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Commission Action:	

STAFF REPORT: PERMIT AMENDMENT

APPLICATION NO.:	**1-05-039-A1**
APPLICANT:	**Humboldt Bay Harbor, Recreation, and Conservation District**
AGENT:	Pacific Affiliates
PROJECT LOCATION:	At the Woodley Island Marina within Humboldt Bay and along the ocean side of the Samoa Peninsula, Humboldt County.
DESCRIPTION OF PROJECT PREVIOUSLY APPROVED:	1) Maintenance dredging of approximately 120,000 cubic yards of material and disposal of the dredged material via slurry pipeline at a beach disposal site in the tidal zone along the ocean shoreline of the Samoa Peninsula; and 2) Repair of shoreline protective rock slope armament by replacing armor rock that has become dislodged into the berthing and docking areas to be dredged.
DESCRIPTION OF AMENDMENT REQUEST:	Modify previously-granted permit to: 1) increase maximum sediment extraction and beach disposal volumes from 120,000 cubic yards to 158,000 cubic

yards; 2) include a Samoa Beach Outfall Solid Waste Cleanup Plan; and 3) install anchors on slurry pipeline to prevent scour of environmentally sensitive mudflat and eelgrass bed areas.

LOCAL APPROVALS RECEIVED: 1) Humboldt County Coastal Development Permit No. CDP-04-38, approved January 23, 1997 and Conditional Use Permit No. CUP-04-14 approved January 20, 2005; 2) Humboldt Bay Harbor, Recreation, and Conservation District Permit for District's dredging approved October 14, 2004; and 3) CEQA Negative Declaration approved October 14, 2004.

OTHER APPROVALS OBTAINED OR REQUIRED: 1) State Lands Commission Approval; 2) Regional Water Quality Control Board FCWA Section 401 Water Quality Certification No. 1A04140WNHU, issued August 26, 2005; 3) U.S. Army Corps of Engineers FCWA Section 404 Individual Permit No. 22216N, issued December 10, 1997, expires March 15, 2008; 4) U.S. Army Corps of Engineers Letter of Modification to FCWA Section 404 Individual Permit No. 22216N, issued October 25, 2006; and 5) California Department of Fish and Game CESA Consistency Determination or Incidental Take Permit (pending).

SUBSTANTIVE FILE DOCUMENTS: 1) County of Humboldt Local Coastal Program; 2) Coastal Development Permit Application No. 1-87-172, issued March 2, 1988; 3) Coastal Development Permit Application No. 1-96-060, issued November 25, 1997; 4) Coastal Development Permit Application No. 1-05-039, issued August 22, 2006; 5) National Marine Fisheries FESA Section 7 Consultation and Biological Opinion, issued December 6, 2005; and 6) *Sampling Results Report for Dioxin/Furans, PCP, and PCB Testing*, Pacific Affiliates, Inc., December 2005.

SUMMARY OF STAFF RECOMMENDATION

The staff recommends that the Commission approve with conditions, the requested amendment to the coastal development permit originally granted for the sediment dredging maintenance project.

The proposed amended project would increase the permissible volume of sediment dredging and beach disposal previously authorized by the Commission in February 2006. The original 2006 permit (CDP No. 1-05-039, Humboldt Bay Harbor, Recreation, and Conservation District, Applicant) authorized the extraction of approximately 120,000 cubic yards of sediment material from the Woodley Island Marina boat basin within Humboldt Bay and convey the materials via a slurry pipeline across the bay for near shore disposal within the ocean waters offshore of Samoa Peninsula.

The proposed project amendments would increase the allowable volume of spoils materials being extracted and disposed from 120,000 cubic yards to 158, 000 cubic yards. This additional approximately 38,000 cubic yards of sediment materials represents the sediment that accumulated within the dock and boating slip area of the marina in the 2½-year period between when pre-dredging surveys were performed in 2004 and the present. To achieve design depths within the 335 individual berthing areas and docking slips of the Woodley Island Marina, including a ½-foot over-dredge allowance, a permit amendment is needed to revise the authorized maximum extraction and deposition volumes.

In addition, the applicant seeks authorization for two other project changes: (1) adding a Samoa Beach Solid Waste Cleanup Plan component; and (2) installing anchor blocks on the spoils slurry transmission pipeline at key locations to prevent scouring of mudflat and eelgrass bed area within the bay caused by lateral movement of the pipeline during tidal fluxes.

Staff believes the amended project, with the attachment of six additional special conditions, would be consistent with the policies of Chapter 3 of the Coastal Act.

Staff recommends that all of the ten special conditions of the original permit approved by the Commission be reimposed verbatim and remain in full force and effect for the amended project. These special conditions set forth requirements relating to: (a) performing the maintenance dredging program pursuant to an approved final monitoring plan; (b) conducting the project work consistent with a dredge spoils slurry and hazardous materials spill contingency plan; (c) assuring compliance with authorizations and determinations issued by the U.S. Army Corps of Engineers, the National Marine Fisheries Service, the California Department of Fish and Game and the U.S. Environmental Protection Agency; minimizing impacts to eelgrass beds during shoreline revetment repair work; (d) placing and maintaining the spoils disposal pipeline outfall in a location that directs dredged discharges into the intertidal reaches of the beach receiving area; (e) conducting the beach disposal consistent with an approved disposal

outfall advisory signage plan; and (f) the erection of advisory signage at beach locations in proximity to the dredged materials disposal pipeline outfall.

The six new special conditions recommended by staff would assure that the amended development remains consistent with the policies of the Coastal Act. These revised conditions would require that the applicant submit, for the review and/or approval of the Executive Director: (1) a copy of any Letter of Modification to the FCWA Section 404 individual or nationwide permit issued to the Harbor District by the U.S. Army Corps of Engineers, or evidence that no such modification letter is needed, prior to commencement of dredging and beach disposal of the additional volumes of sediment authorized by the permit amendment; (2) confirmation from the National Marine Fisheries Service that the conclusions, terms and conditions set forth in the final biological opinion and incidental take statement, as extended for dredging during November 2006 through March 2007, remain applicable to the amended development; (3) confirmation from the California Department of Fish and Game that the conclusions, terms and conditions set forth in the consistency determination prepared pursuant to the California Endangered Species Act, remain applicable to the amended development; (4) confirmation from the California Department of Fish and Game that the in-lieu funding provided to the Rocky Gulch Salmonid Access and Habitat Restoration Project remains applicable to the amended development, and that no additional in-lieu funding is required to offset any additional impacts to salmonids or their habitat; (5) confirmation from U.S. Environmental Protection Agency that the amended development remains in conformance with the Marine Protection, Research, and Sanctuaries Act; and (6) an end-of-project final report of the activities undertaken at the Samoa Beach outfall site to clean up solid waste debris entrained in the dredging works that had been transported and discharged onto the beach through the outfall and return the beach to pre-project conditions.

As conditioned, the project as amended would be consistent with the Chapter 3 policies of the Coastal Act, including the requirements of Section 30233 that permitted new development involving the dredging, diking, or filling or wetlands: (a) be for "maintaining existing, or restoring previously dredged, depths in existing navigational channels, turning basins, vessel berthing and mooring areas, and boat launching ramps," one of the limited number of allowable uses for filling, diking, and dredging; (b) have no other feasible less environmentally damaging alternative; and (c) provide all feasible mitigation measures to minimize adverse environmental effects. In addition, the expanded sediment dredging maintenance work would not result in significant adverse impacts, directly or cumulatively to terrestrial environmentally sensitive habitat areas, would further minimize water quality impacts, the project as amended would also continue to conform to the requirements of Sections 30230, 30231, and 30240 off the Coastal Act.

The motion to adopt the staff recommendation of approval with conditions is found on page 6.

STAFF NOTES:

1. Procedural Note.

Section 13166 of the California Code of Regulations states that the Executive Director shall reject an amendment request if: (a) it lessens or avoids the intent of the approved permit; unless (b) the applicant presents newly discovered material information, which he or she could not, with reasonable diligence, have discovered and produced before the permit was granted.

The Executive Director has determined that the proposed amendment would not lessen or avoid the intent of the conditionally approved permit. On May 22, 2006, Coastal Permit No. 1-05-039 (Humboldt Bay Harbor, Recreation, and Conservation District, Applicant) was approved by the Commission with ten special conditions intended to assure consistency with the provisions of the Coastal Act for protecting, environmentally sensitive habitat areas and coastal water quality. Although the now proposed expanded dredged materials maintenance work would entail additional development in and adjacent to additional environmentally sensitive areas in the marina waters, the project objectives of maintaining boating berths and docks would not change. In addition, the project limitations and performance standards established under the original permit and determined adequate for reducing the effects of the development in and on adjoining ESHA would not be reduced or otherwise altered. Moreover, the revised extraction volumes would not entail dredging or spoils removal of materials that had not been previously sampled and characterized for chemical constituents of concern, including furan/dioxins, polychlorinated biphenyls, or pentachlorophenol contaminants. Accordingly, the development as amended to increase the volume of dredged sediment materials from the dock and boating slip areas of the Woodley Island Marina would conform to the policies and standards of the Coastal Act with respect to designing and siting development so as to be compatible with environmentally sensitive habitat areas and to protect water quality.

Therefore, for the reasons discussed above, the Executive Director has determined that the proposed amendment would not lessen or avoid the intent of the conditionally approved permit and has accepted the amendment request for processing.

2. Commission Jurisdiction and Standard of Review.

The proposed amended project is located in the Commission's retained jurisdiction. The City of Eureka has a certified LCP, but the site is within an area shown on State Lands Commission maps over which the state retains a public trust interest (see Exhibit No. 3). Therefore, the standard of review that the Commission must apply to the amended project is the Chapter 3 policies of the Coastal Act.

3. Scope.

This staff report addresses only the coastal resource issues affected by the proposed permit amendment, provides recommended special conditions to reduce and mitigate significant impacts to coastal resources and achieve consistency with the certified LCP and the public access and recreation policies of the Coastal Act, and provides findings for conditional approval of the amended project. All other analysis, findings, and conditions related to the originally permitted project, except as specifically affected by this proposed permit amendment and addressed herein, remain as stated within the findings for the original development adopted by the Commission on February 9, 2006, and included as Exhibit No. 4 of this report.

I. MOTION, STAFF RECOMMENDATION, AND RESOLUTION:

The staff recommends that the Commission adopt the following resolution:

Motion:

I move that the Commission approve Coastal Development Permit Amendment No. 1-05-039-A1 pursuant to the staff recommendation.

Staff Recommendation of Approval:

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

Resolution to Approve with Conditions:

The Commission hereby approves the proposed permit amendment and adopts the findings set forth below, subject to the conditions below, on the grounds that the development with the proposed amendment, 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 all feasible mitigation measures and alternatives have been incorporated to substantially lessen any significant adverse impacts of the development on the environment.

II. STANDARD CONDITIONS: See attached.

III. SPECIAL CONDITIONS:

Note: Special Condition Nos. 1 through 10 of the original permit are reimposed as conditions of this permit amendment without any changes and remain in full force and effect. Special Condition Nos. 11 through 15 below, are additional new conditions attached to this permit amendment. For comparison, the text of the original permit conditions is included in Exhibit No. 4.

11. Continued Conformance with USACE Requirements

PRIOR TO COMMENCEMENT OF INCREASED SEDIMENT DREDGING AND DISPOSAL AUTHORIZED UNDER THIS PERMIT AMENDMENT, the permittee shall submit to the Executive Director for review, a copy of the Letter of Modification to U.S. Army Corps of Engineers (USACE) Permit No. 22215N, or evidence that no other USACE permit or authorization is necessary for aquatic nearshore disposal of dredge spoils from the Woodley Island Marina for each season's operation. The applicant shall inform the Executive Director of any changes to the amended project required by the U.S. Army Corps of Engineers or the U.S. Environmental Protection Agency. Such changes shall not be incorporated into the amended project until the applicant obtains a Commission amendment to this coastal development permit, unless the Executive Director determines that no amendment is required.

12. Continued Compliance with Final Biological Opinion

A. The permittees shall conduct the authorized amended maintenance dredging program consistent with the non-discretionary Terms and Conditions as set forth in the "Reasonable and Prudent Measures" section of the Section 7 Consultation and Final Biological Opinion, File No. 151422SWR2004AR9177, issued by the Southwest Region, National Marine Fisheries Service (NMFS) for the project on December 6, 2005, as extended for the November 2006 through March 2007 maintenance dredging season. Specifically, the permittees shall conduct the maintenance dredging pursuant to the following performance standards and reporting requirements:

(1) The cutter head suction dredge shall be no more than three (3) feet from the substrate during purging of the pipeline.

(2) The cutter head suction dredge shall not pump water during its descent prior to the beginning of dredging, or during ascent while moving between adjacent locations, especially within Woodley Island Marina.

(3) The plume of suspended sediment content within bay waters associated with dredging operations shall not exceed 200 mg/l beyond an area 1,000 feet abeam and 1,500 feet astern of the suction barge platform.

(4) A monitoring report shall be provided, with the date, time, dredge site, and location, and results, within 60 days following the completion of the

project, to the Arcata Area Office Supervisor, National Marine Fisheries Service.

(5) Equipment and material necessary to repair a leak or contain a pipeline break shall be readily accessible, either aboard the dredge itself or at a nearby staging area.

(6) In the event of a pipeline leak, break, or spill, NMFS shall be notified by phone within 24 hours. A final summary report of any events shall be provided to NMFS within 60 month of project completion to the above contact. The report shall include the time and location of the leaks(s) or break(s), and estimated amount of sediment discharged from the pipeline.

B. **PRIOR TO COMMENCEMENT OF OPERATIONS AUTHORIZED UNDER THIS PERMIT AMENDMENT**, the applicant shall submit a copy of an amendment or revision to the Section 7 Consultation and Biological Opinion or a new biological opinion covering the increase in maintenance dredging volumes authorized by this permit amendment.

C. Should the NMFS subsequently revise any of the terms and conditions of its biological opinion through term extensions or issuance of superseding opinions, the permittees shall inform the Executive Director of any changes to the project required by the U.S. Army Corps of Engineers as set forth in the revised biological opinion. Such changes shall not be incorporated into the project until the permittees obtain a Commission amendment to this coastal development permit, unless the Executive Director determines that no amendment is legally required.

13. Conformance with California Department of Fish and Game

PRIOR TO ISSUANCE OF COASTAL DEVELOPMENT PERMIT AMENDMENT NO. 1-05-039-A1, the applicant shall submit, for the review and approval of the Executive Director, a copy of any revised or amended consistency determination as may be prepared by the California Department of Fish and Game (CDFG) pursuant to Fish and Game Code 2080.1, in response to any incidental take permit for coho salmon (Oncorhynchus kisutch) issued by the National Marine Fisheries Service (NMFS) for the amended project. Alternately, the applicant shall submit, for the review and approval of the Executive Director, a copy of any Incidental Take Permit as may be issued by the CDFG for the amended project pursuant to Fish and Game Code 2081 in-lieu of a consistency determination. The permittees shall inform the Executive Director of any changes to the project required by any revised consistency determination issued by CDFG or any Fish and Game Code Section 2081(b) Take Permit issued by the CDFG. Such changes shall not be incorporated into the amended project until the permittees obtain a Commission amendment to this coastal development permit, unless the Executive Director determines that no amendment is legally required.

14. Coho Salmon Incidental Take Mitigation for Increased Dredging Volumes

PRIOR TO ISSUANCE OF COASTAL DEVELOPMENT PERMIT AMENDMENT NO. 1-05-039-A1, the applicant shall submit, for the Executive Director's review, evidence from the California Department of Fish and Game that the $15,000 in-lieu mitigation funding received to partially fund the Rocky Gulch Salmonid Access and Habitat Restoration Project is adequate to offset any additional impacts to salmonids or their habitat that may result from the increase in dredging volumes. The applicant shall inform the Executive Director of any changes to the mitigation required by the California Department of Fish and Game. Such changes shall not be incorporated into the amended project until the applicant obtains a Commission amendment to this coastal development permit, unless the Executive Director determines that no amendment is required.

15. Compliance with the Marine Protection, Research, and Sanctuaries Act

PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT AMENDMENT NO. 1-05-039-A1, the applicant shall submit shall submit evidence, for the review and approval of the Executive Director, that the U.S. Environmental Protection Agency (USEPA) has issued all required permits, authorizations, and certifications for the development as may be required under the Marine Protection, Research, and Sanctuaries Act for the maintenance dredging and unconfined open ocean disposal of dredged materials authorized by this permit amendment or evidence that no such certification or authorization is required. The permittees shall inform the Executive Director of any changes to the project required by the USEPA. Such changes shall not be incorporated into the amended project until the permittees obtain a Commission amendment to this coastal development permit, unless the Executive Director determines that no amendment is legally required.

16. Final Samoa Beach Clean Up Plan Report

A. The applicant shall implement all elements of the beach disposal site cleanup plan proposed by the applicant and submitted as part of the permit amendment application.

B. **WITHIN 90 DAYS OF COMPLETION OF ALL SEDIMENT MAINTENANCE DREDGING AND DISPOSAL ACTIVITIES AUTHORIZED BY THIS PERMIT, AND BY NO LATER THAN JULY 1, 2007,** the permittee shall submit, for the review and approval of the Executive Director, a report summarizing the activities undertaken pursuant to the Samoa Beach Outfall Clean Up Plan, as prepared by Pacific Affiliates, Inc., dated January 25, 2007. The report shall characterize the solid waste materials that were entrained within the dredging suction-cutter, transmitted through the slurry

pipeline, and discharged onto the Samoa Beach outfall site during maintenance dredging operations, including narrative and photographic documentation of the quantities and types of solid waste debris, dates the debris materials were encountered, and chronicling the clean up and waste disposal activities undertaken pursuant to the clean up plan.

III. FINDINGS AND DECLARATIONS.

The Commission hereby finds and declares as follows:

A. Project Background.

The Humboldt Bar Harbor, Recreation, and Conservation District (HBHRCD or "District") was created in 1970 by the California Legislature to serve the natural resource, recreational, shipping, and economic development management needs of Humboldt Bay and the smaller fishing ports to the north and south (i.e., Trinidad, Shelter Cove). The District functions as the Port Authority for the Port of Humboldt Bay and operates Humboldt County's largest marina, Woodley Island Marina.

In February 2006, the Commission approved Coastal Development Permit No. 1-05-039 authorizing maintenance dredging of a total of approximately 120,000 cubic yards of material from the Woodley Island Marina boat basin in Humboldt Bay (see Exhibit Nos. 1-3) contingent upon meeting certain prior-to-issuance conditions set forth in the notice. The dredging would be performed as a slurry via a pipeline to a beach disposal site on the ocean side of the Samoa Peninsula, the landmass that forms the western boundary of Humboldt Bay. The dredging would be performed at the same time as a maintenance dredging project along the Eureka waterfront by the City of Eureka that was considered concurrently as Coastal Development Permit Application No. 1-05-040. The two projects would be performed by the same contractor and would share the same disposal pipeline and disposal site.

On August 22, 2006, after satisfactorily completing all prior-to-issuance special conditions, primarily involving approval of a plan for monitoring conditions at and in proximity to the nearshore unconfined ocean disposal site, Coastal Development Permit No. 1-05-039 was issued to the HBHRCD. Following consideration of bids and the letting of contracts by the District, dredging operations commenced along the Eureka waterfront sites in November 2006.

Upon near completion of work along the Eureka waterfront sites and prior to redeploying the dredging equipment to Woodley Marina, on January 2, 2007, an updated pre-dredging hydrographic survey was performed in the marina for purposes of assessing the amounts and locations of shoaling with the facilities docks and boating slip areas. The survey found that over the nearly two-year period since the last bathymetric survey had been conducted in 2004, a significant quantity of additional sediment had accumulated within

the marina. Subsequently, on January 5, 2007, Pacific Affiliates, Inc., agents for the HBHRCD submitted a permit amendment request for authorization of an additional 38,000 cubic yards of sediment beyond the 120,000 cubic yards authorized by the Commission the preceding year.

B. Project and Site Description.

1. Originally Approved Project Locations and Descriptions

a. Dredging Site

The originally authorized 120,000 cubic yards of maintenance dredging is intended to restore the marina to its original design depth of –14.0 Mean Lower Low Water (MLLW) and –10.0 MLLW. The 335-berth marina was constructed in 1978, and is used by both commercial fishermen and recreational boaters. The dredging would be performed within the berthing areas and fairways of the marina over a total area of approximately 16.15 acres. Based upon hydrographic surveys conducted in 2004, the maximum cut (depth of material) was estimated to comprise approximately six feet. The marina would continue to operate during the dredging work to ensure commercial and recreational access to coastal waters.

b. Method of Dredging and Spoils Disposal

The cutter head suction pipeline dredging method authorized under the original permit involves use of a hollow suction pipe which extends to the bay floor. The pipe contains a rotating cutter head, which can be swept back and forth across the work area and can be extended into confined areas such as boat slips and under dock faces, etc. As material is loosened by the cutter, it is drawn up the suction pipe to the surface where the suction pipe is joined to a closed flexible pipeline for pumping to the disposal site. The material drawn up by the suction dredge consists of approximately 20% sediment and 80% bay water.

The dredge is a pontoon-mounted crane that lowers a dredge boom, containing a cutter head coupled with a suction pipe, to the bottom. As the cutter head rotates and loosens the bottom material, the material is drawn directly up the suction pipe to the surface and the slurry of sediment and water is then pumped through a floating semi-flexible disposal pipeline, assisted by land based booster pumps for pipeline transfer to the designated disposal area in the surf zone of the Samoa Peninsula.

The slurry pipeline consists of a 12-inch-diameter fused flexible plastic line. The suction pipe, with a pumping rate of 15-20 feet-per-second, removes approximately 200 cubic yards of solid material per hour depending on site conditions and dredging operators, and disposes of the material at a similar rate.

Unless maintenance or repair is necessary, the dredge operates 24-hours a day, six to seven days per week. The pipeline is inspected regularly and maintained to insure integrity and prevent leaks or breaks. The dredge and the shore-based booster pumps rely on diesel engines and generate the noise and exhaust roughly equivalent to that of a semi-tractor truck when operational. In order to purge the pipeline of any accumulated sediment, the cutter head is lifted off the bottom twice a day, and water from the water column is drawn into the cutter head for approximately twenty minutes.

The pipeline is floated across open water areas and weighted and submerged where crossing navigable waters. Placement of the pipeline in the water would be from a slow moving barge, and the pipeline would be routed through an existing carrier pipes and overland to the approximately 20 acre beach disposal site. The total length of the pipeline is 21,400 feet (4.5 miles), with approximately 6,000 feet overland, and the remaining 15,400 feet in Humboldt Bay.

The line extends on floats from the dredging location to the State Route 255 (SR 255) right-of-way; SR 255 is the highway that crosses Humboldt Bay between Woodley Island and the Samoa Peninsula in a series of bridges. The pipeline is placed along the shoulder of the right-of-way where the highway crosses Woodley and Indian Island at ground level, and placed in the water in the shadows of the bridges where the highway crosses water. In tidal locations, the pipeline is floated into position at high tide to avoid unnecessary disturbance to the mudflats. Where the line would cross navigable waters, weights are attached to submerge the line and permit the normal passage of vessels. Buoys and lights would be installed to prevent navigational hazards. A *Notice to Mariners* was also being filed with the U.S. Coast Guard for the duration of the project, advising marine travelers of the location of the pipeline and dredging activities. Once the pipeline reaches the Samoa Peninsula, the line crosses under the Northwestern Pacific Railroad and New Navy Base Road through existing carrier pipes and then continues across the dunes of the North Spit via off-road vehicle trails to the surf zone disposal site. The slurry material is pumped through the pipeline to the disposal site under pressure from several in-line booster pumps.

