerial photograph showing all proposed structures, 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.

10) Annual Monitoring

The action of removing aggregate from the river channel has the potential to produce effects that can lead to alteration of river morphology and associated sensitive habitat. It is through implementation of the conditions and limitations of the LOP, Biological Opinions and other agency permits, coupled with the monitoring feedback loop, that the effects of the activity are avoided and/or minimized. Physical monitoring is needed to track sediment inventory, bed elevation and area, bank erosion, etc. CHERT and NMFS review the river monitoring data and assess changes when developing species and habitat

assessments for the Federal Authorization process (LOP). The results of their study and assessment become part of the species and habitat protection elements of the Federal LOP and the State of California Department of Fish and Wildlife.

Biological monitoring is necessary to track habitat conditions relative to extraction effects and to provide a 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 and 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 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 the extraction process. 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. The monuments are surveyed to a common horizontal and vertical control system.

Monitoring cross section data sets are utilized to track changes in channel characteristics, such as sediment deposition, bank erosion and areas of extraction. 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. NMFS also analyzes the historic data sets during their review of species and habitat status updates of their Biological Opinion for Federal Permits.

Twice annually, aerial photographic series are produced for the lower Eel River. The spring aerial photography captures the conditions of the river following recession of winter flow, shows maximum vegetation growth and changes to

channel configuration. The spring aerial photographs are also used by biological consultants when measuring and evaluating habitat units, conducting sensitive species surveys and when producing annual reports. Fall aerial photographs are taken near the end of the extraction season, showing extraction location and extent of activities. Agencies may use the photographs for site review and enforcement actions.

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 and agency reference to the approved extraction plan.

Extraction planning requires that these additional cross sections be surveyed for operator grade control, calculation of extraction volumes and extraction plan compliance. Extraction areas shall have a minimum of five (5) cross sections for extraction plan development and grade control. The five cross-sections may consist of monitoring and/or supplementary extraction sections.

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 equipment 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 in hand (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.

During extraction operations, periodic site visits are conducted by the operator's consultant to 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. Fish and Wildlife Service, National Marine Fisheries Service and the California Department of Fish and Wildlife. Biological monitoring has been conducted for Amphibians and Reptiles, Avian species and fish. Biological investigation has confirmed the presence of several threatened and endangered (T&E) species and species of special concern within the action areas and has resulted in the adaptive development of conservation measures and operational restrictions 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, potential habitat for the Western Snowy Plover (*Charadrius alexandrinus nivosus)* and Yellow Billed Cuckoo (*Coccyzus americanus)* have also been identified within the Lower Eel River riparian area.

a. Fisheries

Annual fisheries habitat monitoring has provided data on: run-timing, water temperature, redd location and distribution, habitat unit areas 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).*

The U.S. Army Corps of Engineers, in consultation with the National Marine Fisheries Service, will produce a Biological Opinion for LOP 2015 that will update the status of species, habitat and protection measures.

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 historic record of species utilizing the riparian areas during the spring, summer and fall and has resulted in the identification of and mitigation for several T&E species and CDFW species of special concern. This ongoing survey effort will provide the basis for determining: habitat range, population fluctuation, species presence/absence, migrant specie use, T&E species use, and the development of 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 CDFW. 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.

The U.S. Army Corps of Engineers, in consultation with the U.S. Fish and Wildlife Service, will produce a Biological Opinion for LOP-2015 covering the Lower Eel River Project area. The opinion will update the status of T&E species, habitat and protection measures.

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 riparian area. Extraction activities are designed to avoid vegetated areas. Vegetation loss and resultant gains are not specific to individual gravel operations or extraction bars. River morphology is highly dynamic within 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). The combined percentages of Floodplain, Woodland and Terrace vegetation remained approximately the same for both the Eel and Van Duzen Rivers from 1995 to 2008 suggesting that gravel extraction within the study area does not have a detectable effect on overall woody riparian vegetation acreage (Trush, April, 2009).

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 and controlled during the work day. The river area of the project site 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 system, 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. 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.

EXHIBIT NO. 5
APPLICATION NO. 1-15-0204
Eureka Ready Mix
GEOMORPHIC IMPACT ANALYSIS
1 of 3

Eureka Ready Mix Concrete Co., Inc.
Hauck Bar, Eel River
Geomorphic Impacts of Proposed Project
&
Riparian and Vegetation Assessment
March 23, 2015

The information presented below is to address Item #6 and #10 of the March 5, 2015 review letter to CDP Application No. 1-15-0204.