Once the dredge and crew arrived in Humboldt Bay, mobilization of the spoils line, booster pumps and dredge took approximately 10 to 15 days. Dredging commenced once the pipeline had been installed, in November 2006 and will continue 24 hours-a-day, six-day-per-week until March 31, 2007, or until authorized extraction and disposal volumes have been attained.

c. Disposal Site

The location of the surf zone disposal site is shown on Exhibit No. 4. The pipeline discharges the dredged material directly into the intertidal zone. The

disposal site has been posted at several locations and barricades have been provided and maintained throughout the project to inform users of the Peninsula of the temporary project activities occurring there. The sediment being dredged consists of typically fine-grained material composed of approximately 15% sand, 45% silt, and 40% clays. By comparison, the composition of the beach adjoining the disposal area is approximately 95% sand content. The applicant anticipates that most of the sub-sand material will disperse as suspended sediment along the large Eel River basin shelf area offshore. According to the applicant, this shelf area also absorbs an estimated average annual sediment load of approximately 24,698,370 cubic yards discharged by the Eel and Mad River systems. The Eel River represents one of the largest suspended sediment sources in the world. The proposed dredging and dispersal would occur during the winter months, between November and mid-March, when ocean turbidity from the river discharges is at a natural seasonal maximum, to minimize the sedimentation impact on the ocean. The applicant expects that most of the material discharged to the surf zone disposal site will disperse offshore as part of cyclical process of erosion of the winter beach. Some of the material that erodes away will likely be deposited again at the site as part of the natural spring beach build up, but the applicant indicates that all of the material should leave the site within two years.

d. Shoreline Protective Structural Repairs

Concurrently with the dredging of the berthing areas, repairs are also to be made to the revetment armoring that lines the marina shoreline. As a result of high tides and storm surge, some of the 500-lb quarry stone riprap along an approximately 100-foot-long run of the rock slope revetment that has become dislodged and fallen into the adjacent berthing areas to be dredged. During the course of the suction dredging the stones will be unearthed and a land-based excavator or other mechanized heavy equipment capable of lifting a ¼-ton rock at a boom length will extricate the rocks from the silted in area and replace them back into the rock slope works.

e. Coho Salmon Incidental Take Mitigation

As mitigation for the estimated thirty individual juvenile coho salmon that are anticipated to be lost by entrainment into the cutter-suction dredging intake during sediment excavation operations, the applicant has provided in-lieu mitigation funding of the Rocky Gulch Salmonid Access and Habitat Restoration Project being undertaken on Rocky Gulch, a small, first-order watercourse draining into Arcata Bay. This project entails a variety of in-stream restoration activities for improving access into and habitat conditions within this coastal watershed. Specific work to be performed includes replacing tide gates to allow for unimpeded fish passage, increasing tidal marsh areas for juvenile salmonid

rearing habitat, widening the channel and overflow floodplain to better contain winter floods and protect adjoining grazing uses, revegetated creek reaches with native vegetation, and replace culverts that currently bar fish access upstream to spawning areas (see Coastal Development Permit No. 1-05-009). Based upon consultation with and concurrence of the California Department of Fish and Game, the applicant has provided partial funding for the Rocky Creek project in the amount of $15,000 to be used by the CDFG at its sole discretion for performing the associated stream restoration work.

The entire extent of the project, except for the upland portion of the slurry pipeline route, is located within the Commission's retained jurisdictional area. The segment of pipeline that extends over the Samoa Peninsula from the bay to the mean high tide line of the surf zone disposal site is located within the coast permit jurisdiction of Humboldt County. The County approved a coastal development permit (CDP-04-37) and a coastal use permit (CUP-04-13) on January 20, 2005.

2. Permit Amendment

As proposed under this permit amendment application, an additional 38,000 cubic yards of accumulated sediment would be dredged from the docks and boat slips of the Woodley Island Marina and transported through the slurry pipeline for nearshore disposal at the beach spoils outfall situated on Samoa Peninsula. This increase in sediment volume represents the net influx of silt and other sediment materials that accumulated in the marina waters between 2004, when the former pre-project hydrographic survey was conducted, and when an updated pre-extraction survey was completed in early January 2007. To achieve the –10.0 to –14.0 MLLW design depths for the District's berthing facilities, all of the accumulated sediment overburden in the marina waters above these depths, totally some total of 158,000 cubic yards, must be removed. Consequently, as the original permit only authorized extraction and disposal of 120,000 cubic yards of dredged materials, a permit amendment is required (see Exhibit No. 4).

In addition to increasing the maximum permitted volume of dredged materials, the applicant is also seeking two additional revisions to the dredged materials maintenance project:

First, in response to the presence of accumulated, relatively small (less than ¼ cubic foot) solid waste debris encountered near the beach outfall that has been entrained into the suction cutter dredge works and transported through the slurry pipeline, the applicants are requesting to amend the project description of include a clean up plan. The plan calls for daily documentation of materials deposited by the pipeline onto the beach, daily and weekly extrication and proper disposal of the deposited waste materials from the beach, and efforts to restoring the beach to its pre-project conditions once the maintenance dredging program has been completed (see Exhibit No. 3).

Secondly, in response to observed lateral shifting of the slurry pipeline across mudflat and eelgrass vegetated areas of Humboldt Bay, the applicants request to revise the project to install 1,500-lb., pre-fabricated anchor blocks at key locations along the in-water route of the pipeline to prevent further scouring of these environmentally sensitive areas (see Exhibit No. 3).

C. <u>Need for Dredging and Dredge Spoils Disposal</u>.

The project as proposed to be amended would continue to support the continued use of berthing areas within Humboldt Bay for recreational boaters and commercial fishermen. The Coastal Act contains strong policy language supporting marina uses, including those which require dredging. Section 30220 provides that:

> *Coastal areas suited for water-oriented recreational activities that cannot readily be provided at inland water areas shall be protected for such uses.*

Section 30224 provides that:

> *Increased recreational boating use of coastal waters shall be encouraged, in accordance with this division, by developing dry storage areas, increasing public launching facilities, providing additional berthing space in existing harbors, limiting non-water-dependent land uses that congest access corridors and preclude boating support facilities, providing harbors of refuge, and by providing for new boating facilities in natural harbors, new protected water areas, and in areas dredged from dry land.*

Section 30234 provides, in part that:

> *Facilities serving the commercial fishing and recreational boating industries shall be protected and. where feasible, upgraded…*

Section 30255 provides that:

> *Coastal-dependent developments shall have priority over other developments on or near the shoreline. Except as provided elsewhere in this division, coastal-dependent developments shall not be sited in a wetland. When appropriate, coastal-related developments should be accommodated within reasonable proximity to the coastal-dependent uses they support.*

In December 2005, the Woodley Island Marina served as homeport to 260 vessels, of these 102 were classified as commercial fishing vessels and 152 as recreational boats. In addition, the 87-foot U.S. Coast Guard Coastal Patrol Boat *Barracuda* (WPB-87301), the only port security and search and rescue vessel of this size between Crescent City and

Bodega Bay, 44-foot Humboldt County Sheriff Marine Patrol Vessel, and the 64-foot ocean-going tug *M/V Koos King* (WRC7731), the sole pilot boat on Humboldt Bay equipped for transporting bar pilots and guiding large commercial ships and hazardous cargoes across the notoriously treacherous Humboldt Bay entrance bar, are also stationed at Woodley Island. Based upon 2004 economic data, 19,300,000 pounds of fish were landed at District and City docks and quays, representing some$12,900,000 in market valuation.

Currently, many of the "slips" within the marina have aggraded with sediment to the point where docked vessels lay on exposed bay muds during normal low tide periods. Based on present conditions at the marina and berthing areas, any further delays in maintenance dredging can result in a number of impacts, either directly to these vessels, to the city and District harbor facilities, or regionally to the Port of Humboldt Bay. These impacts can be categorized as follows:

- Physical damage to vessels and injury to crew members.
- Delays in fishing operations – loss of competitiveness with other port fleets.
- Loss of income due to delays in shipping and landing catches.
- Physical damage to public marina facilities.
- Loss of income to local governments that supply marina services.
- Environmental damage due to damage to marina facilities and/or vessels.
- Loss of life and property due to damaged vessels or delays in transiting the bay's entrance.
- Loss or diminished capability of local law enforcement, port security and search and rescue and environmental response.
- Loss or diminished commercial maritime shipping.

The maintenance dredging and nearshore dredged material disposal project as proposed to be amended would continue to support the continued use of the Woodley Island Marina for these priority uses. Without full dredging of the accumulated sediments to the design depths of the berthing areas and slips, filling of the marina's waters to depths that could not accommodate boat and watercraft docking would occur more rapidly, resulting in the marina becoming unusable for the high priority coastal dependent uses within a shorter timeframe. Adequate mooring facilities that do not similarly need maintenance dredging and the disposal of the dredged materials are not available elsewhere within Humboldt Bay.

Based upon the important functions the harbor docking and berthing facilities provide for commercial fishing and shipping, recreational boating, and essential public services, the Commission has determined that a need exists for dredging of the project areas. Therefore, the Commission finds that the proposed amended dredging and the disposal of the dredged materials would support recreational boating and commercial fishing, consistent with Sections 30220, 30224, 30234, and 30255 of the Coastal Act.

D. Protection of Marine and Estuarine Resources.

A number of Coastal Act policies address the protection of marine resources from the impacts of dredging and dredge spoils fill projects. These policies include, among others, Section 30231 and 30233.

Section 30231 of the Coastal Act provides as follows, in applicable part:

> *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...*

Section 30233(a) provides as follows, in applicable part:

> *(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:*
>
> *(1) New or expanded port, energy, and coastal-dependent industrial facilities, including commercial fishing facilities.*
>
> *(2) Maintaining existing, or restoring previously dredged, depths in existing navigational channels, turning basins, vessel berthing and mooring areas, and boat launching ramps.*
>
> *(3) In wetland areas only, entrance channels for new or expanded boating facilities; and in a degraded wetland, identified by the Department of Fish and Game pursuant to subdivision (b) of Section 30411, for boating facilities if, in conjunction with such boating facilities, a substantial portion of the degraded wetland is restored and maintained as a biologically productive wetland. The size of the wetland area used for boating facilities, including berthing space, turning basins, necessary navigation channels, and any necessary support service facilities, shall not exceed 25 percent of the degraded wetland.*
>
> *(4) In open coastal waters, other than wetlands, including streams, estuaries, and lakes, new or expanded boating facilities and the placement of structural pilings for public recreational piers that provide public access and recreational opportunities.*

(5) Incidental public service purposes, including but not limited to, burying cables and pipes or inspection of piers and maintenance of existing intake and outfall lines.

(6) Mineral extraction, including sand for restoring beaches, except in environmentally sensitive areas.

(7) Restoration purposes.

(8) Nature study, aquaculture, or similar resource dependent activities.

(b) Dredging and spoils disposal shall be planned and carried out to avoid significant disruption to marine and wildlife habitats and water circulation. Dredge spoils suitable for beach replenishment should be transported for such purposes to appropriate beaches or into suitable long shore current systems.

(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. [Emphases added.]

The above policies set forth a number of different limitations on what development may be allowed in wetlands and other water bodies within the coastal zone. For analysis purposes, the limitations pertinent to the proposed amendment to increase the volume of material to be dredged include the following:

- That feasible mitigation measures have been provided to minimize adverse environmental effects;
- That the project has no feasible less environmentally damaging alternative;
- That the biological productivity and functional capacity of the habitat shall be maintained and enhanced where feasible; and

1. Feasible Mitigation Measures

The second test set forth by Section 30231 and 30233 of the Coastal Act is that feasible mitigation measures have been provided to minimize adverse environmental effects. The Commission must examine the potential impacts of the project on marine and estuarine resources for the non-exempt portions of the project within its jurisdictional area (i.e.,

excluding the project portions within the County of Humboldt's permitting jurisdiction.) The amended project could have eight potential adverse effects on such resources, including: (1) the removal of habitat at the dredging sites; (2) the entrainment of juvenile salmonids into the suction dredge pipeline during line flushing maintenance; (3) increasing turbidity levels at the dredge site; (4) increasing turbidity levels during installation and removal of the dredge spoils pipeline; (5) the covering of estuarine intertidal habitat along the route of the dredge spoils pipeline within Humboldt Bay; (6) accidental releases of the dredge spoils slurry and/or pumping-related fuels or lubricants; (7) disturbing marine intertidal habitat at the dredged material disposal site; and (8) degrading water quality at the nearshore dredged materials disposal site. All of these impacts were addressed by the original approval of the Commission and none of these impacts, have been determined to be significant for the project as amended.

(1) Removal of Habitat at Dredging Sites.

The site of the proposed amended dredging within the Woodley Island Marina basin provides soft bottom habitat that may be habitat for a variety of benthic organisms. In addition, sparse clumps of eelgrass have materialized sporadically along the slope of the marina since the previous dredging was performed in 1998. The proposed amended dredging would continue to involve removal of much of this soft bottom habitat area. However, although an increased amount of sediment would be removed from the dock and boating slip areas, the impacts to bay bottom habitat continue to be considered to be insignificant for several reasons. Firstly, when the marina was created in 1978, the eelgrass and soft bottom habitat that was removed by excavating the marina basin was reestablished elsewhere in Humboldt Bay as a mitigation measure. At the time, it was recognized that the marina would require periodic maintenance dredging and the mitigation was required to ensure that creation of the marina and its subsequent maintenance dredging would not result in a net loss of habitat. Secondly, as occurred after the 1988 and 1998 maintenance dredging projects, the site can be expected to be re-colonized by the flora and fauna that would be temporarily displaced by the project. These organisms grow in sufficient abundance in areas adjacent to the marina that a ready source of colonizers exists to replace the organisms that are lost.

(2) Entrainment of Juvenile Salmonids

The U.S. Army Corps of Engineers initiated a formal Section 7 consultation pursuant to the federal Endangered Species Act (FESA) of 1973, as amended (16 USC. 1531 et seq.) with the National Marine Fisheries Service (NMFS) regarding potential impacts from the original proposed cooperative maintenance dredging project. Humboldt Bay is a component of the designated critical habitat for the Southern Oregon/Northern California Coastal (SONCC) evolutionary significant unit of coho salmon (Oncorhynchus kisutch) and is suitable migration habitat for the SONCC coho, Northern California (NC) steelhead (Oncorhynchus mykiss), and California Coastal (CC) Chinook salmon

(Oncorhynchus tshawytscha). The site may also be suitable rearing habitat for Chinook salmon.

A biological opinion was subsequently prepared and issued by NMFS on December 6, 2005 for the originally approved project. Because the maintenance dredging would be conducted within a timeframe concurrent with the out-migration of coho salmon (Oncorhynchus kisutch) of the Southern Oregon/Northern California Coast (SONCC) Evolutionarily Significant Unit (ESU), the staff of NMFS have indicated to the Commission staff that the agency expects approximately 30 individual SONCC coho salmon smolts to be exposed to risks of potential entrainment by the dredge. In addition, larval stage Pacific herring (Clupea pallasi) and Dungeness crab (Cancer magister) are expected to be entrained as well. Exposure of these individuals would be limited to late February and March, and limited primarily to within and in the vicinity of Woodley Island.

To minimize the risks of entrainment of these species, NMFS staff recommend that the periodic flushing of the pipeline: (1) be undertaken at a depth of three feet from the bay bottom; and (2) water intake from the middle or surface of the water column be prohibited. NMFS staff have stated that these dredge operational measures would reduce the potential risks of entrainment of these environmentally sensitive species to a less than significant level.

As discussed in Project Description Finings Section IV.A, to mitigate for the anticipated loss of approximately 30 individual juvenile SONCC coho salmon from the originally approved project, the applicant has undertaken in-lieu mitigation to provide funding in the amount of $15,000 for the Rocky Gulch Salmonid Access and Habitat Restoration Project.

To assure that the potential entrainment of juvenile salmonids and other estuarine species is minimized and that the proposed mitigation for the loss of 30 coho salmon is provided, the Commission imposes Special Condition Nos. 4 and 8 in the original permit. These conditions are reimposed as conditions of this amendment and remain in full force and effect. Special Condition No. 4 sets forth as project performance standards the above-listed criteria for flushing the dredge spoils slurry pipeline recommended by NMFS for minimizing entrainment of estuarine organisms. Special Condition No. 8 requires the applicant to implement the coho salmon mitigation proposal as proposed. Furthermore, to verify that both the performance standards and mitigation are adequate to offset any additional impacts to salmonids and salmonid habitat associated with increases in dredging and disposal quantities, the Commission attaches new Special Condition Nos. 12 and 14. Special Condition No. 12 requires the permittee to provide, for the review and written approval of the Executive Director, verification from the National Marine Fisheries Service (NOAA Fisheries) that the findings, conclusions, and requisite reasonable and prudent measures set forth in the NOAA Fisheries final biological opinion, as extended for the November 2006 through March 2007 maintenance dredging season, remain valid and that no further consultation is required for the increases in dredged material volumes, provisions for anchoring of the slurry pipeline, and conducting

the beach clean up program associated with the amended project. Special Condition No. 14 similarly requires the permittee to provide, for the review and written approval of the Executive Director, evidence from the California Department of Fish and Game that the $15,000 in-lieu mitigation funding provided to the Rocky Gulch Salmonid Access and Habitat Restoration Project remains adequate for offsetting any increased impacts to salmonids and their habitat associated with the amended project and that no additional mitigation is required by the Department.

(3) Temporary Increase of Turbidity at Dredge Sites.

As the proposed amended dredging would involve greater quantities of dredged material being extracted, some corresponding increase to the amount of sediment disturbance and associated temporary changes in turbidity in the immediate areas of the dredging is expected. Such increased turbidity can have deleterious effects on the estuarine habitat, burying eelgrass and other vegetation and disturbing the spawning, feeding, and other activities of fish and other fauna. However, the proposed amended project would continue to minimize turbidity impacts and reduce them to a level of insignificance through: (1) the use of a suction dredge which creates much less turbidity than other forms of dredging; (2) the use of a pipeline to transport the dredge material to the disposal site as opposed to other forms of transferring the material, such as the use of a hopper barge; and (3) timing the project to occur in the winter months when natural turbidity is high due to increased local river flows.

(4) Temporary Increase of Turbidity During Installation and Removal of the Dredge Spoils Pipeline.

The proposed amended project would continue to depend upon installation and removal of the dredge spoils transmission pipeline that could disturb sediments within the mudflat areas along the pipeline's route. Increased turbidity can have deleterious effects on the estuarine habitat, burying eelgrass and other vegetation and disturbing the spawning, feeding, and other activities of fish and other fauna within the water column and along the bay bottom. However, consistent with the biological opinion issued by NMFS, the proposed amended project would continue to minimize turbidity impacts and reduce them to a level of insignificance through: (a) avoiding mudflats to the greatest extent practicable during installation of the dredge disposal line; (b) installing and removing the pipeline during high tide when these sensitive areas are inundated to assure that no vessel propellers, anchors or dredging equipment are dragged over the mudflats. Furthermore, while the net volume of sediments being transmitted through the pipeline would be increased under the amended project, these changes would not necessitate additional episodic installation and/or removal of the pipeline.

(5) Covering of Habitat Along the Dredge Spoils Pipeline within Humboldt Bay.

The routes of the proposed dredge spoils pipeline through Humboldt Bay provide soft bottom habitat that may be habitat for a variety of benthic organisms. In addition, sparse clumps of eelgrass have materialized sporadically in various berthing areas since the previous dredging was performed. Though unanticipated when the original permit was being considered, the placement of the pipeline through mudflat and eelgrass vegetated area has been subsequently found to temporarily disturb some of this soft bottom habitat area as the pipeline shifts laterally across the mudflats with the flooding and ebbing of tides on the bay. While this scouring of surficial mudflat habitat and the sparse patches of eelgrass currently existing along the pipeline routes does not, in itself, constitute a significant direct impact to biological productivity on the bay, and while the flora and fauna that would be temporarily displaced by the project would continue to be expected to re-colonize following completion of maintenance dredging activities, the scouring effects associated with shifts in the pipeline nonetheless entail cumulative impacts to these environmentally sensitive coastal resources. Accordingly, in response to this heretofore unanticipated impact, the applicant proposes to amend the project to include anchoring of the pipeline at certain locations along its route across the bay. The slurry transmission pipeline would be anchored directly by a 1,500 lb. pre-fabricated concrete block positioned approximately 400 feet offshore of where the pipeline route enters the bay along the northern shoreline of Woodley Island and between the Samoa Channel and where the pipeline goes ashore onto the Samoa Peninsula. In addition, the amended project calls for an extra section of surplus pipeline affixed onto the side of the Highway 255 roadbed to be draped over the active slurry line between the anchor points and to further dampen any additional lateral "whipping" of the pipeline segment. These measures, as proposed to be incorporated within the amended project would reduce the impacts of the development to estuarine habitat along the slurry pipeline route to less than significant levels.

(6) Accidental Release of Dredge Spoils Slurry or Hazardous Materials.

The amended project would continue to entail the transmission of a dredge spoils slurry through a 12-inch diameter flexible pipeline over a distance of 21,400 feet (4.5 miles), with approximately 6,000 feet of the pipeline crossing overland, and the remaining 15,400 feet traversing the waters of Humboldt Bay. If a rupture should occur in the slurry transmission pipeline, an uncontrolled release of highly turbid water and sediment into environmentally sensitive habitat area within the bay, estuarine or marine wetlands, or upland areas could result with potentially deleterious effects to the plant and animals that utilize these areas as habitat.

Additionally, re-fueling or lubricating motorized equipment (i.e., the in-line booster pumps) during the course of maintenance dredging activities is anticipated. An accidental spill of pump fuel or lubricants could adversely affect the environmentally sensitive resources within the project area and the water quality of the adjoining estuarine and marine environments. To ensure that potential adverse impacts from accidental dredge spoils slurry or fuel or oil spills to land and marine resources continue to be

reduced to less-than-significant levels, the Commission reimposes Special Condition No. 2. Special Condition No. 2 requires the applicant to undertake the proposed amended development consistent with an approved Dredge Spoils Slurry / Hazardous Materials Spill Contingency Plan. This plan, as approved by the Commission in August 2006, includes pipeline monitoring and leak response provisions and water quality best management practices for the prevention of hazardous material spills and provisions for prompt containment and clean-up of any spills which may inadvertently occur.

(7) Disturbance of Habitat at the Nearshore Disposal Site.

The surf zone disposal site is inhabited primarily by intertidal invertebrate fauna, including motile, burrowing crustaceans and polycheate worms. As noted previously, the site was used for the similar disposal of approximately 226,238 cubic yards of dredged material in 1998. A monitoring study was conducted prior to, during, and just after this last episode of dredged material disposal. The monitoring report stated that prior to the last use of the area for dredged material disposal, in overall species richness, Samoa Beach was intermediate between local semi-protected sandy beaches and sandy beaches exposed to extreme wave conditions. In both pre- and post-discharge periods, the beach fauna was dominated in species composition and numerically by the burrowing isopod *Excirolana linguifrons* and the burrowing marine worm *Euzonus williamsi*. The abundance of *E. linguifrons* and *E. williamsi* appears to have been much less in 1988 than was collected in 1998. The abundance of other sand beach animals was comparable in 1988 and 1998. By the August sampling period in 1998, the level of faunal similarity approximated that found in the pre-discharge sampling. The reappearance of mole crabs (*Emerita analoga*) in August samples at all three transects and its abundance at the discharge transect indicates that little residual biological effect of dredge spoils could be detected at the discharge point.

As was the case for the originally approved project, the material to be discharged from the proposed amended project would temporarily bury this habitat, until wave and tidal action disperses the material to the offshore shelf. Even with the additional 38,000 cubic yards of materials requested by the permit amendment, the volumes will continue to be less than that discharged during past maintenance dredging operations. Accordingly, impacts to the habitat from the amended project are expected to be similar to those that occurred in 1998. According to the 1998 monitoring study, the habitat area recovered rapidly:

> Based on the present study, negative effects of temporary discharge of dredge spoils on intertidal fauna of Samoa Beach were localized and transitory, primarily affecting the abundance of characteristic beach species in the immediate vicinity of the disposal outfall. Within 1 month following the end of disposal operations, most species characteristic of this beach were present at the outfall site, although at reduced densities. Approximately 4 months following termination of beach disposal,

> populations at the Disposal Site had recovered to levels comparable to those at the Control Site.

Thus, based on the result of the 1998 monitoring report, the impacts of the proposed discharge of 158,000 cubic yards of dredged material on the surf zone habitat, as proposed in the permit amendment request, can be expected to continue to be temporary and insignificant.

(8) Water Quality at the Nearshore Disposal Site.

Physical and Chemical Suitability of Dredged Materials for Nearshore Disposal

As detailed at length within Section IV.C.2(8) of the adopted findings for the original permit (see Exhibit No. 5), substantial controversy continues to exist surrounding the appropriateness of the surf zone disposal methodology for dispensing with the dredged materials removed from the Woodley Island and Eureka waterfront dock and boating slip sites. Although the proposed amended development requested by the applicant would result in a 31.6% increase in the overall volume of sediments being discharged into the nearshore environment, this recently deposited sediments comprising the net additional 38,000 cubic yards of material would not be markedly different in physical composition, including both sediment fraction size percentages and concentrations of contamination by chemicals constituents of concern, from that comprising the 120,000 cubic yards of spoils originally authorized for extraction and disposal. These newly accumulated materials were sampled in November 2005 alongside the pre-2004 deposited sediments and characterized in a resulting laboratory analysis presented in the December 12, 2005 "Sampling Results Report for Dioxin/Furan, PCB, and PCP Testing" prepared by Pacific Affiliates, Inc. Accordingly, no analytical gap exists with regard to the characterization of the additional sediments to be removed as proposed by the applicant in the permit amendment request and the concluded appropriateness for nearshore unconfined disposal of these materials as originally set forth in the adopted findings for the original permit.

On October 25, 2006, the U.S. Army Corps of Engineers issued a Letter of Modification to FCWA Section 404 Individual Permit No. 22216N, authorizing an increase in the dredged materials volumes from approximately 120,000 cubic yards to 265,000 cubic yards for the remainder of the permit set to expire on March 15, 2008.[1] This expansion in

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[1] The Commission notes that while the modified USACE permit may allow for dredging up to 265,000 cubic yards of sediment material through March 15, 2008, any extraction above any beyond the 158,000 cubic yards authorized by this permit amendment will require that either a new coastal development permit or another amendment to this permit first be secured from the Commission. In addition, any dredging proposed for periods beyond March 31, 2007 may also require that additional consultations be conducted with NOAA Fisheries and the California Department of Fish and Game pursuant to federal and state endangered species acts prior to commencement of such an expanded maintenance dredging program.

permissible dredging volume had been sought by the district because appreciable amounts of sediment had accumulated within the marina during the nearly two year hiatus between when pre-dredging surveys had been conducted in 2004 and when the final authorizations had been secured from the Commission in February 2006. In addition, due to an oversight on the part of the maintenance program's developer, the ½-foot dredging overage allowance had not been included in the estimated extraction volumes when the Harbor District made application for all necessary permits to conduct the maintenance dredging work. Accordingly, in reliance on the supplemental chemical assays conducted in late 2005 which had fully characterized and cleared for nearshore unconfined ocean disposal the accumulated sediments —both those deposited prior to the 2004 hydrographic surveys and between 2004 and 2006 when all authorizations for the maintenance dredging had been secured— the Corps authorized the increase in maximum dredged material quantities.

Jack Gregg PhD of the Commission's Water Quality Unit technical staff has also reviewed the permit amendment request. Dr. Gregg observed that, as the additional accumulated sediment materials had been subjected to the November 2005 physical and chemical compositional analyses, no heretofore uncharacterized sediment materials would be extracted and disposed in the nearshore environment. Dr. Gregg further concludes that, with all other operational parameters remaining unchanged with respect to project scheduling and methodologies, the relatively small increase in dredged materials disposal volume to 158,000 cubic yards as proposed by the permit amendment request would not result in significantly greater impacts to the water quality or coastal waters or cause significant adversely impacts to littoral habitat as compared to that likely to result from nearshore disposal of the 120,000 cubic yards authorized under the original permit. Accordingly, the proposed increase in dredged materials disposal volumes would not result in a corresponding increase in impacts to water quality of the nearshore environment and the amended project continues to be consistent with Coastal Act Sections 30231 and 30233.

Furthermore, the Commission notes that, with regard to the proposed inclusion of a beach clean up plan component to the project, the potential introduction of solid waste into the marine environment, including forms of pollutants such as buoyant plastic debris documented as having potential to cause significant impacts to the health and safety of sensitive motile marine organisms such as marine mammals and fish species inhabiting near shore areas, would be avoided. This project task would further reduce impacts to marine water quality caused by the project.

Conclusion

Therefore, the Commission finds that the amended development, as proposed and conditioned to include specific mitigation measures where feasible, would continue to minimize significant adverse environmental effects of the project consistent with Sections 30231 and 30233.

3. Project Alternatives.

The third test set forth by the Coastal Act 's coastal waters and wetlands dredging, diking, and filling policies is that the proposed dredging or fill project must have no feasible less environmentally damaging alternative. Although the Commission determines that the proposed amended project will have no significant impacts, the Commission has also considered the various identified alternatives, and determines that none of them provides a feasible less environmentally damaging alternative. Section 30108 of the Coastal Act defines "feasible" as, "*capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors*."

As discussed in detail within Section IV.C.3 of the adopted findings for the original permit (see Exhibit No. 5), a total of seven possible alternatives to the proposed cutter-suction dredge / nearshore outfall disposal technique of the proposed sediment maintenance project were identified. The proposed changes to the project entailing increased sediment volumes, addition of a beach clean up component, and anchoring the slurry pipeline, as contained within the permit amendment request, would not in any way alter, modify, or influence the conclusion reached in the adopted findings for the original permit with regard to the feasibility or relative degree of environmental damage that would result from any of the studies alternatives. The preceding findings reached for the original permit, that no clear feasible environmentally less damaging alternative exists to the proposed development, would remain applicable to the amended project.

4. Maintenance and Enhancement of Estuarine and Marine Habitat Values

The fourth general limitation set by Sections 30231 and 30233 on dredging and fill projects is that any proposed dredging or fill project must maintain and enhance the biological capacity of the habitat, where feasible.

As discussed within the adopted findings for the original permit, although the project was found to have adverse impacts on habitat at both the dredging and disposal sites, the impacts were deemed to be insignificant, and would maintain the biological productivity and functional capacity of estuarine and open ocean habitats. To ensure that proper response is made to any unexpected impacts that might occur during the proposed project's implementation, the Commission found it necessary for the impacts of the proposed surf disposal to be monitored, with the results of the monitoring program used by the Commission and other agencies to evaluate future dredging projects so that future projects would be conducted in a manner that will maintain and enhance the biological capacity of the habitat.

Accordingly, to continue this monitoring effort for the amended project, the Commission reimposes as a condition of this amendment Special Condition No. 1 of the original

permit which requires that the permittee conduct monitoring over a five year period of: (1) the pattern and rate of dispersal of material deposited at the site (2) sediment characteristics at the disposal site and at the control site; (3) the species composition and abundance of intertidal invertebrates in areas directly affected by the disposal of dredge spoils and at a control site near the disposal area over a three year period; and (4) the effects of the surf zone disposal on fisheries consistent with a surf zone disposal monitoring plan approved by the Executive Director.

Moreover, to further assess the amount of incidental solid waste debris entrained in the dredging works and discharged onto Samoa Beach at the maintenance dredging outfall, and the success of the clean up plan to extricate and remove these materials prior to their entry into ocean waters, the Commission attaches Special Condition No. 16. Special Condition No. 16 requires the permittee within 90 days of the completion of all maintenance dredging activities to submit for the review and approval of the Executive Director a final report detailing the activities undertaken pursuant to the beach clean up plan.

As conditioned, the Commission finds that the proposed project is consistent with the requirements of Sections 30231 and 30233 of the Coastal Act that any proposed dredging or fill project must maintain and enhance the biological productivity and functional capacity of the habitat, where feasible.

E. Public Access.

Coastal Act Section 30210 requires that maximum public access opportunities be provided when consistent with public safety, private property rights, and natural resource protection. Coastal Act Section 30211 requires that development not interfere with the public's right of access to the sea where acquired through use. Coastal Act Section 30212 requires 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, as when adequate access exists nearby. 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 those 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 primary objective of the project, as proposed for amendment, remains for ensuring that vessels can continue to use berthing areas at the Woodley Island Marina for mooring. Accordingly, the amended project will continue to help maintain recreational boating as a form of public access to Humboldt Bay and the ocean. In addition, notwithstanding the increases in dredged material volume and the placement of anchoring devices within the bay mudflat areas, as the amended project would continue to: (1) have a duration of only a few months; (2) provide for all portions of the disposal pipeline and the dredging area

to be sufficiently marked to warn boaters of its presence; and (3) submerge all portions of the pipeline line crossing navigational channels to the bottom of the bay where they would not block vessel passage, the amended project will have no significant effect on vessel access during dredging operations. In addition, no changes would be made by the proposed project amendment to the provisions for marking, lighting, and noting the presence of the portions of the pipeline crossing the Samoa Channel or the erection of advisory signage along the Samoa Beach pipeline route such that risks to boating in the navigable waters of Humboldt Bay or interference with water-oriented recreational use of the outfall areas, respectively, would be increased by the amended project.

Therefore, for the reasons indicated above, the proposed amended project will not have any significant adverse effect on public access. The Commission finds that the proposed amended project, which does not include any new provision for shoreline public access, is consistent with the public access policies of the Coastal Act.

F. Visual Resources.

Section 30251 of the Coastal Act requires that the scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance, and requires in applicable part that permitted development be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural land forms, and to be visually compatible with the character of surrounding areas. Furthermore, Section 30240(b) of the Coastal Act states that development in areas adjacent to parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those recreation areas.

As detailed in Findings Section IV.B.2 above, the proposed project amendment entails, among other activities, the installation of anchoring blocks at strategic locations along the mudflat route of the slurry pipeline to lessen impacts to mudflat and eelgrass environmentally sensitive area caused by the lateral shifting of the pipeline with the ebb and flow of the tides. In addition, tied-down sections of surplus pipeline would be draped over the active slurry pipeline to further dampen side-to-side “whipping” of the pipeline and related scouring.

These new project components would be visible from a variety public vantage points along the shoreline and within Humboldt Bay. However, the anchoring blocks would be similar in appearance to several other developments within this section of the bay, including mooring pilings and dolphins, channel marker aides-to-navigation, docks and revetments, and the approach and abutment materials comprising the Highway 255 Bistrin, Christiansen, and Denbo Bridge spans. Moreover, the anchoring materials would only be in place for the remaining two months of the currently authorized 2006-7 dredging season.

Therefore, given its continued temporary and transient nature, and the fact that the proposed dredging and disposal activity as requested to be amended would not significantly alter scenic public views within and along the shorelines of Humboldt Bay along the route of the dredge spoils transmission pipeline or along the open ocean shoreline in proximity to the dredge spoils pipeline outfall, the Commission finds that the amended project is consistent with Sections 30251 and 30240(b) of the Coastal Act.

G. U.S. Army Corps of Engineers Review.

The project is within and adjacent to a navigable waterway and is subject to review by the U.S. Army Corps of Engineers (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 U.S. Army Corps of Engineers, the Corps will not issue a permit until the Coastal Commission approves a federal consistency certification for the project or approves a permit.

On December 10, 1997, pursuant to Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act, the U.S. Army Corps of Engineers (Corps) issued Permit No. 22215N to the Harbor District. The permit, which expires on March 15, 2008, is for maintenance dredging of accumulated sediment in the Outer and Inner Reaches of the Eureka Channel in Humboldt Bay, and for surf disposal of dredged material in the Pacific Ocean off the Samoa Peninsula, Humboldt County, California. The first dredging episode took place in 1998, and permitted the District to excavate and dispose of 67,155 cubic yards (cy) of dredged materials. Although SONCC coho salmon was listed as threatened at the time the permit was issued, the Corps did not consult NMFS. However, a special condition of each permit required completion of Section 7 Endangered Species Act (ESA) consultation, prior to authorization of any additional dredging episode. As discussed in the following finding, a final biological opinion regarding the project's potential impacts to coho salmon and the essential fish habitat was released on December 6, 2005 by the NMFS.

On October 25, 2006, at the behest of the applicant, the Corps issued a Letter of Modification to Permit No. 22216N increasing the allowable volume of dredging from approximately 120,000 to 265,000 cubic yards for the 1½-year remainder of the permit's term. To further ensure that the amended dredging activities ultimately approved by the Corps is the same as the amended project authorized herein, the Commission attaches new Special Condition No. 11. Special Condition No. 11 requires the applicant to demonstrate that it has all necessary approvals from the U.S. Army Corps of Engineers for that season's dredging operations prior to commencing dredging of any sediment beyond the 120,000 cubic yards authorized under the Commission's and Corps' original permits. The applicant is required to inform the Executive Director of any changes to the project by the Corps and not implement the changes until the applicant obtains a coastal development permit amendment.

H. Consultations by National Marine Fisheries Service.

Pursuant to Section 7 of the Federal Endangered Species Act (16 USC 1531) and the Magnuson-Stevens Fishery Conservation and Management Act (50 CFR 600), the U.S. Army Corps of Engineers Federal Clean Water Act Section 404 individual permit is subject to prerequisite and interim consultations with the National Marine Fisheries Service (NMFS) regarding the project's potential environmental effects on fisheries. A final biological opinion regarding the project's potential impacts to coho salmon and the essential fish habitat was released on December 6, 2005 by the NMFS for the November 2005 – March 2006 project timeline (see Exhibit No. 11). An extension to the opinion was subsequently granted by NMFS to cover the project's November 2006-March 2007 timeframe.

To ensure that amended project continues to incorporate appropriate operational procedures and restrictions identified by NMFS as necessary for minimizing the take of coho salmon to incidental levels, the Commission attaches new Special Condition No. 12. Special Condition No. 12 requires that the applicant submit, for the review of the Executive Director, a copy of any revised final biological opinion issued for the amended dredging project, and notification of any project changes recommended by NMFS in response to the increase in sediment dredging volumes. The Executive Director would determine whether an amendment to the coastal development permit would be required before dredging of sediment volumes greater than 120,000 cubic yards could commence.

I. Compliance with California Endangered Species Act.

SONCC coho salmon are also listed on the California Endangered Species Act as "threatened." As set forth in Section 2080.1 of the California Fish and Game Code, for any threatened or endangered species co-listed under both the Federal Endangered Species Act and the California Endangered Species Act, for which the responsible federal resource agency has issued an incidental take statement or permit, the California Department of Fish and Game (CDFG) is directed to conduct a consistency review of that federal agency's action with CESA. Alternately, the CDFG may issue its own take permit for the development or activity. To assure that the Commission is apprised of any changes to the consistency review that may result from the project amendments, the Commission attaches new Special Condition Nos. 13 and 14. Special Condition No. 13 requires that, prior to issuance of the subject coastal development permit amendment, the permittee submit evidence from the CDFG, for the review of the Executive Director, that any such changes to the CESA consistency determination do not obviate the findings for approval of the permit amendment. In addition, the condition requires that the amended project not commence until the Executive Director has reviewed the changes to the consistency determination take permit to determine whether an amendment to the coastal development permit is required. Special Condition No. 14 requires the permittee to provide notification to the Executive Director of any changes required by CDFG to the

in-lieu mitigation plan to partially fund the Rocky Gulch Salmonid Access and Habitat Restoration Project resulting from the proposed amended project. In addition, the condition requires that the amended project not commence until the Executive Director has reviewed the changes, if any, in the mitigation plan to determine whether the amendment to the coastal development permit is required.

J. Conformance with the Marine Protection, Research, and Sanctuaries Act

As part of the action taken on the original permit, the Commission required the permittee to substantiate that the maintenance dredging program would be in conformance with the Marine Protection, Research, and Sanctuaries Act (MPRSA) (see Exhibit No. 4, page 9). To ensure continued compliance with the MPRSA, the Commission attaches new Special Condition No. 15. Special Condition No. 15 requires the permittee to submit, for the review and approval of the Executive Director, evidence from the U.S. Environmental Protection Agency that the project as amended to increase the volume of nearshore unconfined ocean dredged sediment disposal will continue to be consistent with the MPRSA. In addition, the condition requires that the amended project not commence until the Executive Director has reviewed the changes, if any, in MPRSA compliance status to determine whether an amendment to the coastal development permit is required.

K. California Environmental Quality Act.

Section 13096 of the Commission's administrative regulations requires Commission approval of coastal development permit applications to be supported by a finding showing the application, as modified by any conditions of approval, to be consistent with any applicable requirement 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 substantially lessen any significant adverse effect the proposed development may have on the environment.

The Commission incorporates its findings on conformity with the Chapter 3 policies of the Coastal Act at this point as if set forth in full. These findings address and respond to all public comments regarding potential significant adverse environmental effects of the project that were received prior to preparation of the staff report. As specifically discussed in these above findings, which are hereby incorporated by reference, mitigation measures that will minimize or avoid all significant adverse environmental impacts have been required. As conditioned, there are no other feasible alternatives or feasible mitigation measures available which would substantially lessen any significant adverse impacts which the activity may have on the environment. Therefore, the Commission finds that the proposed project as amended can be found to be consistent with the requirements of the Coastal Act to conform to CEQA.

IV. EXHIBITS:

1. Regional Location Map
2. Vicinity Map
3. Proposed Amended Project Description Narrative and Marina Soundings, Solid Waste Cleanup Plan, and Slurry Pipeline Anchoring Details
4. Excerpts, Original Coastal Development Permit No. 1-05-039 Staff Report

APPENDIX A

STANDARD CONDITIONS

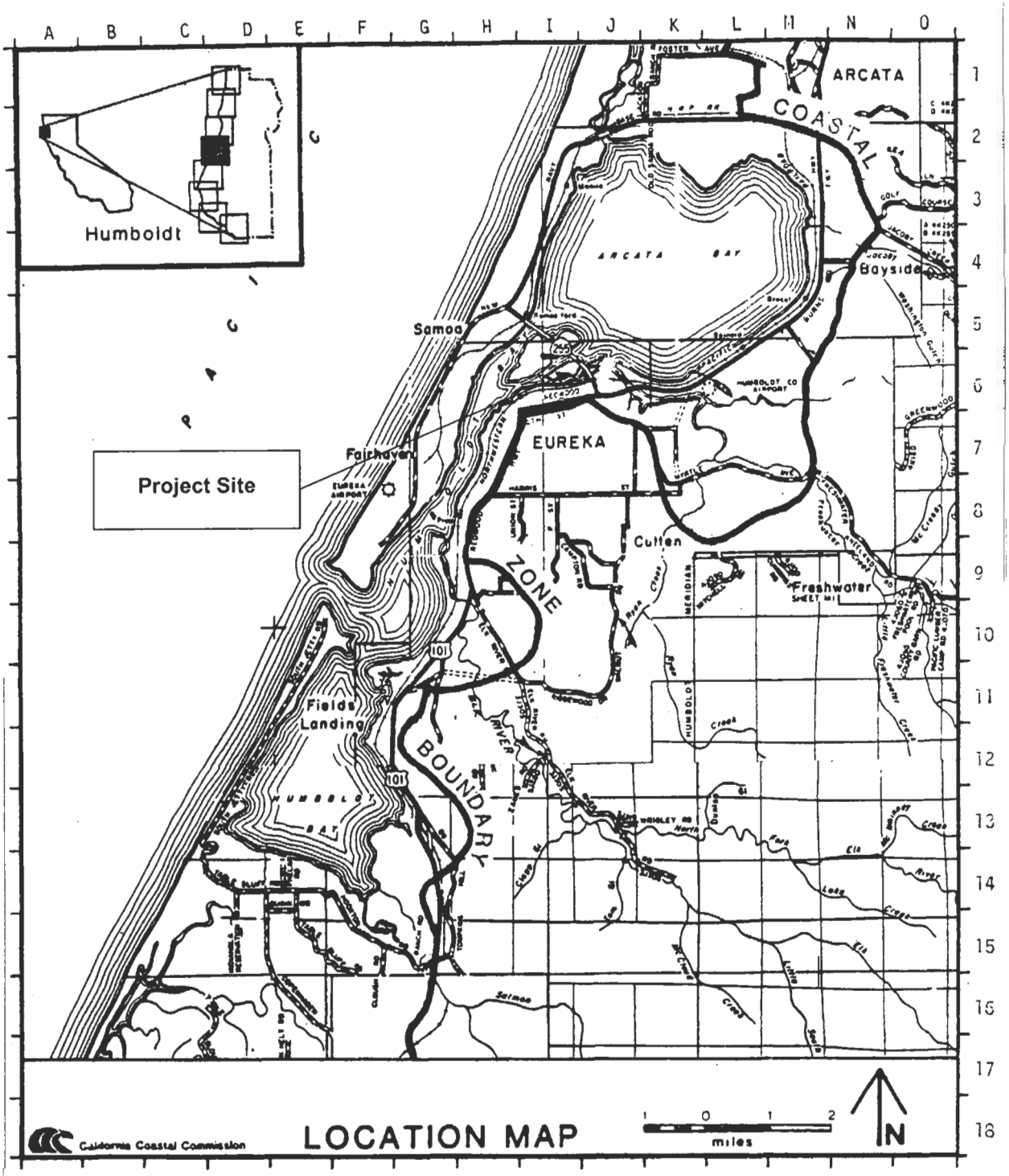
1. Notice of Receipt and Acknowledgement. The permit is not valid and development shall not commence until a copy of the permit, signed by the permittee or authorized agent, acknowledging receipt of the permit and acceptance of the terms and conditions, is returned to the Commission office.

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

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

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

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



County of Humboldt

EXHIBIT NO. 1

APPLICATION NO.

1-05-039-A1

HBHRCD

REGIONAL LOCATION MAP

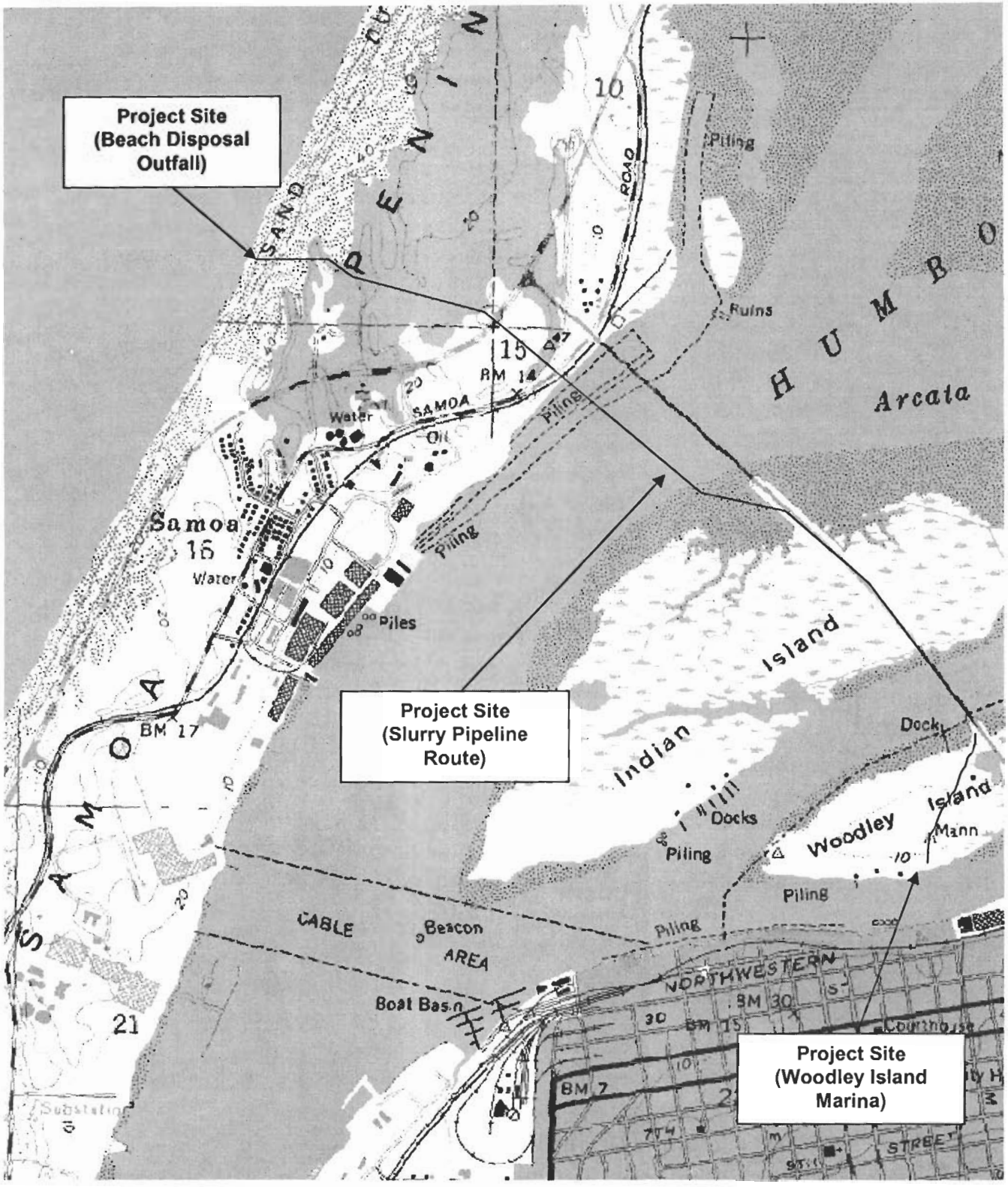


EXHIBIT NO. 2

APPLICATION NO.