6. Geomorphic Impacts of Proposed Project

Please refer to the attached document "Analysis of Eel River Cross Sections at Gravel Mining Sites" prepared by the County of Humboldt Extraction Review Team (CHERT), January 2009. The Eel River Analysis can be accessed from the Humboldt County Planning Division website via the following link: http://www.humboldtgov.org/ArchiveCenter/ViewFile/Item/237. The general conclusion, based upon the 2009 analysis, is that large scale persistent effects of Eel River gravel mining on channel thalweg elevations, mean bed elevations or scour were not discernable. 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 (CHERT 2009).

The Hauck Bar site has been in operation since the 1950's. The activities associated with the historic project have not resulted in observed effects upon stream morphology or upon the integrity of the banks downstream of the project site. Downstream of the project site, the stream banks are protected by rock levees constructed after the large scale floods of the 1950's and 1960's. Mature riparian vegetation stands have colonized within the levees, providing further protection of the active stream banks and terrace alluvium.

Changes to the scope of project or in operational processes are not proposed by the application submitted to the Commission or through existing permits of the operation by other involved agencies. Therefore it is anticipated that operations will not cause significant effects to channel morphology in the reach of the Eel River that includes the project site and adjacent areas. Additionally, annual extraction volume has decreased during the term of the previous two Coastal Development Permit terms (2004-2008 & 2009-2013). For the 2004-2008 permit term, annual average extraction was 53,660 cubic yards and for the 2009-2013 permit term annual average extraction fell to 33,035 cubic yards. It is expected that future annual average extraction volume will be in line with extraction volumes of the previous ten years (2004-2013). According to Annual CHERT Reports, available at the Humboldt County Planning Department website, annual extraction volume for all extraction operations on the Lower Eel River has decreased during the term of the previous two Coastal Development Permit cycles. The

comparative photographs for years 2009 and 2014 related to Item 10., Riparian and Vegetation Assessment depict a stable channel plan form.

Attached are several monitoring cross sections that depict the 2009 channel profile (dashed line) and the 2014 channel profile (solid line) for the upstream and downstream areas of the project site. The channel area, gravel bars and channel bed, lying between the Sandy Prairie and Grizzley Bluff levees, consists of flood washed alluvial materials that are moved and redeposited by winter flow events. The comparative profiles show modest amounts of fill and scour within the active channel area. This reworking of the low flow channel is not an unexpected occurrence in a semi-unconstrained alluvial channel. The higher elevation channel margins and channel banks of the monitoring cross sections appear stable in profile as these areas are not subject to regular inundation and flow energy that generates scour and fill. The higher elevation alluvial surfaces of the site are also protected by herbaceous and woody vegetation which tends to reduce high flow energy and provide armoring of the surface sediments (see attached 2009 and 2014 aerial photographs for growth and extent of riparian vegetation).

10. Riparian and Vegetation Assessment

In April of 2009, McBain and Trush conducted a study of the woody riparian vegetation trends of the Eel and Van Duzen Rivers for the period of 1995-2008. The Hauck Bar project area was included in the 2,800 acre study area that extended from Fox Creek on the Van Duzen River to Fernbridge on the Eel River (see attached copy of vegetation study).

The study results concluded that over the period of the study (1995-2008), the combined percent acreages of the open riparian categories (Open Channel Bed and Active Channel Bed) and the vegetated riparian categories (Floodplain, Woodland and Terrace) remained relatively stable, suggesting that gravel extraction does not have a detectable effect on overall woody riparian vegetation acreage. The study also noted that the total area of annual extraction within the Lower Eel River study area was quite small (i.e., 20.9 acres in 2004) and therefore changes in vegetation acreage relative to the size of the Lower Eel River extraction reach and study area are likely undetectable (McBain & Trush 2009). The combined area of annual extraction operations within the Lower Eel River study area have remained at low levels with 24.6 total acres in 2009, 38 total acres in 2010 and 15.5 total acres in 2013 (Annual CHERT Reports; Summary by ERM in Comments to Feb. 28, 2015 Biological Assessment by SHN).

Attached are spring site photographs from years 2009 and 2014 showing the project channel area and vegetation colonization. The aerial photographs are presented at the same scale and at a relatively similar time of the year (June 2009 and May 2014). Polylines have been drawn around areas of woody vegetation on the photo sets to show comparative areas of cover and progressive density over time. Upon observation of the photographs it is apparent that vegetation density and overall area have increased significantly at the project site between

2009 and 2014. While this quick evaluation does not provide acreages for each vegetation type, it provides conclusive evidence of woody vegetation growth and succession in conjunction with annual gravel extraction operations.