1-05-039-A1

HBHRCD

VICINITY MAP

PACIFIC AFFILIATES, INC.
A CONSULTING ENGINEERING GROUP
990 W. WATERFRONT DRIVE • EUREKA • CA • 95501 • PH (707) 445-3001 • FAX (707) 445-3003

DAVID L. SCHNEIDER R.C.E. 27285
TRAVIS L. SCHNEIDER R.C.E. 67393

1-05-039-A1

RECEIVED
JAN 05 2007
CALIFORNIA
COASTAL COMMISSION

EXHIBIT NO. 3
APPLICATION NO.
1-05-039-A1 - HBHRCD
PROPOSED AMENDED PROJECT DESCRIPTION NARRATIVE & MARINA SOUNDINGS, SOLID WASTE CLEANUP PLAN, & SLURRY PIPELINE ANCHORING DETAILS (1 of 5)

January 5, 2007

Mr. Jim Baskin, AICP, Coastal Planner
California Coastal Commission
North Coast District Office
710 E Street, Suite 200
Eureka, CA 95501

Re: Woodley Island Marina Maintenance Dredging Project CDP Nos. 1-05-039.

Subject: Request to Amend Dredge Quantity in CDP 1-05-039

Dear Mr. Baskin:

On behalf of the Humboldt Bay Harbor, Recreation and Conservation District we would like to request that the California Coastal Commission (CCC) amend CDP 1-05-039 to increase the required dredge volume to reach the design depth and the overdredge allowance at the Woodley Island Marina.

In the CDP application submitted to you on September 7, 2004 the applicant applied to dredge 120,000 yd^3 from the Woodley Island Marina. The cooperative maintenance dredging project was permitted by the California Coastal Commission on February 9, 2006 and commenced on November 1, 2006. Over the last two years normal shoaling has occurred in Woodley Island Marina which has caused the need for the removal of additional sediment. The site was not dredged in 2004 or 2005 due to delays in the permitting process.

Pre project hydrographic survey conducted on January 2, 2007 indicate that 131,000 yd^3 need to be dredged to achieve the original design depth of -14.0 feet MLLW. Additional 27,000 yd^3 need to be removed to achieve the overdredge depth allowance of -15.0 feet MLLW. Therefore, a total of 158,000 yd^3 need to be dredged from Woodley Island Marina.

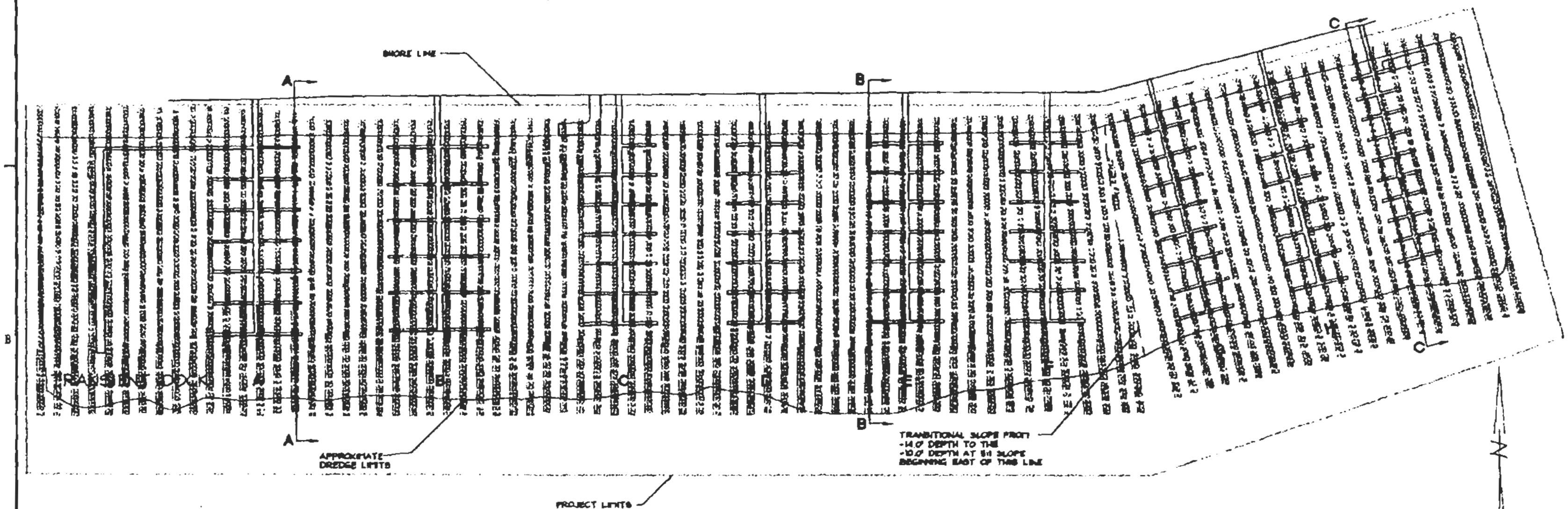
Please find attached the pre project hydrographic survey conducted on January 2, 2007 and three typical cross sections of the Woodley Island Marina that will illustrate the shoaling that has occurred in the Woodley Island Marina over the last two years.

Dredging at Woodley Island Marina has yet to commence and is expected to terminate on March 31, 2006 as approved by the CCC. Per our phone conversation this morning, please confirm that the material amendment will be heard by the Commission in the February 14 -16 meeting. Should you have any questions please contact me at (707) 445-3001 or via email to ytilles@pa-schneiderdock.com.

Sincerely,
Yoash Tilles
Yoash Tilles
Project Manager
E.I.T. 117566

Enclosures: Pre Project Hydrographic Survey and Typical Cross Sections - Woodley Island Marina (Jan 2007)

cc: Mr. David Hull – HBHRCD
Mr. Clyde Davis – US ACOE
Mr. Grace Cato – CA SLC
Ms. Diane Ashton – NMFS
File 04-930/940
Mr. Mike Knight – City of Eureka
Mr. Dean Prat- RWQCB
Ms. Vicky Frey – CA DFG
Mr. David Imper - USFWS



HALF SCALE

SURVEY NOTES

SURVEYED BY PACIFIC AFFILIATES CONSULTING ENGINEERS JANUARY 2, 2007.

SOUNDINGS ARE SHOWN TO THE NEAREST FOOT AND TENTHS OF A FOOT.

VERTICAL DATUM UTILIZED – MEAN LOWER LOW WATER (MLLW).

HORIZONTAL CONTROL REFERENCED TO NAD27, CALIF. ZONE 1, LAMBERT CONFORMAL PROJECTION.

SURVEY REPRESENTS THE CONDITIONS ON THE DATE SURVEYED (OCTOBER 26, 2006).

TIDE STATION FOR SURVEYS, NAIL & SHINER SET BY PACIFIC AFFILIATES, INC. ELEV. 12.23 MLLW.

NAIL & SHINER IS LOCATED ON TOP OF A 4x12 AT THE SCHNEIDER DOCK FLOATING DOCK.

THE MODEL WAS CREATED FROM A BATHYMETRIC SURVEY OF THE AREA SUPPLEMENTED BY A LAND BASED GPS SURVEY.

REVISIONS	BY

PACIFIC AFFILIATES
A CONSULTING ENGINEERING GROUP
990 WEST WATERFRONT DRIVE
EUREKA, CA 95501

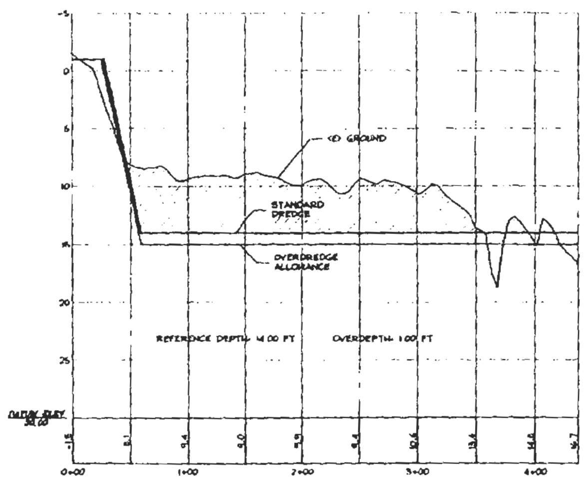
ENGINEER
DAVID L SCHNEIDER
990 WEST WATERFRONT DRIVE
EUREKA, CA 95501
(707) 445-3001

PRE-DREDGE SOUNDINGS

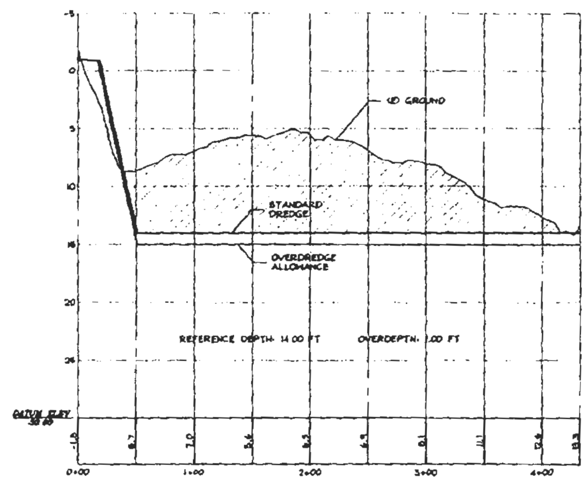
WOODLEY ISLAND MARINA MAINTENANCE DREDGING
WOODLEY ISLAND MARINA
EUREKA, CA 95501

Date: January 2, 2007
Scale: 1"=80'
Drawn by: TB, YT

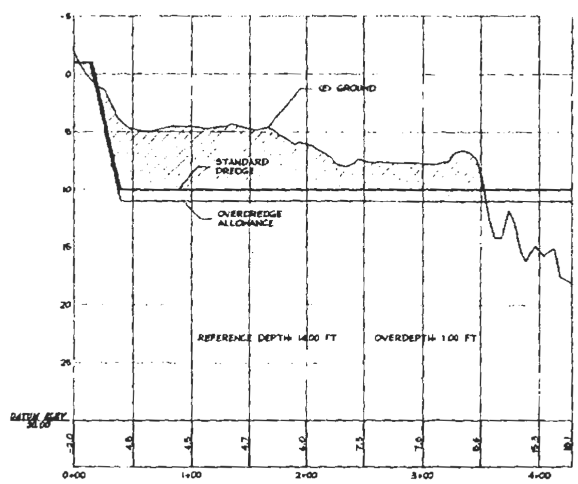
SHEET NUMBER
H-1



SECTION A-A



SECTION B-B



SECTION C-C

HORIZONTAL SCALE: 1"=50'
VERTICAL SCALE: 1"=5'

HALF SCALE

REVISIONS | BY

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ENGINEER
DAVID L. SCHNEIDER
990 WEST WATERFRONT DRIVE
EUREKA, CA 95501
(707) 445-3001

PRE-DREDGE SECTIONS

WOODLEY ISLAND MARINA
MAINTENANCE DREDGING
WOODLEY ISLAND MARINA
EUREKA, CA 95501

Date: January 2, 2007
Scale: AS NOTED
Drawn by: TS, YT

SHEET NUMBER
H-2

3 of 5

Description of Dredge Pipeline Anchoring

The dredging Contractor uses self fabricated 1,500 lbs concrete weights to submerge and/or anchor the pipeline (Photo 1). The cement blocks have clamps built onto them. The pipeline is clamped into place on the concrete weight. Nehalem River Dredging utilized a concrete block approximately 400 feet offshore from where the pipeline extends from the Samoa Bridge and into the Samoa Channel. The pipe that was laid along the Samoa Bridge (Hwy 255) when the project commenced, and extends approximately 100 feet onto the mudflats, was never used. On Monday morning, January 29, 2007at high tide the dredging Contractor, utilized his tug boat (Bar Fly) and moved the pipe not used above the pipe used and anchored with rope that section of pipe that is not used to the bank. Laying the pipe over the pipe in use, which is anchored with a 1,500 lbs concrete block, and anchoring the unused pipe to the bank will prevent scouring of the mudflats and will avoid impacts to eelgrass.

The self fabricated concrete weights are used to keep the channels clear for navigation and to prevent the pipe from moving by the currents. In the Samoa Channel the Contractor utilized approximately 14-16 weights separated approximately 100 feet apart. Extending from approximately 400 feet off the Samoa Bridge into the Channel and to approximately 300 feet from the land based booster pump located on west side of the Samoa Channel. The Contractor utilized three (3) concrete weights between the water based booster pump and the Samoa Bridge in the Mid Span Channel. The water based booster pump is located approximately 1,000 feet from the Samoa Bridge into the Mid Span Channel. Between the dredge Nehalem and the land based booster pump the Contractor utilized 6-7 concrete weights separated approximately 150 – 200 feet apart. An overhead View (Figure HE-1) shows the locations of the submerged sections of the pipeline. Note that this map only indicates the approximate location of the pipeline and the submerged sections of the pipeline. The Contractor utilized a total of approximately 23 - 26 concrete floats.

Photo 1: Self fabricated 1,500 lbs concrete weights to submerge the pipeline.

405

Samoa Beach Outfall Solid Waste Cleanup Plan

On behalf of the City of Eureka and the Humboldt Bay Harbor, recreation and Conservation District, Pacific Affiliates will insure that no solid waste remains on the beach at the outfall site following termination of the project in March 31, 2007.

The following tasks shall be performed in order to maintain the outfall site:

- Pacific Affiliates representatives and/or Nehalem River Dredging Project Superintendent will continue to conduct daily inspections of the outfall at the lowest tide possible during daylight hours (Monday through Saturday). Any solid waste observed by personnel visiting the site shall be removed and transported upland for disposal at the local transfer station. Up to date the Contractor and/or Pacific Affiliates' Project Manager have inspected the site at least once every day.

- On Sundays, when the dredge is not in operation Pacific Affiliates and/or Nehalem River Dredging personnel will visit the site at the lowest tide possible during daylight hours and remove any solid waste at the outfall site. In addition, the top of the beach will be combed every Sunday.

- Should any solid waste remain on the beach following the termination of the project, Pacific Affiliates and/or Nehalem River Dredging personnel will conduct a thorough cleanup of solid waste. The last cleanup will be performed by scanning the beach at low tide from the bottom to the top of the beach to remove any solid waste.

Solid waste and maintenance activities of the outfall shall be performed as follows:

- Using hands and manual tools including but not limited to shovels and rakes.
- All solid waste shall be removed from above the surface and below the surface (as much as possible) in the area directly under the outfall.
- The area surrounding the outfall (approximately 100 meters north and south of the outfall) shall be cleaned.
- The area in close proximity to the outfall (approximately 25 meters north and south of the outfall) shall be combed using rakes.
- All solid waste will be transported to the top of the berm above the beach and collected by the Contractor for disposal.

Monitoring Requirements

Pacific Affiliates representatives and/or Nehalem River Dredging Project Superintendent will take three photographs each day at the outfall site. The photographs will show the wave slope condition, the beach area directly under the outfall, and any solid waste removed from the outfall. Pacific Affiliates representative and/or the Project Superintendent shall document the description and the approximate volume of solid waste removed from the outfall each day. The solid waste monitoring report shall be provided to the California Coastal Commission following termination of the project in March 31, 2007.

CALIFORNIA COASTAL COMMISSION
NORTH COAST DISTRICT OFFICE
710 E STREET • SUITE 200
EUREKA, CA 95501-1865
VOICE (707) 445-7833
FACSIMILE (707) 445-7877
MAILING ADDRESS:
P. O. BOX 4908
EUREKA, CA 95502-4908

EXHIBIT NO. 4
APPLICATION NO.
1-05-039-A1 - HBHRCD
EXCERPTS, ORIGINAL COASTAL DEVELOPMENT PERMIT NO. 1-05-039 STAFF REPORT (1 of 100)

Hearing Date: February 9, 2006
Commission Action: **Approved with Conditions February 9, 2006**

ADOPTED FINDINGS

APPLICATION NO.: **1-05-039**

APPLICANT: **Humboldt Bay Harbor, Recreation, and Conservation District**

AGENT: Pacific Affiliates

PROJECT LOCATION: At the Woodley Island Marina within Humboldt Bay and along the ocean side of the Samoa Peninsula, Humboldt County.

PROJECT DESCRIPTION: 1) Maintenance dredging of approximately 120,000 cubic yards of material and dispose of the dredged material via slurry pipeline at a beach disposal site in the tidal zone along the ocean shoreline of the Samoa Peninsula; and 2) Repair of shoreline protective rock slope armament by replacing armor rock that has become dislodged into the berthing and docking areas to be dredged.

LOCAL APPROVALS RECEIVED: 1) Humboldt County Coastal Development Permit No. CDP-04-38, approved January 23, 1997 and Conditional Use Permit No. CUP-04-14 approved January 20, 2005; 2) Humboldt Bay Harbor, Recreation, and Conservation District Permit for District's dredging approved October 14, 2004; and 3) CEQA Negative Declaration approved October 14, 2004.

OTHER APPROVALS OBTAINED OR REQUIRED: 1) State Lands Commission Approval; 2) Regional Water Quality Control Board FCWA Section 401 Water Quality Certification No. 1A04140WNHU, issued August 26, 2005; 3) U.S. Army Corps of Engineers FCWA Section 404 Individual Permit No. 22216N, issued December 10, 1997, expires

March 15, 2008; 4) U.S. Army Corps of Engineers Letter of Modification to FCWA Section 404 Individual Permit No. 22216N (pending); and 5) California Department of Fish and Game CESA Consistency Determination or Incidental Take Permit (pending).

SUBSTANTIVE FILE DOCUMENTS: 1) County of Humboldt Local Coastal Program; 2) Coastal Development Permit Application No. 1-87-172, issued March 2, 1988; 3) Coastal Development Permit Application No. 1-96-060, issued November 25, 1997; 4) National Marine Fisheries FESA Section 7 Consultation and Biological Opinion, issued December 6, 2005; and 5) *Sampling Results Report for Dioxin/Furans, PCP, and PCB Testing*, Pacific Affiliates, Inc., December 2005.

STAFF NOTES:

1. Adopted Findings.

The Commission held a public hearing and approved the permit at the meeting of February 9, 2006. The adopted conditions for approval of the development differ from those contained in the written staff recommendation dated January 27, 2006. At the hearing, staff presented an addendum that added recommended Special Condition No. 9 requiring the applicant to submit, for the review and approval of the Executive Director, a signage plan for the erection of advisory signage along the beach areas approaching the dredged disposal site informing the public about the authorized use of the adjoining ocean areas for dredged materials disposal for a specified time, and disclosing other nearby sited where water-oriented coastal recreation could be pursued without being subjected to the loss of water clarity, odor, and other aesthetic impacts caused by the elevated levels of suspended sediment associated with the spoils disposal. The addendum also included findings to be added to the staff recommendation discussing the rationale for this special condition. In addition, at the meeting, staff incorporated into its recommendation an additional Special Condition No. 10 be attached to the permit approval, requiring the applicant to provide evidence from the U.S. Environmental Protection Agency that the project had obtained all necessary permits, authorizations, and certifications pursuant to the Marine Protection, Research, and Sanctuaries Act, or evidence that no such permits or certifications are required. The Commission adopted the changes to the staff recommendation in their entirety.

The following resolution, conditions, and findings were adopted by the Commission on February 9, 2006 upon conclusion of the public hearing.

I. RESOLUTION

Resolution to Approve the Permit:

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

II. STANDARD CONDITIONS: See Attachment A.

III. SPECIAL CONDITIONS:

1. Monitoring Report

A. **PRIOR TO ISSUANCE OF COASTAL DEVELOPMENT PERMIT NO. 1-05-039**, the applicant shall submit for the review and approval of the Executive Director a surf zone disposal monitoring plan that provides for monitoring over a five year period of: (1) the pattern and rate of dispersal of material deposited at the site; (2) sediment characteristics at the disposal site and at the control site; (3) the species composition and abundance of intertidal invertebrates in areas directly affected by the disposal of dredge spoils and at a control site near the disposal area over a three year period; and (4) the effects of the surf zone disposal on fisheries. Specific dispersal monitoring provisions shall include: (a) pre- and post-disposal aerial photographs; (b) hygrographic surveys, scanning sonar, fathometer soundings, or other similar bathymetric measurements; (c) turbidity or opacity measurements; and (d) sediment core samples of the immediate area of the dredge materials disposal site and extending offshore to a closure depth of -40 feet msl and three times the distance to the depth of closure laterally north and south of the disposal site along the adjoining ocean shoreline, taken at appropriate intervals to adequately monitor the movement and dispersal of discharged materials, and to characterize the composition of nearshore ocean sediments and epibenthic marine habitat. The plan shall provide for submittal of reports providing the required monitoring information before, during, and within four months after conclusion of

the disposal operation, and yearly reports thereafter to be submitted by July 1 of each year.

B. In the event that the monitoring program reveals that the turbidity generated by the discharge exceeds 20% of the background levels of the receiving waters or persistent shoaling or beach deposition of dredged materials in concentrations that could cause significant adverse impacts to marine biological resources, coastal recreational activities, or navigation, the permittee shall prepare and submit, for the review and approval of the Executive Director, within 60 days of submittal of the final monitoring report, a dredged materials remediation plan identifying corrective actions to be undertaken to restore the affected areas to their pre-disposal conditions. The plan shall identify appropriate remedial actions to be taken, including mechanical and hydraulic removal, *ex-situ* treatment, capping, *in-situ* remediation, or natural attenuation and continued monitoring efforts, if the disposed dredged materials fail to disperse, persist on the receiver beach and intertidal areas, or cause significant adverse impacts to marine organisms within the study area at the end of the initial five-year period. Specific actions shall also be identified to reduce the turbidity generated by the discharge of the dredged materials to less than 20% or less of the background levels of the receiving waters. The plan shall be processed as an amendment to the coastal development permit unless the Executive Director determines that no amendment is required.

C. The permittee shall undertake the dredging spoils transmission and nearshore disposal activities in accordance with the approved final plan. Any proposed changes to the approved final plans shall be reported to the Executive Director. No changes to the approved final plan shall occur without a Commission amendment to this coastal development permit unless the Executive Director determines that no amendment is required.

2. <u>Dredge Spoils Slurry /Hazardous Materials Spill Contingency Plan</u>

A. **PRIOR TO ISSUANCE OF COASTAL DEVELOPMENT PERMIT NO. 1-05-039**, the applicant shall submit for Executive Director approval a project-specific dredge spoils slurry monitoring and spill contingency plan that includes: (1) an estimate of a reasonable worst case release of dredge spoils, and pumping-related fuels and lubricants into coastal waters or wetlands that could result from project operations; (2) a clear protocol for monitoring and minimizing the risks of the transmission of dredge spoils through environmentally sensitive areas during maintenance dredging operations, including criteria for identifying an unanticipated slurry release and proposed transmission pipeline sealants or other repair materials; (3) a response and clean-up plan in the event of a spill or accidental discharge of dredge spoils and/or pump fuels and lubricants; (4) a list of all clean-up equipment that will be maintained on-site; (5) the designation of the onsite person who will have responsibility for implementing the plan; (6) a

telephone contact list of all regulatory and public trustee agencies having authority over the development and/or the project site and its resources to be notified in the event of a spill or material release; and (7) a list of all conduit and pumping materials, fluids, additives, and sealants that will be used or might be used in the transmission and pumping of the dredge spoils, together with Material Safety Data Sheets for each of these materials.

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

C. In the event that a spill or accidental discharge of dredge spoils or other fuel or lubricant fluids occurs during spoils disposal operations, all maintenance dredging and disposal activities shall cease and shall not recommence except as provided in subsection (D) hereof:

D. Following discovery of the spill or accidental discharge of dredge spoils or other fuel or lubricant fluids, the permittee shall submit to the Executive Director a revised project and restoration plan prepared by qualified professional(s) that provides for: (1) necessary revisions to the proposed project to avoid further spill or accidental discharge of spoils and/or fluids; and (2) restoration of the area(s) affected by the spill or accidental discharge to pre-project conditions. The revised project and restoration plan shall be consistent with any applicable requirements of the State and/or Regional Water Resources Control Board(s). The revised project and restoration plan shall be processed as an amendment to the coastal development permit. Maintenance dredging and disposal may not recommence until after an amendment to this permit is approved by the Commission.

3. Conformance with USACE Requirements

PRIOR TO COMMENCEMENT OF EACH SEASON'S OPERATIONS AUTHORIZED UNDER THIS PERMIT, the permittee shall submit to the Executive Director for review, a copy of the Letter of Modification to U.S. Army Corps of Engineers (USACE) Permit No. 22215N, or evidence that no other USACE permit or authorization is necessary for aquatic nearshore disposal of dredge spoils from the Woodley Island Marina for each season's operation. The applicant shall inform the Executive Director of any changes to the project required by the U.S. Army Corps of Engineers or the U.S. Environmental Protection Agency. 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 required.

4. Final Biological Opinion

A. The permittees shall conduct the authorized maintenance dredging program consistent with the non-discretionary Terms and Conditions as set forth in the "Reasonable and Prudent Measures" section of the Section 7 Consultation and Final Biological Opinion, File No. 151422SWR2004AR9177, issued by the Southwest Region, National Marine Fisheries Service (NMFS) for the project on December 6, 2005. Specifically, the permittees shall conduct the maintenance dredging pursuant to the following performance standards and reporting requirements:

(1) The cutter head suction dredge shall be no more than three (3) feet from the substrate during purging of the pipeline.

(2) The cutter head suction dredge shall not pump water during its descent prior to the beginning of dredging, or during ascent while moving between adjacent locations, especially within Woodley Island Marina.

(3) The plume of suspended sediment content within bay waters associated with dredging operations shall not exceed 200 mg/l beyond an area 1,000 feet abeam and 1,500 feet astern of the suction barge platform.

(4) A monitoring report shall be provided, with the date, time, dredge site, and location, and results, within 60 days following the completion of the project, to the Arcata Area Office Supervisor, National Marine Fisheries Service.

(5) Equipment and material necessary to repair a leak or contain a pipeline break shall be readily accessible, either aboard the dredge itself or at a nearby staging area.

(6) In the event of a pipeline leak, break, or spill, NMFS shall be notified by phone within 24 hours. A final summary report of any events shall be provided to NMFS within 60 month of project completion to the above contact. The report shall include the time and location of the leaks(s) or break(s), and estimated amount of sediment discharged from the pipeline.

B. **PRIOR TO COMMENCEMENT OF OPERATIONS AUTHORIZED UNDER THIS PERMIT FOR THE PERIOD OF NOVEMBER 1, 2006 THROUGH MARCH 31, 2007**, the applicant shall submit a copy of an extension to the Section 7 Consultation and Biological Opinion or a new biological opinion covering maintenance dredging during the November 2006 through March 2007 project timeframe.

C. Should the NMFS subsequently revise any of the terms and conditions of its biological opinion through term extensions or issuance of superseding opinions, the permittees shall inform the Executive Director of any changes to the project required by the U.S. Army Corps of Engineers as set forth in the revised biological opinion. Such changes shall not be incorporated into the project until

the permittees obtain a Commission amendment to this coastal development permit, unless the Executive Director determines that no amendment is legally required.

5. Conformance with California Department of Fish and Game

PRIOR TO ISSUANCE OF COASTAL DEVELOPMENT PERMIT NO. 1-05-039, the applicant shall submit, for the review and approval of the Executive Director, a copy of the consistency determination as may be prepared by the California Department of Fish and Game (CDFG) pursuant to Fish and Game Code 2080.1, in response to any incidental take permit for coho salmon (Oncorhynchus kisutch) issued by the National Marine Fisheries Service (NMFS) for the project. Alternately, the applicant shall submit, for the review and approval of the Executive Director, a copy of any Incidental Take Permit as may be issued by the CDFG pursuant to Fish and Game Code 2081 in-lieu of a consistency determination. The permittees shall inform the Executive Director of any changes to the project required by any Fish and Game Code Section 2081(b) Take Permit issued by the CDFG. Such changes shall not be incorporated into the project until the permittees obtain a Commission amendment to this coastal development permit, unless the Executive Director determines that no amendment is legally required.

6. Shoreline Protective Works Repair Responsibilities

Care shall be taken to avoid trampling, uprooting, or otherwise impacting areas of eelgrass (Zostera marina) during the extrication from the dredging areas and repositioning of dislodged rock slope protection materials back onto the marina shoreline revetment structures. Training as to the location and identification of eelgrass beds in the vicinity of the shoreline protective repair work shall be provided to the revetment repair contractors.

7. Spoils Disposal Outfall Placement

The spoils slurry pipeline outfall at the authorized nearshore disposal site shall be sited and maintained in a location within the intertidal reach such that all discharges from the pipeline are released directly into coastal waters. No discharge of dredged materials onto exposed beach areas adjacent to the surf zone disposal site is permitted.

8. Coho Salmon Incidental Take Mitigation

The applicant shall implement their proposal to partially fund the Rocky Gulch Salmonid Access and Habitat Restoration Project as proposed in their letter to Clyde David, U.S. Army Corps of Engineers dated January 11, 2006, attached to this staff report as pages 11 through 37 of Exhibit No. 4. **PRIOR TO ISSUANCE OF COASTAL DEVELOPMENT PERMIT NO. 1-05-039**, the applicant shall provide the Executive Director with evidence from the California Department of Fish and Game that the

proposed $15,000 in-lieu mitigation funding has been received and/or adequately secured to ensure its allocation to the subject restoration project.

9. Disposal Outfall Advisory Sign Plan

A. **PRIOR TO ISSUANCE OF COASTAL DEVELOPMENT PERMIT NO. 1-05-039**, the applicant shall submit for the review and approval of the Executive Director, an advisory signage plan.

1) The plan shall demonstrate that:

a) The signage shall provide notice to coastal visitors that: (1) they are entering an authorized dredged materials disposal site; (2) the specified timeframe in which dredged materials are authorized to be discharged into the nearshore environment; (3) the discharged spoils will affect water clarity and odor by raising levels of suspended sediment in the ocean waters in immediate proximity to the pipeline outfall; (4) alternate sites for beach walkers, surfers, ocean swimmers, and sea kayakers exist nearby where water clarity and odor would not be as affected as in the immediate proximity of the disposal outfall; and (5) the general location of these other sites (i.e., open ocean coastal access points and surf breaks along the Samoa Peninsula);

b) A total of three (3) signs shall be installed at approximately 200 feet from the dredged spoils pipeline outfall along the north and south beach approaches to the disposal area and along the landward access to the disposal site; and

c) The signage shall be installed prior to the discharge of dredged materials and maintained in place during each season of operation until the end of that season's dredged materials disposal operations.

2) The plan shall include, at a minimum, the following components:

a) A map showing the size, design, and location of the advisory signage;
b) The specific verbiage that will be appear on the signage;
c) A schedule for installation, maintenance and upkeep (i.e., replacement of stolen, damaged, or defaced signs); and
d) Copies of all necessary discretionary approvals from the County of Humboldt for installation of the signage or evidence that no such approvals are necessary.

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

10. Compliance with the Marine Protection, Research, and Sanctuaries Act

PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT NO. 1-05-039, the applicant shall submit shall submit evidence, for the review and approval of the Executive Director, that the U.S. Environmental Protection Agency (USEPA) has issued all required permits, authorizations, and certifications for the development as may be required under the Marine Protection, Research, and Sanctuaries Act for the maintenance dredging and unconfined open ocean disposal of dredged materials authorized by this permit or evidence that no such certification or authorization is required. The permittees shall inform the Executive Director of any changes to the project required by the USEPA. Such changes shall not be incorporated into the project until the permittees obtain 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:

A. Project and Site Description.

The Humboldt Bar Harbor, Recreation, and Conservation District (HBHRCD) was created in 1970 by the California Legislature to serve the natural resource, recreational, shipping, and economic development management needs of Humboldt Bay and the smaller fishing ports to the north and south (i.e., Trinidad, Shelter Cove). The District functions as the Port Authority for the Port of Humboldt Bay and operates Humboldt County's largest marina, Woodley Island Marina.

The applicant proposes to maintenance dredge a total of approximately 120,000 cubic yards of material from the Woodley Island Marina boat basin in Humboldt Bay (see Exhibit Nos. 1-3). The dredging would be performed as a slurry via a pipeline to a beach disposal site on the ocean side of the Samoa Peninsula, the landmass that forms the western boundary of Humboldt Bay. The dredging would be performed at the same time as a maintenance dredging project along the Eureka waterfront by the City of Eureka (being considered concurrently under Coastal Development Permit Application No. 1-05-040). The two projects would be performed by the same contractor and would share the same disposal pipeline and disposal site.

1. Proposed Dredging Site

The proposed 120,000 cubic yards dredging would restore the marina to its original design depth of –14.0 Mean Lower Low Water (MLLW) and –10.0 MLLW. The 335-berth marina was constructed in 1978, and is used by both commercial fishermen and recreational boaters. The dredging would be performed within the berthing areas and fairways of the marina over a total area of

approximately 16.15 acres. The maximum cut (depth of material) is approximately six feet. The marina would continue to operate during the dredging work to ensure commercial and recreational access to coastal waters.

2. Proposed Method of Dredging and Spoils Disposal

The proposed cutter head suction pipeline dredging method involves use of a hollow suction pipe which extends to the bay floor. The pipe contains a rotating cutter head, which can be swept back and forth across the work area and can be extended into confined areas such as boat slips and under dock faces, etc. As material is loosened by the cutter, it is drawn up the suction pipe to the surface where the suction pipe is joined to a closed flexible pipeline for pumping to the disposal site. The material drawn up by the suction dredge consists of approximately 20% sediment and 80% bay water.

The dredge is a pontoon-mounted crane that lowers a dredge boom, containing a cutter head coupled with a suction pipe, to the bottom. As the cutter head rotates and loosens the bottom material, the material is drawn directly up the suction pipe to the surface and the slurry of sediment and water is then pumped through a floating semi-flexible disposal pipeline, assisted by land based booster pumps for pipeline transfer to the designated disposal area in the surf zone of the Samoa Peninsula.

The slurry pipeline would consist of a 12-inch-diameter fused flexible plastic line. The suction pipe, with a pumping rate of 15-20 feet-per-second, would remove approximately 200 cubic yards of solid material per hour depending on site conditions and dredging operators, and dispose of the material at a similar rate. Unless maintenance or repair is necessary, the dredge is expected to operate 24-hours a day, six to seven days per week. The pipeline is inspected regularly and maintained to insure integrity and prevent leaks or breaks. The dredge and the shore-based booster pumps rely on diesel engines and generate the noise and exhaust roughly equivalent to that of a semi-tractor truck when operational. In order to purge the pipeline of any accumulated sediment, the cutter head would be lifted off the bottom twice a day, and water from the water column would be drawn into the cutter head for approximately twenty minutes.

The pipeline is floated across open water areas and weighted and submerged where crossing navigable waters. Placement of the pipeline in the water would be from a slow moving barge, and the pipeline would be routed through an existing carrier pipes and overland to the approximately 20 acre beach disposal site. The total length of the pipeline is 21,400 feet (4.5 miles), with approximately 6,000 feet overland, and the remaining 15,400 feet in Humboldt Bay.

The line would extend on floats from the dredging location to the State Route 255 (SR 255) right-of-way; SR 255 is the highway that crosses Humboldt Bay between Woodley Island and the Samoa Peninsula in a series of bridges. The pipeline would be placed along the shoulder of the right-of-way where the highway crosses Woodley and Indian Island at ground level, and placed in the water in the shadows of the bridges where the highway crosses water. In tidal locations, the pipeline would be floated into position at high tide to avoid unnecessary disturbance to the mudflats. Where the line would cross navigable waters, weight would be attached to submerge the line and permit the normal passage of vessels. Buoys and lights would be installed to prevent navigational hazards. A *Notice to Mariners* would also be filed with the U.S. Coast Guard for the duration of the project, advising marine travelers of the location of the pipeline and dredging activities. Once the pipeline reaches the Samoa Peninsula, the line would cross under the Northwestern Pacific Railroad and New Navy Base Road through existing carrier pipes and then continues across the dunes of the North Spit via off-road vehicle trails to the surf zone disposal site. The slurry material is pumped through the pipeline to the disposal site under pressure from several in-line booster pumps.

Once the dredge and crew arrive in Humboldt Bay, mobilization of the spoils line, booster pumps and dredge is expected to take 10 to 15 days. Dredging would commence once the pipeline had been installed, on or about March 1, 2006 and would continue until March 31, 2006. The applicant has amended the project description to request that after the seasonal closure for coho salmon migrations beginning on April 1, 2006, maintenance dredging operations be allowed to resumed on November 1, 2006 through March 2007 for completing any remaining dredging not conducted during the compressed spring 2006 timeframe.

3. Proposed Disposal Site

The location of the surf zone disposal site is shown on Exhibit No. 4. The pipeline would discharge the dredged material directly into the surf zone. The disposal site would be posted at several locations and barricades and lighting would be provided and maintained through the project to further inform users of the Peninsula of the temporary project activities occurring there. The sediment to be dredged consists of typically fine-grained material composed of approximately 15% sand, 45% silt, and 40% clays. By comparison, the composition of the beach adjoining the disposal area is approximately 95% sand content. The applicant anticipates that most of the sub-sand material will disperse as suspended sediment along the large Eel River basin shelf area offshore. According to the applicant, this shelf area also absorbs an estimated average annual sediment load of approximately 24,698,370 cubic yards discharged by the Eel and Mad River systems. The Eel River represents one of the largest suspended sediment sources in the world. The proposed dredging and dispersal would occur during the winter

months, between November and mid-March, when ocean turbidity from the river discharges is at a natural seasonal maximum, to minimize the sedimentation impact on the ocean. The applicant expects that most of the material discharged to the surf zone disposal site would be dispersed offshore as part of cyclical process of erosion of the winter beach. Some of the material that erodes away would likely be deposited again at the site as part of the natural spring beach build up, but the applicant indicates that all of the material should leave the site within two years.

The Samoa Peninsula surf disposal site has been used thrice previously for dredge material disposal. In 1977, the Corps of Engineers disposed of approximately 1.8 million cubic yards of material from the North Bay Channel Deepening project at this location. In 1988, the site was also used for the disposal of 131,000 cubic yards of material from a maintenance dredging project at the Woodley Island Marina. The Coastal Commission approved the maintenance dredging and surf zone disposal under Coastal Development Permit No. 1-87-172. Subsequently in 1998, pursuant to Coastal Development Permit Nos. 1-96-060 and 1-96-061, 226,238 cubic yards of dredged spoils from the City waterfront and the Woodley Island Marina were disposed at the Samoa Peninsula surf disposal site.

The proposed maintenance dredging project is only one of several dredging projects performed or proposed for Humboldt Bay. The proposed maintenance dredging project is separate from the annual Humboldt Bay maintenance dredging project performed by the U.S. Army Corps of Engineers. The proposed maintenance dredging project is also separate from the annual Humboldt Bay Channel maintenance dredging projects also performed by the Corps. Between 1982 and 2004, the Bay Channel maintenance project removed approximately 802,000 cubic yards per year. The material from the Corps dredging projects has been and will continue to be disposed of at the "Humboldt Open Ocean Disposal Site (HOODS).

4. Shoreline Protective Structural Repairs

Concurrently with the dredging of the berthing areas, repairs will also be made to the revetment armoring that lines the marina shoreline. As a result of high tides and storm surge, some of the 500-lb quarry stone riprap along an approximately 100-foot-long run of the rock slope revetment have become dislodged and fallen into the adjacent berthing areas to be dredged. During the course of the suction dredging the stones will be unearthed and a land-based excavator or other mechanized heavy equipment capable of lifting a ¼-ton rock at a boom length will extricate the rocks from the silted in area and replace them back into the rock slope works.

5. Coho Salmon Incidental Take Mitigation

As mitigation for the thirty individual juvenile coho salmon that are anticipated to be lost by entrainment into the cutter-suction dredging intake during sediment excavation operations, the applicant has proposed in-lieu mitigation funding of the Rocky Gulch Salmonid Access and Habitat Restoration Project being undertaken on Rocky Gulch, a small, first-order watercourse draining into Arcata Bay. This project entails a variety of in-stream restoration activities for improving access into and habitat conditions within this coastal watershed. Specific work to be performed includes replacing tide gates to allow for unimpeded fish passage, increasing tidal marsh areas for juvenile salmonid rearing habitat, widening the channel and overflow floodplain to better contain winter floods and protect adjoining grazing uses, revegetated creek reaches with native vegetation, and replace culverts that currently bar fish access upstream to spawning areas (see Coastal Development Permit No. 1-05-009). Based upon consultation with and concurrence of the California Department of Fish and Game, the applicant would provide partial funding for the Rocky Creek project in the amount of $15,000 to be used by the CDFG at its sole discretion for performing the associated stream restoration work.

The entire project except for a portion of the pipeline would be located within the Commission's retained jurisdictional area. The segment of pipeline that extends over the Samoa Peninsula from the bay to the mean high tide line of the surf zone disposal site is located within the coast permit jurisdiction of Humboldt County. The County approved a coastal development permit (CDP-04-37) and a coastal use permit (CUP-04-13) on January 20, 2005. The County permits required avoidance and mitigation of potential disturbance to sensitive rare plants, including the Menzies wallflower (Erysimum menziesii) and beach layia (Layia carnosa). The coastal development permit was not appealed to the Commission.

B. Need for Dredging and Dredge Spoils Disposal.

The proposed dredging and related nearshore disposal of dredged materials would support the continued use of berthing areas within Humboldt Bay for recreational boaters and commercial fishermen. The Coastal Act contains strong policy language supporting marina uses, including those which require dredging. Section 30220 provides that:

Coastal areas suited for water-oriented recreational activities that cannot readily be provided at inland water areas shall be protected for such uses.

Section 30224 provides that:

Increased recreational boating use of coastal waters shall be encouraged, in accordance with this division, by developing dry storage areas, increasing public launching facilities, providing additional berthing space

> *in existing harbors, limiting non-water-dependent land uses that congest access corridors and preclude boating support facilities, providing harbors of refuge, and by providing for new boating facilities in natural harbors, new protected water areas, and in areas dredged from dry land.*

Section 30234 provides, in part that:

> *Facilities serving the commercial fishing and recreational boating industries shall be protected and. where feasible, upgraded...*

Section 30255 provides that:

> *Coastal-dependent developments shall have priority over other developments on or near the shoreline. Except as provided elsewhere in this division, coastal-dependent developments shall not be sited in a wetland. When appropriate, coastal-related developments should be accommodated within reasonable proximity to the coastal-dependent uses they support.*

In December 2005, the Woodley Island Marina served as homeport to 260 vessels, of these 102 were classified as commercial fishing vessels and 152 as recreational boats. In addition, the 87-foot U.S. Coast Guard Coastal Patrol Boat *Barracuda* (WPB-87301), the only port security and search and rescue vessel of this size between Crescent City and Bodega Bay, 44-foot Humboldt County Sheriff Marine Patrol Vessel, and the 64-foot ocean-going tug *M/V Koos King* (WRC7731), the sole pilot boat on Humboldt Bay equipped for transporting bar pilots and guiding large commercial ships and hazardous cargoes across the notoriously treacherous Humboldt Bay entrance bar, are also stationed at Woodley Island. Based upon 2004 economic data, 19,300,000 pounds of fish were landed at District and City docks and quays, representing some$12,900,000 in market valuation.

Currently, many of the "slips" within the marina have aggraded with sediment to the point where docked vessels lay on exposed bay muds during normal low tide periods. Based on present conditions at the marina and berthing areas, any further delays in maintenance dredging can result in a number of impacts, either directly to these vessels, to the city and District harbor facilities, or regionally to the Port of Humboldt Bay. These impacts can be categorized as follows:

- Physical damage to vessels and injury to crew members.
- Delays in fishing operations – loss of competitiveness with other port fleets.
- Loss of income due to delays in shipping and landing catches.
- Physical damage to public marina facilities.
- Loss of income to local governments that supply marina services.
- Environmental damage due to damage to marina facilities and/or vessels.

- Loss of life and property due to damaged vessels or delays in transiting the bay's entrance.
- Loss or diminished capability of local law enforcement, port security and search and rescue and environmental response.
- Loss or diminished commercial maritime shipping.

The proposed maintenance dredging and nearshore dredged material disposal project would support the continued use of the Woodley Island Marina for these priority uses. Without the dredging and the disposal of the dredged materials, the berthing areas and slips of the marina would continue to fill with sediment and would no longer be usable for mooring vessels. Adequate mooring facilities that do not similarly need maintenance dredging and the disposal of the dredged materials are not available elsewhere within Humboldt Bay.

Based upon the important functions the harbor docking and berthing facilities provide for commercial fishing and shipping, recreational boating, and essential public services, the Commission has determined that a need exists for dredging of the project areas. Therefore, the Commission finds that the proposed dredging and the disposal of the dredged materials would support recreational boating and commercial fishing, consistent with Sections 30220, 30224, 30234, and 30255 of the Coastal Act.

C. Protection of Marine and Estuarine Resources.

A number of Coastal Act policies address the protection of marine resources from the impacts of dredging and dredge spoils fill projects. These policies include, among others, Section 30231 and 30233.

Section 30231 of the Coastal Act provides as follows, in applicable part:

> *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...*

Section 30233(a) provides as follows, in applicable part:

> *(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:*

(1) New or expanded port, energy, and coastal-dependent industrial facilities, including commercial fishing facilities.

(2) Maintaining existing, or restoring previously dredged, depths in existing navigational channels, turning basins, vessel berthing and mooring areas, and boat launching ramps.

(3) In wetland areas only, entrance channels for new or expanded boating facilities; and in a degraded wetland, identified by the Department of Fish and Game pursuant to subdivision (b) of Section 30411, for boating facilities if, in conjunction with such boating facilities, a substantial portion of the degraded wetland is restored and maintained as a biologically productive wetland. The size of the wetland area used for boating facilities, including berthing space, turning basins, necessary navigation channels, and any necessary support service facilities, shall not exceed 25 percent of the degraded wetland.

(4) In open coastal waters, other than wetlands, including streams, estuaries, and lakes, new or expanded boating facilities and the placement of structural pilings for public recreational piers that provide public access and recreational opportunities.

(5) Incidental public service purposes, including but not limited to, burying cables and pipes or inspection of piers and maintenance of existing intake and outfall lines.

(6) Mineral extraction, including sand for restoring beaches, except in environmentally sensitive areas.

(7) Restoration purposes.

(8) Nature study, aquaculture, or similar resource dependent activities.

(b) Dredging and spoils disposal shall be planned and carried out to avoid significant disruption to marine and wildlife habitats and water circulation. Dredge spoils suitable for beach replenishment should be transported for such purposes to appropriate beaches or into suitable long shore current systems.

(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. [Emphases added.]

The above policies set forth a number of different limitations on what development may be allowed in wetlands and other water bodies within the coastal zone. For analysis purposes, the limitations can be grouped into five general categories or tests. These tests are:

- That the purpose of the fill is for one of eight uses allowed under Section 30233;
- That feasible mitigation measures have been provided to minimize adverse environmental effects;
- That the project has no feasible less environmentally damaging alternative;
- That the biological productivity and functional capacity of the habitat shall be maintained and enhanced where feasible; and
- That dredge spoils suitable for beach replenishment be transported to appropriate beaches or into suitable long shore current systems.

1. Permissible Use for Dredge Spoils Disposal in Coastal Waters.

The first test set forth by the Coastal Act policies that address the protection of marine and estuarine resources is that any proposed dredging or fill project must be for an allowable purpose under Section 30233 of the Coastal Act. The proposed project involves maintenance dredging.

Section 30233(2) allows dredging for maintaining existing, or restoring previously dredged depths in existing vessel berthing and mooring areas, and launching ramps. The proposed dredging is limited to areas that have been previously dredged to the same elevation for vessel berthing and mooring. Therefore, the Commission finds that the proposed dredging, and its associated pipeline installation and beach disposal, are consistent with the use limitations of Section 30233, as the dredging is for the maintenance of existing vessel berthing and mooring areas.

2. Feasible Mitigation Measures

The second test set forth by Section 30231 and 30233 of the Coastal Act is that feasible mitigation measures have been provided to minimize adverse environmental effects. The Commission must examine the potential impacts of the project on marine and estuarine resources for the non-exempt portions of the project within its jurisdictional area (i.e., excluding the project portions within the County of Humboldt's permitting jurisdiction.) The project could have ten potential adverse effects on such resources, including: (1) the removal of habitat at the dredging sites; (2) the entrainment of juvenile salmonids into the suction dredge pipeline during line flushing maintenance; (3) increasing turbidity levels

at the dredge site; (4) increasing turbidity levels during installation and removal of the dredge spoils pipeline; (5) the covering of estuarine intertidal habitat along the route of the dredge spoils pipeline within Humboldt Bay; (6) accidental releases of the dredge spoils slurry and/or pumping-related fuels or lubricants; (7) disturbing marine intertidal habitat at the dredged material disposal site; (8) degrading water quality at the nearshore dredged materials disposal site; (9) impacts to terrestrial environmental habitat; and (10) release of hydrogen sulfide. None of these impacts, however, have been determined to be significant.

(1) Removal of Habitat at Dredging Sites.

The site of the proposed dredging within the Woodley Island Marina basin provides soft bottom habitat that may be habitat for a variety of benthic organisms. In addition, sparse clumps of eelgrass have materialized sporadically along the slope of the marina since the previous dredging was performed in 1998. The proposed dredging would remove much of this soft bottom habitat area. However, the impact is not judged to be significant for several reasons. Firstly, when the marina was created in 1978, the eelgrass and soft bottom habitat that was removed by excavating the marina basin was reestablished elsewhere in Humboldt Bay as a mitigation measure. At the time, it was recognized that the marina would require periodic maintenance dredging and the mitigation was required to ensure that creation of the marina and its subsequent maintenance dredging would not result in a net loss of habitat. Secondly, as occurred after the 1988 and 1998 maintenance dredging projects, the site can be expected to be re-colonized by the flora and fauna that would be temporarily displaced by the project. These organisms grow in sufficient abundance in areas adjacent to the marina that a ready source of colonizers exists to replace the organisms that are lost.

(2) Entrainment of Juvenile Salmonids

The U.S. Army Corps of Engineers initiated a formal Section 7 consultation pursuant to the federal Endangered Species Act (FESA) of 1973, as amended (16 USC. 1531 et seq.) with the National Marine Fisheries Service (NMFS) regarding potential impacts from the proposed cooperative maintenance dredging project. Humboldt Bay is a component of the designated critical habitat for the Southern Oregon/Northern California Coastal (SONCC) evolutionary significant unit of coho salmon (Oncorhynchus kisutch) and is suitable migration habitat for the SONCC coho, Northern California (NC) steelhead (Oncorhynchus mykiss), and California Coastal (CC) Chinook salmon (Oncorhynchus tshawytscha). The site may also be suitable rearing habitat for Chinook salmon.

A biological opinion was subsequently prepared and issued by NMFS on December 6, 2005. Because the maintenance dredging would be conducted within a timeframe concurrent with the out-migration of coho salmon (Oncorhynchus kisutch) of the Southern Oregon/Northern California Coast (SONCC) Evolutionarily Significant Unit (ESU), the staff of NMFS have indicated to the Commission staff that the agency expects approximately 30 individual SONCC coho salmon smolts to be exposed to risks of

potential entrainment by the dredge. In addition, larval stage Pacific herring (Clupea pallasi) and Dungeness crab (Cancer magister) are expected to be entrained as well. Exposure of these individuals would be limited to late February and March, and limited primarily to within and in the vicinity of Woodley Island.

To minimize the risks of entrainment of these species, NMFS staff recommend that the periodic flushing of the pipeline: (1) be undertaken at a depth of three feet from the bay bottom; and (2) water intake from the middle or surface of the water column be prohibited. NMFS staff have stated that these dredge operational measures would reduce the potential risks of entrainment of these environmentally sensitive species to a less than significant level.

As discussed in Project Description Finings Section IV.A, to mitigate for the anticipated loss of approximately 30 individual juvenile SONCC coho salmon, the applicant has included as part of its amended project description (see Exhibit No. 4) a mitigation proposal to provide funding in the amount of $15,000 for the Rocky Gulch Salmonid Access and Habitat Restoration Project.

To assure that the potential entrainment of juvenile salmonids and other estuarine species is minimized and that the proposed mitigation for the loss of 30 coho salmon is provided, the Commission attaches Special Condition Nos. 4 and 8. Special Condition No. 4 sets forth as project performance standards the above-listed criteria for flushing the dredge spoils slurry pipeline recommended by NMFS for minimizing entrainment of estuarine organisms. Special Condition No. 8 requires the applicant to implement the coho salmon mitigation proposal as proposed.

(3) Temporary Increase of Turbidity at Dredge Sites.

As the proposed dredging would disturb sediments at the dredging locations, a temporary change in turbidity in the immediate areas of the dredging is expected. Increased turbidity can have deleterious effects on the estuarine habitat, burying eelgrass and other vegetation and disturbing the spawning, feeding, and other activities of fish and other fauna. However, the proposed project would minimize turbidity impacts and reduce them to a level of insignificance through: (1) the use of a suction dredge which creates much less turbidity than other forms of dredging; (2) the use of a pipeline to transport the dredge material to the disposal site as opposed to other forms of transferring the material, such as the use of a hopper barge; and (3) timing the project to occur in the winter months when natural turbidity is high due to increased local river flows.

(4) Temporary Increase of Turbidity During Installation and Removal of the Dredge Spoils Pipeline.

The proposed installation and removal of the dredge spoils transmission pipeline could disturb sediments within the mudflat areas along the pipeline's route. Increased turbidity can have deleterious effects on the estuarine habitat, burying eelgrass and other vegetation and disturbing the spawning, feeding, and other activities of fish and other

fauna within the water column and along the bay bottom. However, as discussed in the biological opinion issued by NMFS, the proposed project would minimize turbidity impacts and reduce them to a level of insignificance through: (a) avoiding mudflats to the greatest extent practicable during installation of the dredge disposal line; (b) installing and removing the pipeline during high tide when these sensitive areas are inundated to assure that no vessel propellers, anchors or dredging equipment are dragged over the mudflats.

(5) Covering of Habitat Along the Dredge Spoils Pipeline within Humboldt Bay.

The routes of the proposed dredge spoils pipeline through Humboldt Bay provide soft bottom habitat that may be habitat for a variety of benthic organisms. In addition, sparse clumps of eelgrass have materialized sporadically in various berthing areas since the previous dredging was performed. The placement of the pipeline may temporarily disturb some of this soft bottom habitat area. However, the impact is not judged to be significant. The loss of the sparse patches currently existing along the pipeline routes would not result in a significant loss of biological productivity. In addition, the pipeline routes can be expected to be re-colonized by the flora and fauna that would be temporarily displaced by the project. These organisms grow in sufficient abundance in areas adjacent to the pipeline routes that a ready source of colonizers exists to replace the organisms that are lost.

(6) Accidental Release of Dredge Spoils Slurry or Hazardous Materials.

The project entails the transmission of a dredge spoils slurry through a 12-inch diameter flexible pipeline over a distance of 21,400 feet (4.5 miles), with approximately 6,000 feet of the pipeline crossing overland, and the remaining 15,400 feet traversing the waters of Humboldt Bay. If a rupture should occur in the slurry transmission pipeline, an uncontrolled release of highly turbid water and sediment into environmentally sensitive habitat area within the bay, estuarine or marine wetlands, or upland areas could result with potentially deleterious effects to the plant and animals that utilize these areas as habitat.

Additionally, re-fueling or lubricating motorized equipment (i.e., the in-line booster pumps) during the course of maintenance dredging activities is anticipated. An accidental spill of pump fuel or lubricants could adversely affect the environmentally sensitive resources within the project area and the water quality of the adjoining estuarine and marine environments. Special Condition No. 2 requires the applicant to undertake the proposed development consistent with an approved Dredge Spoils Slurry / Hazardous Materials Spill Contingency Plan. This plan is to include pipeline monitoring and leak response provisions and water quality best management practices for the prevention of hazardous material spills and provisions for prompt containment and clean-up of any spills which may inadvertently occur. As conditioned, potential adverse impacts from

accidental dredge spoils slurry or fuel or oil spills to land and marine resources will be reduced to less-than-significant levels.

(7) Disturbance of Habitat at the Nearshore Disposal Site.

The surf zone disposal site is inhabited primarily by intertidal invertebrate fauna, including motile, burrowing crustaceans and polycheate worms. As noted previously, the site was used for the similar disposal of approximately 226,238 cubic yards of dredged material in 1998. A monitoring study was conducted prior to, during, and just after this last episode of dredged material disposal. The monitoring report stated that prior to the last use of the area for dredged material disposal, in overall species richness, Samoa Beach was intermediate between local semi-protected sandy beaches and sandy beaches exposed to extreme wave conditions. In both pre- and post-discharge periods, the beach fauna was dominated in species composition and numerically by the burrowing isopod Excirolana linguifrons and the burrowing marine worm Euzonus williamsi. The abundance of E. linguifrons and E. williamsi appears to have been much less in 1988 than was collected in 1998. The abundance of other sand beach animals was comparable in 1988 and 1998. By the August sampling period in 1998, the level of faunal similarity approximated that found in the pre-discharge sampling. The reappearance of mole crabs (Emerita analoga) in August samples at all three transects and its abundance at the discharge transect indicates that little residual biological effect of dredge spoils could be detected at the discharge point. The material to be discharged from the proposed project would temporarily bury this habitat, until wave and tidal action disperses the material to the offshore shelf. Impacts to the habitat are expected to be similar to the impacts that occurred in 1998. According to the 1998 monitoring study, the habitat area recovered rapidly:

> Based on the present study, negative effects of temporary discharge of dredge spoils on intertidal fauna of Samoa Beach were localized and transitory, primarily affecting the abundance of characteristic beach species in the immediate vicinity of the disposal outfall. Within 1 month following the end of disposal operations, most species characteristic of this beach were present at the outfall site, although at reduced densities. Approximately 4 months following termination of beach disposal, populations at the Disposal Site had recovered to levels comparable to those at the Control Site.

Thus, based on the result of the 1998 monitoring report, the impacts of the proposed discharge of dredged material on the surf zone habitat can be expected to be temporary and insignificant.

(8) Water Quality at the Nearshore Disposal Site.

Physical Suitability of Dredged Materials for Nearshore Disposal

Several members of the public have opined that as the sand content of the dredged materials proposed for nearshore ocean disposal are far less than 80%, the materials would not be suitable for nearshore disposal from the standpoint of the protection of water quality (see Exhibit No. 12). In addition, staff from the California Department of Fish and Game (CDFG) and the U.S. Environmental Protection Agency have expressed reservations as to the appropriateness of disposing of the subject dredged materials in the nearshore environment given the high fines content of the dredge spoils as compared to the composition of sediments in proximity to the discharge area. However, the Commission notes that neither the U.S. Army Corps of Engineers (USACE or "Corps") or the U.S. Environmental Protection Agency (USEPA) have established a firm prohibition on the nearshore disposal of dredged sediments containing less than 80% sand. To the contrary, as discussed in the Coastal Sediment Management Workgroup's 2003 work plan:

> It appears that there is a widespread misperception, within both regulatory agencies and the regulated community, that an 80/20 coarse-to-fines 'rule-of-thumb' ratio is an inviolate rule prohibiting the use of dredged material containing more than 20% fines...
>
> The U.S. Army Corps of Engineers (USACE) and U.S. Environmental Protection Agency (EPA) share regulatory responsibility for all discharges of dredged material in waters of the United States under Section 404 of the Clean Water Act (CWA)... Officials with both agencies agree that the 80/20 ratio is a 'rule of thumb' only and that there is no statutory authority for its enforcement nor any known definitive studies or research from which a 20% cut-off was selected. Instead, it represents a national consensus value based on experience that such sediments are unlikely to be contaminated to an extent that would cause environmental damage...
>
> Both agencies also recognize that there is significant flexibility in allowing material with higher percentages of fines provided it meets the requirements of the 404(b)(1) guidelines that dredged material be demonstrated to be compatible with the receiving beach... The 404(b)(1) guidelines allow for site-specific determinations regarding compatibility of dredged-sediment grain sizes with receiving beaches. Dredge or fill discharges must satisfy the requirements of Sec 230.10 of the guidelines which, among other things, mandate that 1) the discharge site must be the least environmentally damaging alternative, 2) discharge will not result in significant degradation of ecosystems based on factual determinations, and 3) that all practicable means must be employed to minimize for adverse environmental impacts.

Thus, provided that the sediments are shown to not have contaminants in concentrations that would result in significant human health risks or ecological degradation, that no other environmentally less damaging alternative disposal site exists, and that all practicable mitigation measures have been employed, unconfined aquatic disposal of dredged materials containing greater than a 20% fines content into the nearshore environment, even for purposes of incidental beach nourishment may be authorized. Both the CDFG and USEPA have stated that, notwithstanding their concerns over the high fines content of the bay sediments, these agencies will not formally object to the proposed nearshore disposal of the dredged materials being undertaken under the USACE's existing FCWA Section 404 permit. However, both agencies have also stated that the applicant must investigate other disposal options, including but not limited to offshore disposal at the HOODS facility or landfill disposal, for any future maintenance dredging to be conducted under subsequent Corps authorizations after the current CWA §404 permit expires in March 2008.

Contaminant-related Potential Impacts

Many of the sediments in coastal waters, particularly those deposited in areas where extensive industrial processes are occurring or have been undertaken in the past, are contaminated by chemical pollutants. Some of these pollutants, such as the pesticide dichlorodiphenyltrichloroethane (DDT) and the industrial chemicals known as polychlorinated biphenyls (PCBs), were released into the environment long ago. The use of DDT and PCBs in the United States was banned in the 1970s, but these compounds linger in the environment for many years. As is typical of dredging projects throughout the California coast, the sediments and associated contaminants within Humboldt Bay originate upstream and the contamination was not directly caused by current or past practices of the applicant-agency responsible for maintaining navigable channel or harbor depths.

Dioxin is the popular name for the family of chlorinated organic compounds comprised of Polychlorinated Dibenzo Dioxins (PCDD) and Polychlorinated Dibenzo Furans (PCDF). Dioxin/furans (PCDD/PCDF) form from the incomplete combustion of organic compounds, contain chlorine, and are introduced into the land and water environments through a variety of means, including chemical spills, process water effluent discharges and stack air emissions. Eighty percent of on-going dioxin/furans production is associated with trash barrel buring, land application of sewage sludge, coal-fired utilities, residential wood burning, metal smelting, and diesel truck emissions. Given these common origins and induction pathways, dioxin/furans have been detected globally in variable concentrations. Levels of PCDD/PCDF are elevated in industrial settings such as ports. Local point-sources of dioxin/furans on Humboldt Bay encountered in bay sediments include past pulp mill air discharges and runoff-entrained wood preservative chemicals from timber products processing facilities.

PCDD/PCDF's have been shown to bioaccumulate in humans and wildlife due to their lipophilic properties. Excessive exposure to dioxin may cause a severe form of persistent acne, known as chloracne. To date, this is the only clinically-established direct result of dioxin exposure at levels below the lethal dose. Other possible effects linked to long-term exposure include, developmental abnormalities in the enamel of children's teeth, damage to immunological systems, endometriosis, teratogenic birth defects, complications of diabetes, and in laboratory animals, increased rates of liver and lung cancer.

Past Sediment Testing for and Assessments of Contaminated Sediments

Pacific Affiliates initially submitted on behalf of the applicant a Sediment Sampling Plan that was approved by the USEPA and the Corps on December 7, 2004. Analytical requirements for this project were recommended by the USEPA's Dredging and Sediment Management Team and the Corps. The guidelines were set forth in the Inland Testing Manual for Tier II Sediment Physical and Chemical evaluation. The sampling was conformed to the strict guidelines set by the USEPA. The composite sampling methods were instructed by the USEPA and were followed and recorded in the Sediment Analysis Plan.

Between January 19 and February 7, 2005 core samples were collected from 11 sites along the Eureka waterfront and from the beach disposal site. Representative samples were collected at the proposed dredge project depths for each site. Samples were submitted to ToxScan Labs for the required analysis. The analysis included testing for grain size, percent solids, total mercury, total organic carbon (TOC), total petroleum hydrocarbons (TPH), total volatile solids (TVS), metals, semi-volatile organics, PCBs and speciated butyltins in sediment. The results from the 2005 testing were compared to the testing results conducted between August 6th and August 13th, 1996 in order to determine changes in the quality of the sediment over time.

Seven core samples from four of the Eureka waterfront sites were combined in the 2005 testing to form one composite sample (as instructed by the EPA), while in 1996 two of the sites were tested individually (J Street and Bonnie Gool Guest Dock) and the remaining two sites were not tested (Adorni Dock and the Samoa Bridge Launch Ramp). I street Dock and Coast Seafoods Dock were only tested in 2005.

Five sampling sites along the Eureka waterfront and Woodley Island Marina were identical in sampling locations in 1996 and 2005. Therefore, these sites were chosen for comparison. The result indicated that most sampled compound concentrations have decreased over time in those locations. Mercury concentrations decreased at all marina sampling locations. Metal and TVS concentrations also decreased at all sampling locations except at F Street Dock where no change was noted. TPH concentration decreased at four of the sites. Testing results for TOC showed decrease or no change in concentrations since 1996. At all sampling sites except for Commercial Street Dock, the concentrations of most semi-volatile organic compounds decreased. PCBs were not

detected at any site except at Landing Dock where Arcolor 1254 was found at levels of 0.016 mg/kg. Speciated butyltins group were detected at Coast Seafoods Dock and the I Street Dock at levels of less than 10 µg/kg.

USACE staff has not raised any concerns in regards to the suitability of the dredge spoils for near shore ocean disposal. In the Corps request for formal Section 7 consultation from the National Marine Fisheries dated February 8, 2005 it was stated that, "Water quality impacts associated with the disposal of dredged material at the spit would be short-term, localized and minor. The City of Eureka sites contained low concentration of Cr and Nickel in the range of 50-60 mg/kg. The Corps also stated that, "Concentration of PAH were not significantly elevated. PCBs were not detectable at a detection of 0.01 mg/kg. Chloro pesticides have not been tested in the berth, given the paucity of agriculture in the area and the fact that previous testing (detection limit 2µg/kg) in the Federal channel did not detect pesticides; there is no reason to expect significant presence. The Federal channel maintenance material characterization of 1995 through 2001 was similar in character and did not detect Dioxin." Based upon the testing results of 2005, no significant change was noticed in the quality of the sediment at the dredging sites.

As part of their FCWA Section 401 certification for the proposed maintenance dredging project (see Exhibit No. 10), the North Coast Regional Water Quality Control Board found, provided specific conditions were applied to the maintenance program, the proposed dredging would comply with the applicable provisions of sections 301 ("Effluent Limitations"), 302 ("Water Quality Related Effluent Limitations"), 303 ("Water Quality Standards and Implementation Plans"), 306 ("National Standards of Performance"), and 307 ("Toxic and Pretreatment Effluent Standards") of the Clean Water Act [33 USC Subsection 1341 (a)(1)], and with other applicable requirements of State law. The attached conditions require that:

- Best Management Practices be employed for turbidity control, including the use of a cutter-suction dredge and ocean disposal within the surf zone during the time of year when background turbidity levels are expected to be high and dissipation of the spoils slurry is expected to be rapid.

- Sediment from Coast Seafood's dock area not be dredged and discharged to surface waters without prior written approval from the USEPA and Regional Water Board.

- No debris, soil, silt, sand, bark, slash, sawdust, rubbish, cement or concrete washings, oil or petroleum products, or other organic or earthen material from any construction or associated activity of whatever nature, other than that authorized by this permit, be allowed to enter into or be placed where it may be washed by rainfall into waters of the State. When operations are completed, any excess material or debris, including concrete washings, shall be removed from the work

area and disposed of properly. No rubbish shall be deposited within 150 feet of the high water mark of any stream.

- Fueling, lubrication, maintenance, operation, and storage of vehicles and equipment not result in a discharge or a threatened discharge to waters of the United States. At no time shall the applicant use any vehicle or equipment which leaks any substance that may impact water quality. Staging and storage areas for vehicles and equipment must be located outside of waters of the United States.

- Project activities comply with provisions in the North Coast Region Water Quality Control Plan (Basin Plan).

- Creation of pollution, contamination, or nuisance, as defined by Section 13050 of the California Water Code, is prohibited.

- The suspended sediment load of surface waters in Humboldt Bay or the Pacific Ocean not be altered in such a manner as to cause a nuisance or adversely affect beneficial uses.

- Dredging and sediment disposal activities not cause the turbidity of Humboldt Bay to be increased more than 20 percent above naturally occurring background levels.

- The project site be subject to visitation and assessments by Regional Water Board staff to document compliance with the certification.

- A copy of this permit be provided to the Contractor and all subcontractors conducting the work, and be in their possession at the work site.

- Aerial photos of the surf zone disposal location and the shoreline from the mouth of the Eel River to the mouth of the Mad River be taken before, during, and after the project to provide visual evidence of the effects of the discharge and the natural ocean water conditions along the shoreline. Aerial photos of this stretch of shoreline shall be taken within one week prior to discharge, within two weeks after discharge begins, approximately mid way through the project and within two weeks after the discharge ends. A report containing the aerial photos shall be submitted to the Regional Board within 30 days of the end of the project.

- If, at any time, an unauthorized discharge to surface waters occurs, or any water quality problem arises, the project be ceased immediately and the Regional Water Board be notified promptly.

Supplemental Testing for Chemical Contaminants

Notwithstanding these past agency findings and recommendations, numerous concerns were raised in testimony at the September 14, 2005 hearing regarding the presence of

dioxin/furans "hotspots" subsequently detected at various locations in the vicinity of the proposed maintenance dredging sites, and the past legacy of Humboldt Bay as an industrialized port where extensive timber products processing involving the treatment of lumber with the carcinogenic and endocrinic disrupting compound pentachlorophenol (PCP or "penta") as a wood preservative. Based on these comments, the Commission continued the project hearing to allow for the applicant to test for dioxin/furans and PCP, and to reassess whether the testing for PCBs conducted in early 2005 that had been based on composite sampling had accurately characterized the presence and concentrations of these compounds within the bay sediments.

Between November 4th and November 14th, 2005, fifty-five sediment core samples from the then-proposed eleven Eureka Waterfront moorage facilities and Woodley Island Marina slated for maintenance dredging pursuant to a Sampling Analysis Plan co-approved by the USEPA and Commission's Water Quality Unit. Composite samples from all twelve sites slated for dredging were tested for PCDD/PCDF and PCP. Three of the sites, Coast Seafoods Dock, Fisherman's Terminal and 'F' Street Dock, were also re-tested for polychlorinated biphenyls (PCBs). Additionally, the beach area adjacent to the proposed nearshore disposal site was tested for dioxins/furans, PCBs, PCP, and grain size distribution (see Exhibit No. 10).

In his review of the subsequent chemical analysis of the sediments proposed for dredging (see Exhibit No. 13), Brian Ross, a staff member of the U.S Environmental Protection Agency's Dredging and Sediment Management Team, found with respect to the dredged materials originating from the City dredging areas:

> EPA has reviewed the December 12, 2005 "Sampling Results Report for Dioxin/Furan, PCB, and PCP Testing" prepared by Pacific Affiliates, Inc. for the City of Eureka... from 11 City waterfront facilities, and to dispose of the dredged material in the intertidal and nearshore zone of Samoa Spit.
>
> We are pleased to note that dioxin and furan levels in the Woodley Island Marina and City of Eureka waterfront facilities, while detectable, were quite low. The Coast Seafoods dock, whose sediments have already been excluded from aquatic disposal, had the highest levels (overall 2,3,7,8-TCDD TEQs of 6.99 to 7.70 parts per trillion). The remaining dredging sites had overall TEQs ranging from 1.78 to 4.57 pptr (mean TEQ of 2.86 pptr, median of 2.69 pptr and an average 95 % Upper Confidence Limit of 3.08 pptr). In comparison, there were no detected levels of individual dioxin or furan compounds at the beach disposal site. (The beach still showed an overall TEQ of 1.3 to 1.54 pptr, since overall TEQ calculations assume non-detected compounds are present at % their detection limit.)

Placing the testing results in a statewide perspective, Mr. Ross continues on to state:

> Although the dredged material samples had TEQs slightly higher than the beach disposal site, they were nevertheless low. For example, EPA's Environmental Monitoring and assessment Program (EMAP) conducted a dioxin survey that involved extensive sediment sampling throughout San Francisco Bay in 2000 (Pedersen et al., 2001). This survey found mean and median TEQs of 5 pptr and 2 pptr, respectively, from 56 stations. This 2-5 pptr TEQ range effectively represents the background for dioxins and furans in San Francisco Bay sediments, and compares with a US sediment background TEQ of 5.3 pptr measured from 11 non-source impacted sites throughout the US (EPA, 2003).
>
> The dioxin/furan levels in sediments from the proposed Eureka area project are consistent with both the San Francisco Bay sediment background and the US sediment background. In addition, the dioxin/furan levels in these Eureka area project sediments are generally below EPA Region 9's most conservative relevant screening value: the residential Preliminary Remediation Goal (PRG) of 3.9 pptr TEQ. The residential PRG is based on significant and long-term exposure of children to soils. EPA Region 9 toxicologist Dr. Sophia Serda confirms that the residential PRG is an appropriate and conservative screening value in this case.

Mr. Ross follows on to include a series of question and answers to specific inquiries regarding human health exposure concerns and the significance of the introduction of dioxin/furans/ through a volatilization and aerosolization pathways as had been prepared by Dr. Serda:

> Issue: Are there any life long risks that can be caused by short-term exposure - e.g. six hours per day for 24 days - to dioxin from sediment particles discharged to the surf zone?
>
> Response: The exposure from these parameters would be much lower than any residential impacts already reflected in the PRG.
>
> Issue: Does the cancer toxicity value adequately constrain the human health risk in terms of immunotoxicity endpoints? Reproductive toxicity endpoints?
>
> Response: Per Linda Bimbaum, yes. Using the residential PRG would be protective of the immunotoxicity and reproductive endpoints.
>
> Issue: Does dioxin volatilize from sediment particles as they are discharged to the surf zone?

> Response: For dioxin, potential volatilization is a very minor pathway and does not drive the risk.
>
> Issue: Does aerosolization of dioxin from the sediment particles occur as they discharged from the surf zone?
>
> Response: For dioxin exposure to any sediment aerosolization would be similar to the inhalation of soil particles, an exposure pathway that is already reflected in the PRG values.

With regard to potential impacts to marine biological organisms and the need for further human health-based risk assessments, Mr. Ross went on to state:

> Although the residential PRG is an appropriate and conservative screening value, it is based on human health risk. Ecological impacts are not specifically addressed. There are few directly relevant data that can be brought to bear on this point. However, we note that aquatic organisms are now and will continue to be exposed to these background levels of dioxins and furans, whether dredging and aquatic discharge occurs or not. Upon discharge, we would expect dispersion to very quickly result in orders of magnitude reductions of the dioxin/furan concentration carried by the plume, such that exposure will be rapidly reduced with both time and distance.
>
> We therefore do not expect there to be a significant human health or ecological risk associated with beach or nearshore discharge of the dioxin/furan levels in the proposed sediments, although a quantitative risk assessment is not possible with the existing information. Such a risk assessment would generally be appropriate where higher dioxin levels are present and where exposure conditions are substantially greater. Of course, disposal at the Humboldt Open Ocean Disposal Site (HOODS) would even further reduce any potential exposure. The HOODS location was chosen specifically to avoid high value aquatic habitats, fishery areas, or human use areas to the maximum extent possible. Furthermore it is a depositional area, so project sediments discharged at HOODS would not disperse as far and would soon be buried by greater volumes of (generally even cleaner) material from ongoing federal channel maintenance dredging, further reducing exposure.

In conclusion, Mr. Ross states:

> EPA does not believe that a significant human health or ecological risk is associated with discharge at Samoa Spit of dioxins and furans at the

> concentrations found in the Eureka area project dredged material. In fact, EPA continues to believe that for this project impacts are more likely to result from the physical placement of inappropriately fine material on the beach and in the nearshore zone. EPA would find all this material (with the exception of that from Coast Seafoods dock) to be suitable for ocean disposal at HOODS, and in future years we expect the fine material dredged from the Eureka area facilities will be disposed there.

Jack Gregg PhD of the Commission's Water Quality Unit technical staff has also reviewed the results of the supplemental sediment testing (see Exhibit No. 14). Dr. Gregg presents a chronology of the review efforts undertaken since the September continuance and, with respect to analysis of the sediment testing results, risk thresholds, baselines for comparison, and the significance of human and ecological risks, reiterates many of the same points presented by the USEPA cited above.

In regard to how the sediments sampled at the dock and marina locations compare with the residential preliminary remediation goals for residential settings, Dr Gregg observes:

> Although a few of the sample locations exceeded the PRG of 3.9 pptr, Table 1 shows that the Woodley Island Marina samples, representing 60% of the sediment volume to be dredged, average less than 2 pptr using the conservative "overall" TEQ estimation method. Since the sediments will be mixed with bay water during the dredging process and then further dispersed in the surf zone during discharge, potential human exposure will be much less than considered in the PRGs. Although proper operation of the discharge pipe should ensure that no dredged material is discharged on the beach, even direct contact with the dredged material would be short term and thus less exposure than considered in development of the PRG screening values. Table 2 shows comparison of the PCP and dioxin levels with the USEPA Region IX Preliminary Remediation Goals (PRGs) for residential soils as a conservative assessment of human health risk.
>
> Although there are not federal or state standards for exposure of dioxins to marine organisms, these sediments are below the level where the federal government or the states of Washington or New York would consider bioaccumulation to cause a significant adverse impact (Table 3), even if the material was disposed at a non-dispersive site. Under the surf zone dispersive disposal alternative, marine organisms will be exposed to significantly lower concentrations of dioxins since they will be exposed to the dredged material after it has been mixed with large amounts of cleaner sediment and water. The dredged material will be mixed with bay water during the dredging process and further mixed in the wave zone. During winter months the many millions of cubic meters (24 million per year on average) are discharged from the Eel and Mad Rivers into the ocean waters near Humboldt Bay. As the fine-grained sediment from the

> dredging project settle to the bottom they will be only a small proportion of the total sediment and will be indistinguishable from background conditions. The USEPA staff concluded in the January 12th memo that they "do not expect there to be a significant human health or ecological risk associated with beach or nearshore discharge".

In his conclusion, Dr, Gregg stated:

> The fact that none of the sediments to be dredged (except perhaps at the Coast Seafood docks) were noticeably elevated indicates that that no potential onshore hotspots are having a significant impact on the quality of the sediments to be dredged. The levels found in the areas to be dredged under these permits (which will now exclude the Coast Seafoods dredging) are on average below the conservative human health screening value (USEPA Preliminary Remediation Goal for residential soils of 3.9 pptr TEQ) and below the threshold where bioaccumulation testing is required. Based on these low levels of contaminants and the proposed discharge into the surf zone during the winter storm season when the fine-grained sediments will be dispersed widely over the Eel River Shelf, there is no significant adverse environmental or health risk of surf zone disposal of these sediments and I would recommend allowing this project to proceed with surf zone disposal.

A chief assumption forming the base of the foregoing analysis is that the contaminated sediments would be further diluted and rapidly dispersed in the high energy environment of the surf zone into which they would be discharged. To ensure that the dredged materials being discharged into the nearshore environment receive the maximum possible amount of dilution and dispersal possible, the Commission attaches Special Condition No. 7. Special Condition No. 7 requires the applicant to install and maintain the spoils slurry pipeline outfall at a location within the intertidal reach of the disposal site in a manner that the dredged materials are discharged directly into ocean waters. Discharging dredged materials onto exposed beach areas is prohibited.

In addition, notwithstanding the conclusions reached by the USEPA, North Coast Regional Water Quality Control Board, and Commission's water quality unit staff regarding the low risk of impacts to coastal resources and human health associated with the proposed nearshore disposal of the dredged bay sediments, the full effects of the beach disposal of dredged materials with physical and chemical compositions differing from that of the receiving beach and sub-tidal area remain, to some degree, unknown. Of particular concern is the lack of monitoring that has been performed outside of the immediate discharge area with respect to the persistence of the dredged materials and any effects such lingering deposits may have on marine biological resources. This concern appears repeatedly in the various comments from the reviewing agencies:

EPA continues to object to surfzone placement of material from any of these facilities based on the inappropriately fine-grained nature of the sediments. On this basis, we expect to object to any extension or reissuance of the existing permit once it expires, particularly given the availability of the Humboldt Open Ocean Disposal Site (HOODS) just offshore of Humboldt Harbor. We strongly urge the City of Eureka and the Humboldt Bay Harbor, Recreation and Conservation District to begin taking appropriate steps now, financial and otherwise, to plan to use HOODS or other alternatives to nearshore discharge of fine grained sediment by the time maintenance dredging of these facilities is needed again. – Brian Ross, USEPA

The dredge spoils that will be discharged in this project are 85% silt and clay an only 15% sand, yet the receiving beach is 95% sand. The Department does not believe that a beach composed of 95% sand is suitable for placement of dredge spoils with 85% fines due to the potential adverse effects on benthic habitat, fish, and wildlife. Therefore, the Department recommends that the nearshore subtidal habitat be monitored, in addition to the intertidal habitat, for substrate changes. Aerial photography and water quality monitoring for suspended solids would be helpful to show where the plume is traveling. In addition, the Department recommends that the applicants' (*sic*) begin planning for other methods of disposal for future dredging events. The Humboldt Open Ocean Disposal Site (HOODS) was designed and approved to accept fine-grain sediments and has the capacity to received these sediments. Upland disposal is another option which could be pursued. – Vicky Frey, CDFG

CDF&G staff and USEPA staff have indicated that the applicants may proceed with the project, including shoreline disposal, but that the sediment may not be suitable for beach disposal in the future mainly due to the small grain size and the lack of studies to evaluate the effects of disposal on the near shore sea floor habitat. These agencies have stated that they will object to any future projects involving shoreline disposal. CDF&G staff suggested that the applicants should either begin working now on identifying alternative methods for sediment disposal from future projects, or else plan to use the designated Humboldt Open Ocean Disposal Site in the future. This may be the last opportunity for the applicants to thoroughly study the effects of this type of disposal. If the applicants intend to pursue shoreline disposal for future projects, Regional Water Board staff recommend that the applicants work with USEPA and CDF&G to develop a plan to monitor and study the discharge and near shore subtidal habitat during implementation of this project. – Dean Pratt, NCRWQCB

To monitor the effects of the dredged materials on coastal resources, the applicant has proposed to perform pre- and post-disposal aerial photography of the area between the Eel and Mad Rivers, in conformance with the requirements of by the North Coast Regional Water Quality Control Board as set forth in their FCWA Section 401 certification. However, given the difficulties commonly encountered with interpretation of aerial photographs of aquatic areas, especially when the intent is to track the extent and movement of exotic materials which may closely resemble in-situ shoreline materials, the Commission does not believe that monitoring the dispersal of dredged materials solely by photogrammetry would constitute an adequate monitoring program. Accordingly, the Commission attaches Special Condition No. 1. Special Condition No. 1 requires the applicant, prior to issuance of the coastal development permit for the maintenance dredging to submit, for the Executive Director's review and approval, a comprehensive monitoring plan that, in addition to aerial photography of the disposal site vicinity, includes bathymetric surveying, sediment core sampling, and measurements of turbidity generated by the release of the sediments into ocean waters. The plan is also to identify remediative measures to be taken if the dredged materials persist or accumulate near the discharge area or if the turbidity exceeds 20% of naturally occurring background levels.

9) Project Impacts on Terrestrial Biological Resources

The Commission notes that with regard to potential biological impacts to the land based portion of the project, the placement, use, and removal of the portion of the pipeline that would cross the Samoa Peninsula could have potential impacts on certain rare or endangered species. However, except for the area below the mean high tide line, the segment of the pipeline crossing the Samoa Peninsula is entirely within the coastal permit jurisdiction of the County of Humboldt. The County has approved a separate coastal development permit for this portion of the overall project. Therefore, the "project" before the Commission does not include the portion of the overall project that crosses the Samoa Peninsula.

Nonetheless, the County and the lead agency determined that the environmental effects of the pipeline on the terrestrial habitat of the Samoa Peninsula would not be significant. The pipeline would cross through areas where beach layia (Layia carnosa) is growing. Beach layia is a federally listed endangered species. In addition, the Western snowy plover (Charadrius alexandrinus nivosus) has been known to nest in the spring along portions of the upper beach areas of the Samoa Peninsula. However, the project as proposed would minimize impacts to these species and reduce them to a level of insignificance. The pipeline would be routed along old trails to avoid the beach layia and would be placed by hand in sensitive areas to minimize disturbance from construction. In addition, a qualified biologist would be present before and during laying of the pipeline to identify and evaluate the status of the beach layia populations in order to avoid the plants and minimize impacts to beach layia seedlings. A field survey and biological assessment of snowy plovers conducted by Mad River Biologists concluded that the proposed outfall area was not suitable habitat for the Western Snowy Plover given the

narrow band of possible nesting area along the top of the wave slope and presence of debris and predators and "For these reasons, placement and removal of the pipeline should have no significant effect on the Western Snowy Plover." The County approved the coastal development permit with conditions requiring that the proposed mitigation measures to protect beach layia be implemented by the applicants.

(10) Introduction of Hydrogen Sulfide.

A final potential impact of the project involves the introduction of hydrogen sulfide during dredging extraction. Hydrogen sulfide (H_2S) is a metabolic byproduct of the anaerobic breakdown of organic material within bay sediments. Hydrogen sulfide is an extremely toxic and irritating gas. Hydrogen sulfide is regulated by Occupational Safety and Hazards Administration (OSHA) and has a permissible exposure limit of 20 parts per million (ppm) ceiling concentration and a peak exposure limit of 50 (ppm) for no more than 10 minutes if no other measurable exposure occurs. Inhalation of concentrations of 500-1000 (ppm) will cause rapid unconsciousness and death through respiratory paralysis and asphyxiation. The human health risks of exposure to H_2S are highest in enclosed spaces rather than in an open-air setting. Toxicity of H_2S to plants and animals varies greatly by organism.

The human olfactory mechanism is capable of detecting the presence of hydrogen sulfide gas in quantities as low as two parts per billion (ppb). Levels of hydrogen sulfide detected in the immediate proximity of dredge discharge lines used at the Santa Cruz Harbor, similar to that proposed by the District and City, have been measured at less than eight ppb. This concentration is far below the acceptable level of concentration determined safe for an individual working eight hours per day under constant exposure to hydrogen sulfide gas.

The use of a suction dredging, in place of other methodologies, such as hopper, dragline, or clam-shell dredging, would minimize the amount of sediment disturbance and introduction of H_2S into bay waters. The concentrations of H_2S within the dredged materials would be further diluted by the introduction of seawater to create the dredge spoils slurry and by the initial mixing with ocean waters upon their discharge. No further mitigation would be required to reduce the potentially significant adverse impacts of hydrogen sulfide exposure of humans, and fish and wildlife to less than significant levels.

Conclusion

Therefore, the Commission finds that the development as proposed and conditioned includes mitigation measures, where feasible, to minimize significant adverse environmental effects of the project consistent with Section 30233.

3. Project Alternatives.

The third test set forth by the Commission's dredging and fill policies is that the proposed dredging or fill project must have no feasible less environmentally damaging alternative. Although the Commission determines that the proposed project will have no significant impacts, the Commission has also considered the various identified alternatives, and determines that none of them provides a feasible less environmentally damaging alternative. Section 30108 of the Coastal Act defines "feasible" as, "*capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors.*" Emphasis added.]

A total of seven possible alternatives have been identified, including: (a) utilizing alternative dredging methodologies to cutter-suction / pipeline slurry dredging, including hopper-barge or clam-shell bucket dredging techniques; (b) conducting the dredging at other times of the year; (c) disposing of the dredged material at the offshore HOODS disposal site; (d) disposing of the dredged material at upland disposal sites; (e) use of an interim "knock-down bathymetric grading; (f) extending the spoils slurry outfall offshore to the closure depth; and (g) the "no project" alternative.

a. Alternatives to Cutter-suction Dredging Technique

Four dredging methodologies to the proposed cutter-suction / slurry pipeline dredging technique have been identified. These include: (1) hopper dredging; (2) a combination of cutter-suction dredging using scows and tugs to transport the material to the HOODS site; (3) the use of the Federal Hopper Dredge; and (4) mechanical "clamshell" bucket dredging. For the following reasons, all of these techniques are not appropriate for the proposed project as they would either be infeasible to perform or result in greater environmental damage.

Hopper Dredges - are self-propelled dredging vessels whose hull forms the bin in which the sediments are pumped. Drag arms, fitted with a suction pump are attached near the front of the hull. During operation, the drag arm, or arms are lowered to the desired depth and trail along the dredge. As the drag arms loosen bottom sediments, the pump sucks the loosened sediments into the hollow drag arms and deposits them in the ship's hold. When the dredge reaches the disposal site, the bottom of the holds open and the dredged sediments are released. The U.S. Army Corps of Engineers (USACE) uses this type of dredge during the maintenance dredging of the Humboldt Bay shipping channels.

Hopper dredges are typically large vessels that are not suited for precision dredging work in confined areas such as marinas where dredging around and under structures and obstructions is necessary. Hopper dredging has been assessed as being practicable for a small part of the overall cooperative project area, representing approximately fifteen percent (15%) of the estimated sediment volume, comprising those sites with unobstructed wharf frontage.

The use of the hopper dredge for this project would result in more significant environmental impacts than when using a cutter-suction pipeline dredge. The

hopper dredge generates a significant volume of suspended sediment at the dredge site as the hopper is filling with solids. Dredged sediment is suctioned into the hopper of the dredge along with substantial volume of water. As the hopper fills, the accompanying water, laden with the finer suspended sediment, overflows the hopper into the water body from which it is dredged. Furthermore, dredge hoppers are commonly purposely filled past the point when the hull overflows to partially decant the spoils to increase the load of sediment in the hull As a result water column turbidity significantly increases and areas on the bay bottom are subject to covering effects associated with the re-deposition of dredged solids. The turbidity levels will vary during dredging according to the physical characteristics of the sediment. The finer the sediment the more turbidity increases. When turbidity increases, dissolved oxygen (DO) levels tend to decline in the vicinity of such dredging operations, potentially compromising aquatic species survival in the area affected by the sediment plume.

Given the anticipated length of the cooperative project (approximately 90 days), and that the dredging sites are situated in close proximity to one another along a defined reach of channel, the increased suspended sediment levels within the channel and adjacent sensitive intertidal areas of Humboldt Bay for the duration of the project would result in greater environmental damage to the water quality of Humboldt Bay, both directly and cumulatively, than that result from the use of the proposed cutter-suction dredging method. Thus, while the potential less than significant impacts associated with disposal of dredged materials in the nearshore environment would be avoided, impacts to the estuarine environment of Humboldt Bay would be significantly increased. Therefore, the use of the hopper dredging technique is not a feasible less environmentally damaging alternative.

Cutter Suction Dredging / Hopper Barge Disposal at HOODS Site - Effectively dredging the Eureka waterfront properties and the Woodley Island Marina utilizing a hopper-dredge for the transport of sediments to HOODS would require that the hopper dredge work in tandem with a small cutter-suction pipeline dredge. The smaller cutter-suction dredge would conduct the actual dredging and pump the sediments through a pipeline to the hold of the hopper dredge. When full, the hopper dredge would then disconnect from the cutter-suction pipeline dredge and make the 18-mile, two-hour round trip to the HOODS. During sediment transport to HOODS, dredging operations within the bay would be halted.

Dredging by this method would produce significantly more turbidity at the dredge sites than if dredged strictly by the cutter suction pipeline method, as the hopper dredge would be decanting the entire time sediment is being pumped into the hold. Based upon dredging records from the preceding 1987 and 1997 dredging episodes, the cutter suction dredge pumped at approximately twenty five percent (25%) solids to seventy five percent (75%) water. Given this ratio, it would necessitate approximately four (4) hopper volumes of pumped slurry to fill the

hopper with one volume of dredge solids. This would result in the discharge of three to four hopper volumes containing suspended sediments into Humboldt Bay, which would not occur during the cutter-suction pipeline method proposed for the project.

The combined cutter-suction / hopper barge option was investigated in past maintenance dredging proposals developed by the applicant. In a letter to the applicant's agent dated April 10, 1997, Veron Scovell, president of Nehalem River Dredging noted, "Recently, we completed a project where we pumped from a cutter-suction dredge to hopper barges, and by tug transported the sediment to an off-shore disposal site. The amount of non-productive time spent mooring the barges, connecting and disconnecting the spoils line from the barges added considerable cost to the project. The barge and tug expense for transport of dredged spoils to the disposal site also added considerable costs. Pumping the slurry to the barges generated an enormous sediment cloud during dredging operations when the water flowed from the overflow portal."

In addition, hopper disposal is generally not as efficient or as cost effective as pipeline transfer, inasmuch as the dredge cannot operate while the barge is in transit to the disposal site. The length of time to conduct the maintenance dredging would be significantly extended unless multiple barges area employed. Additionally, the barge(s) are typically not self-propelled, requiring the employment of tugs for transport, further congesting bay areas adjoining the dredge sites.

Thus, for the reasons set forth above, using a combination of cutter-suction and hopper barge dredging methodologies would not represent a feasible less environmentally damaging alternative.

Cooperative Dredging Using USACE Hopper Dredge - Another alternative technique considered the prospect of having the USACE hopper dredges do the maintenance dredging on these dredge sites immediately adjacent to the Eureka inner and outer channel as part of the Corps' annual channel maintenance dredging project. The sites that would be available for this method would include Bonnie Goo1 Guest Dock, Adorni Dock, I Street, J Street, F Street, Fisherman's Terminal, Coast Seafoods Dock, Commercial Street Dock and Dock B. Upon contacting Corps representatives, it was discovered that the USACE is prohibited from doing projects where they compete with private companies and they are similarly restrained from getting as close to structures as is needed for this project. Therefore, utilizing USACE dredging vessels to maintain several of the dredge sites is not an feasible alternative.

Mechanical "Clamshell" Dredging - is a mechanical dredging method used to remove sediment of varying density through the direct application of mechanical force to loosen and excavate sediment. The clamshell method can be economical

for small jobs due to the economics of mobilization; however, there are practical and environmental concerns with large-scale applications. This method also does not allow efficient and uniform removal of material. It is difficult and not applicable to use this method in close quarters such as boat slips; this method cannot be used to dredge beneath slips and docks.

Clamshell method uses a clamshell bucket, which may vary in size, but usually has a capacity of about 4.5 cubic yards. The bucket is operated by a crane stationed on barge platform. The open bucket is lowered to the ocean floor and then closed, retaining sediment. The retained sediment is then raised to the surface and transferred to either a receiving vessel, another scow or barge, a hopper barge, or, if operating near dock access, to trucks for transport to disposal sites. Trucks may also be used to transport dredged sediment to upland confined disposal area. During the lifting of the bucket load of sediment from the bay waters and into the transport vessel or vehicle, turbid water and some sediments, in varying amounts depending upon the specific type of bucket used, will drain out of the clutches of the bucket and re-enter bay waters, raising the suspended sediment levels in the water column above the dredged area.

To effectively dredge the Woodley Island Marina and the City of Eureka waterfront sites by clamshell bucket dredging, the floats and utility systems would need to be removed to obtain access to the sediments beneath these semi-permanent structures. The floats of Woodley Island Marina, the larger of the two marina facilities, contains water, electrical, phone, and saver (bilge line) services provided in separate conduits. Dismantling and reconstructing the twenty-eight-year-old facility and its utility system would necessitate building code upgrades of fire, water and electrical services. The cost to the owner would be approximately $620,000, equivalent to re-constructing the entire marina, including the re-installation of the float system, at current prices, less then the material expense of the floats. Thus, this methodology also appears to be both economically infeasible and involve greater environmental risks. Therefore, use of clamshell bucket dredging methodology is not a feasible less environmentally damaging alternative.

b. Conducting Maintenance Dredging in Other Seasons

The winter/spring time period was previously prescribed by the NCRWQB for historically related projects within Humboldt Bay. The winter dredge period effectively reduces turbidity impacts at the dredge sites, especially within the Eureka Inner Reach Channel of Humboldt Bay (project area) where of turbid runoff from the uplands of the Freshwater Creek and Ryan Slough watersheds predominates, The minor quantity of suspended sediment generated within the Eureka Inner Channel by the cutter-suction pipeline dredge would not be detectable over the diminished background water quality for a good portion of the

rainy season. While summer ocean conditions may provide a safer and easier round trip to the HOODS site, dredging within the Eureka Inner Reach Channel during the summer and fall would result in noticeable water quality effects and interfere with endangered species fish migration.

The timing of maintenance dredging on Humboldt Bay is also dependent upon the migration periods of endangered species fish from major tributaries such as Jacoby and Freshwater Creeks, to the Pacific Ocean through north Humboldt Bay. Migration of coho salmon smolts (Oncorhynchus kisutch) generally commences in April. West Coast coho smolts typically leave freshwater in the spring (April to June) and re-enter freshwater when sexually mature from September to November. To date, the National Marine Fisheries Service (NMFS) has permitted dredging only between November 1, 2005 and March 31, 2006. In accordance to Section 7 of the Endangered Species Act (ESA) of 1973, a change in the timing of the maintenance dredging would require that NMFS extend the dredging window into these critical periods of smolt migration. Therefore, performing the dredging during different seasons other than winter/spring is not a feasible less environmentally damaging alternative.

c. Disposal at Offshore HOODS Disposal Site.

As noted previously, the federal government has designated an offshore disposal site for dredged material known as the "HOODS" disposal site. The site is between three and four miles offshore of Humboldt Bay, beyond sovereign state lands in federal waters. The Commission concurred with a Coastal Zone Management Act consistency determination made by the U.S. Environmental Protection Agency for designation of the site in 1995 (CD-72-95). Over 800,000 cubic yards of dredged material is disposed of annually at the site, mostly from maintenance dredging of Humboldt Bay navigational channels performed by the U.S. Army Corps of Engineers.

A possible alternative to the proposed project that would avoid even the temporary impacts on habitat at the surf zone disposal site would be to dispose of the dredged material at the HOODS site. During the 1998 maintenance dredging project three state and federal agencies commented to the Corps of Engineers in response to the Corps' public notice of its consideration of federal permits for the project that this alternative should be used to avoid impacts to habitat at the surf disposal zone. The Commission acknowledges the concerns raised by the commenting agencies. However, the Commission finds that discharging the dredged materials into the nearshore environment would not have appreciably greater adverse impacts than dispatching the spoils to the offshore HOODS disposal site even though each disposal alternative has unique and different sets of environmental impacts to marine and estuarine biological resources. As explained by the applicants' consultants in response to the 1998 reviewing agency comments and under the various dredging methodology sub-alternatives

discussion above, use of the HOODS disposal site would actually increase turbidity impacts in and around the dredging areas.

Turbidity would be increased near the dredging area because a different method of transferring the dredged material to the disposal site would have to be used. Given the three to four mile distance to the HOODS site across open ocean waters, a pipeline obviously cannot be used to discharge dredged material at the HOODS site and the use of vessels must be relied upon.

Use of a suction dredged is required given the close quarters within the mooring areas where the dredge must operate. The water content of the material dredged with the suction dredge approaches 80%. While the high proportion of water in the slurry material does not present a problem for transferring the dredged material to the disposal site through a contained pipelined, the high water volume does present a problem for transferring the dredged material by barge or hopper dredger to an offshore disposal site. When using hoppers or barged to transport the dredged material, a large proportion of the 80% water volume of the dredged material must be decanted and the resulting water discharged during vessel loading to accommodate the solids (20%). This decanting would take place in or near the dredge area to allow for efficient filling of the vessels. Significant turbidity can be expected to result from the discharge of the supernatant water, which contains significant amounts of sediment. In fine-grained material (only approximately 15% is coarse sandy material), the degree of turbidity will be greater than if the material had a more sandy composition.

The primary reason the Harbor District and the City of Eureka chose not to propose disposal of the dredged material from the maintenance dredging proposed under coastal permit applications 1-96-60 and 1-96-61 at the HOODS site is the comparative costs of these options. Based on cost estimates provided to the HBHRCD by dredging companies, the proposed project with surf zone disposal would cost approximately $2 million. The cost of disposing of the material at the HOODS site would nearly double the total cost to $3.8 million.

In addition to the added cost, the time delay that would be involved in implementing the HOODS disposal alternative make this alternative infeasible. The applicant is a public entity without substantial financial reserves and would need to secure grant funding, special appropriations of legislative bodies, or obtain a voter-ratified bonding measure or increase to their current ad valorem property tax rate. As noted previously, large numbers of commercial, public, and recreational vessels who moor in the berths to be dredged are adversely affected by the accumulation of sediment in their berths that makes access difficult and increases the risk of damage to these vessels. The added year or two that would be needed to secure the additional funding necessary for HOODS disposal would greatly exacerbate the berthing problems. Accordingly, use of the HOODS

disposal site is not a feasible alternative for conducting this project in the necessary time-frame.

d. Disposal at Upland Disposal Sites.

Dredged materials have previously been deposited at an upland disposal site on the Samoa Peninsula known as the "Superbowl" site (see Exhibit No. 3), adjacent to the Old Eureka Airport/Samoa Dragstrip. The 60-acre site was used for disposal of sediments in the North Bay Channel Improvement Project of 1978-79 and for other projects in the late 1970s. The site reportedly has capacity available, and the dredged material could be piped to the disposal site, thus avoiding turbidity impacts at the dredge site as the proposed project would.

However, since the Superbowl site was last used, portions of the site have transformed into freshwater marsh habitat and sensitive plant species have colonized portions of the site. These areas are considered to be environmentally sensitive habitat areas, and are protected by the Coastal Act. Use of the site for the proposed project would likely result in significant disturbance of the habitat through filling atop established freshwater wetlands and the effects that the decanting of saltwater within the dredge spoils would have on Menzie's Wallflower (Erysium menziessii) located on the west and northeast dunes adjacent to the site and populations of beach layia (Layia carnosa). As the habitat values at the surf zone disposal site and the potential impacts to marine resources associated with the introduction of the dredged materials into the littoral ocean environmental are considered to be less than significant, and the impacts of the use of the surf zone disposal site would be temporary, the Commission finds that the alternative of using the Superbowl for dredge disposal is not an environmentally less damaging alternative.

With respect to other past disposal sites, the former L-P upland disposal site, now owned by the applicant agency, is located southwest of the intersection of State Route 255 and New Navy Base Road has been used for numerous maintenance dredging operations at L-P's Samoa facilities and other North Bay dredging projects. However, the North Coast Regional Water Quality Control Board (NCRWQCB) rescinded the waste discharge requirements for this site on June 28, 2001. In addition, this site has limited capacity that is not large enough to accept the material to be dredged as part of the proposed project. Therefore, the Commission finds that he alternative of using the form L-P upland disposal site is not a feasible less environmentally damaging alternative. The site may have enough capacity for disposal of dredge spoils from individual berthing docks, and may be suitable for accepting dredged material that has elevated levels of contaminants that would render them inappropriate for unconfined aquatic disposal, including the HOODS facility. Permits to re-open the LP upland dredge disposal site are required from the NCRWQCB and Humboldt County. The

applicant agency is currently working to obtain permits from these agencies to reopen this site.

In 2003, the applicant agency had several discussions with the City of Arcata about the possibility of using the maintenance dredge materials as part of Arcata's McDaniel Wetland Restoration Project. A large quantity of fill material will be required for impounding and bringing portions of the restoration area up to elevation suitable for the reestablishment of saltmarsh. Although Arcata is considering the utilization of dredge spoils as fill in the project, the McDaniel Slough project is still within its initial environmental review phase with permitting for project yet to be secured. Thus, due to the significant differences in the timelines for these two projects, the McDaniel Slough project site was dismissed as a feasible upland disposal site.

No other upland properties are known to exist within a reasonable distance from the dredging sites that: (a) would have adequate capacity to receive the volume of dredge materials that would originate from the City and District docking and marina facilities; (b) would not result in greater environmental impacts to coastal resources; or (c) have owners willing to either sell or allow the District and City to conduct landfill dredge material disposal on their properties. Therefore, the Commission finds that the use of an upland disposal site is not a feasible less environmentally damaging alternative.

e. "Knock-down" Bathymetric Grading

The applicants also explored, as an interim measure, the use of "knock-down" bathymetric grading. This technique involves redistributing shoaled sediments within the dredging prism of the dock or marina area, whereas in regular dredging, shoaled sediments are completely removed. Knock-down dredging is performed by dragging an I-beam towed by a boat across a shoal in order to redistribute the shoaled material within the project area, or by excavating shoaled material with a clamshell bucket and releasing the material near the bottom elsewhere within the project area. The knock-down technique is usually used to supplement routine maintenance dredging when time constraints may not allow for regular maintenance dredging or when a shoal threatening navigation covers a small area that is otherwise at or below its permitted depth. Use of the "knock-down method is restricted to the physical bounds of a designated berthing area and to be feasible requires that their be significant bathymetric differential within area

The USACE has indicated that only 1,000 cubic yards would be authorized for knock-down. Additionally, NMFS staff has voiced concerns over the potential environmental impacts of this methodology, including the effects increased turbidity on essential fish habitat and on migrating adult fish due to the timing of the dredging and requested additional information on sediment concentrations and

settling times in order to evaluate the impacts of this alternative. It is possible that depending on the amount of sediment to be knocked down, locations and durations of the activity, the knock-down technique may not have adverse effects and if so, a concurrence letter could be prepared by NMFS. If however, the effects were deemed significant, NMFS may need to revise its biological opinion or issue a new opinion. Because of the time implications associated with securing revision or new biological reviews, and the fact that the action would only be an interim measure that would not result in longstanding deepening of the dock and marina areas, the Commission finds that knock-down bathymetric grading as a project option is not a feasible less environmentally damaging alternative.

f. Deepwater Extension of Spoils Pipeline Outfall.

Another potential project alternative would entail the extension of the dredged materials pipeline outfall from its proposed location within the upper subtidal ocean waters to the "depth of closure," the depth of water at which sediments will be transported to deposition in offshore depths rather than to be cyclically returned onto the beach and/or transported laterally along the shoreline by longshore currents. For Northern California, the depth of closure has been estimated to be an approximately 40-foot depth of water.

The option to extend the discharge line further out beyond the breaker zone to further ensure littoral cell dispersal of the sediments would be difficult to implement due to the added complications associated with in maintaining the pipeline and the cost associated with constructing a temporary structure to support the pipeline. The wintertime surf zone represents a high-energy environment that makes it very difficult to maintain a pipeline in place. The proposed outfall location that has historically been used on the beach slope itself requires continual maintenance during disposal operations due to the beach erosion that occurs during high energy storms.

The costs of constructing a temporary structure to hold the pipeline in place and off of the ocean surface would be significant and would be likely more environmentally damaging. Such a structure in the surf zone would require ongoing monitoring, maintenance, and repair that would be expose dredging personnel to hazardous surf conditions.

In addition, such temporary discharge pipeline extensions have been unsuccessfully attempted in the past. During work at the Louisiana-Pacific Corporation's Samoa Pulp Mill to extend the permanent outfall line when a temporary flexible pipeline was being used to convey process effluent, L/P attempted to place the pipeline, beyond the surf zone. Despite the pipeline being substantially larger in diameter and longer then the pipeline being used for the

maintenance dredging project, and arguably more stable, the plastic pipeline became repeatedly twisted and kinked in the surf surge, resulting in a significant losses to its discharge capacity. As a result, the effort was subsequently aborted.

Moreover, based on biological and physical monitoring of the Samoa Beach disposal site conducted between 1998 and 2002 following the last dredging episode, the mixing and dispersal of the fine materials was determined to be effectively accomplished by the deposition of the material in the near shore zone. Because of these turbulent conditions, the fine particles remain in suspension and do not settle in the nearshore surf zone. During the winter storm season, the wave energy prism is very wide and extends beyond the surf zone to deep waters. Once the materials reach deeper waters, turbulent conditions are reduced and the fine particles are allowed to settle out of suspension within the water column. Photographs taken during the 1998 episode indicate that significant sorting of the spoils occurs, with the larger, heavier sand fragments settle in the near shore zone and fine material being transported offshore. Thus, extension of the spoils pipeline outfall to deeper water areas is not a feasible less environmentally damaging feasible alternative.

g. The No Project Alternative.

The no project alternative would entail that no maintenance dredging of the accumulated sediments within the Woodley Island Marina be undertaken. With no dredging, there would be no impacts from dredging and no impacts from disposal. However, without maintenance dredging, the berthing areas would eventually silt in to the point that they could no longer be used for commercial fishing vessels or recreational boating, except by the shallowest draft vessels. The berthing areas would likely be forced to close, and the boaters who currently use the site would be displaced. As there are limited mooring facilities in Humboldt Bay, many of these users would be forced to leave this region of the coast. Such a result would be contrary to policies of the Coastal Act. As discussed previously, commercial fishing and recreational boating are given high priority under the Coastal Act and the Coastal Act policies call for the protection of these uses and the facilities needed to continue these uses. Therefore, the Commission finds that the no project alternative is not a feasible less environmentally damaging alternative.

Conclusion

The Commission finds that there are unique and different sets of impacts associated with the various dredging alternatives, and certain alternatives, specifically those involving disposal of the dredged materials other than in the nearshore ocean environment would arguably result in an incremental reduction in risks to biological resources that utilize littoral areas for habitat. However, as discussed in other findings, the proposed discharge of the dredged material in the

nearshore environment would not result in a significant adverse impact to water quality, biological resources, coastal access, or other coastal resources. When the differing impacts of the disposal site alternatives are considered in light of the urgent need for maintenance dredging at the project site, the protracted timeline associated with implementing these alternatives, and the fiscal limitations of public agencies and the added costs associated with the alternatives, none of the identified alternatives can be found to be a feasible less environmentally damaging alternative to the proposed development.

4. Maintenance and Enhancement of Estuarine and Marine Habitat Values

The fourth general limitation set by Sections 30231 and 30233 on dredging and fill projects is that any proposed dredging or fill project must maintain and enhance the biological capacity of the habitat, where feasible.

As discussed above, although the project as proposed would have adverse impacts on habitat at both the dredging and disposal sites, the impacts will not be significant. By avoiding significant impacts to coastal resources, the project will maintain the biological productivity and functional capacity of the habitat. However, there will be a continuing need for maintenance dredging of the bay in the future. Based on past dredging patterns, maintenance dredging will likely be required at roughly ten-year intervals. Therefore, the Commission finds that it is necessary for the impacts of the proposed surf disposal to be monitored to ensure that if unexpected impacts were to occur, the results could be used during the evaluation of future dredging projects by the Commission and other agencies. Consideration of the information provided by a monitoring report would help ensure that such future projects are conducted in a manner that will maintain and enhance the biological capacity of the habitat.

The Commission notes that it has relied, in part, on information provided by the 1998 monitoring report prepared after the last episode of surf zone dredge material disposal in its evaluation of the current permit application. Accordingly, the Commission attaches Special Condition No. 1 which requires that prior to issuance of the permit, the applicant submit a surf zone disposal monitoring plan for the review and approval of the Executive Director. The plan must provide for monitoring over a five year period of: (1) the pattern and rate of dispersal of material deposited at the site (2) sediment characteristics at the disposal site and at the control site; (3) the species composition and abundance of intertidal invertebrates in areas directly affected by the disposal of dredge spoils and at a control site near the disposal area over a three year period; and (4) the effects of the surf zone disposal on fisheries.

As conditioned, the Commission finds that the proposed project is consistent with the requirements of Sections 30231 and 30233 of the Coastal Act that any proposed dredging or fill project must maintain and enhance the biological productivity and functional capacity of the habitat, where feasible.

5. Use of Dredged Material for Beach Replenishment

The fifth test set forth above is that dredge spoils suitable for beach replenishment be transported to appropriate beaches or into suitable long shore current systems. One of the concerns of any dredging project is the loss of sand to the particular longshore current cell and the possible resulting downcoast erosion. When possible, sandy dredge spoils should be disposed in a location that will ensure downcoast disposal.

The sediment to be dredged consists of typically fine-grained material composed of approximately 15% sand, 45% silt, and 40% clays. Only the sand portion of the material is suitable for beach nourishment, and given the small component of sand in the dredged material, the applicants do not claim that the project can be characterized as a beach nourishment project. Nevertheless, given the proposed location and timing the project to be conducted during the winter months when a high background level of turbidity exists along the open ocean shoreline, the proposed disposal site is an appropriate beach for beach replenishment. As the site is within the surf zone, the material would be discharged where the sand component may enter the long shore current system, although the beach in question is not in a sand-starved condition.

Furthermore, the site is sufficiently far from the mouth of Humboldt Bay that discharges at the site would not contribute to a mounding or shoaling problem within a navigational area. Therefore, the Commission finds that the small component of the material to be dredged that is suitable for beach nourishment will be transported to an appropriate beach consistent with the sand supply requirements of Section 30233 of the Coastal Act.

D. Permit Authority, Extraordinary Methods of Repair and Maintenance, Shoreline Protection Structures.

Coastal Act Section 30610(d) generally exempts from Coastal Act permitting requirements the repair or maintenance of structures that does not result in an addition to, or enlargement or expansion of the structure being repaired or maintained. However, the Commission retains authority to review certain extraordinary methods of repair and maintenance of existing structures that involve a risk of substantial adverse environmental impact as enumerated in Section 13252 of the Commission regulations. Section 30610 of the Coastal Act provides, in relevant part:

> *Notwithstanding any other provision of this division, no coastal development permit shall be required pursuant to this chapter for the following types of development and in the following areas: . . .*
>
> *(d) Repair or maintenance activities that do not result in an addition to, or enlargement or expansion of, the object of those repair or maintenance activities; provided, however, that if the commission determines that*

certain extraordinary methods of repair and maintenance involve a risk of substantial adverse environmental impact, it shall, by regulation, require that a permit be obtained pursuant to this chapter. [Emphasis added.]

Section 13252 of the Commission regulations provides, in relevant part:

(a) For purposes of Public Resources Code section 30610(d), the following extraordinary methods of repair and maintenance shall require a coastal development permit because they involve a risk of substantial adverse environmental impact:...

(3) Any repair or maintenance to facilities or structures or work located in an environmentally sensitive habitat area, any sand area, within 50 feet of the edge of a coastal bluff or environmentally sensitive habitat area, or within 20 feet of coastal waters or streams that include:

(A) The placement or removal, whether temporary or permanent, of rip-rap, rocks, sand or other beach materials or any other forms of solid materials;

(B) The presence, whether temporary or permanent, of mechanized equipment or construction materials.

All repair and maintenance activities governed by the above provisions shall be subject to the permit regulations promulgated pursuant to the Coastal Act... [Emphases added]

The rock slope revetment repair portion of the proposed project is a repair and maintenance project because it does not involve an addition to or enlargement of the levee. The approximately 100-foot linear portion of the levee to be repaired is only a small portion of the shoreline protective works that extends for more than a 1,750 lineal feet along the shoreline of the Woodley Island Marina. Although certain types of repair projects are exempt from CDP requirements, Section 13252 of the regulations requires a coastal development permit for extraordinary methods of repair and maintenance enumerated in the regulation. The proposed rock slope revetment repair involves the removal of dislodged riprap from an environmentally sensitive habitat area (Humboldt Bay) and related replacement of these materials onto a shoreline protective structure that is situated within 20 feet of the coastal waters of Humboldt Bay, utilizing mechanized equipment. The proposed repair project therefore requires a coastal development permit under Sections 13252(a)(3)(A) and (B) of the Commission's administrative regulations.

In considering a permit application for a repair or maintenance project pursuant to the above-cited authority, the Commission reviews whether the proposed method of repair or maintenance is consistent with the Chapter 3 policies of the Coastal Act. The

Commission's evaluation of such repair and maintenance projects does not extend to an evaluation of the conformity with the Coastal Act of the underlying existing development.

Although not located within the berthing and docking locations proposed for dredging, eelgrass (Zostera marina) beds occupy an approximately 50 to 100 square-foot area near the westernmost slips of the marina. These patches of eelgrass could be impacted by the proposed rock slope revetment repairs if materials or personnel were to enter the area and either trample, crush, or up-root the plants during repositioning of the dislodged shoreline protective materials.

To minimize the potential adverse effects to eelgrass from this portion of the project the Commission attaches Special Condition No. 3. Special Condition No. 3 requires that care be taken to avoid trampling or uprooting areas of eelgrass during the repair and maintenance work. In addition, the special condition includes provisions for training contractor personnel as to the presence and identification of eelgrass outcroppings within the vicinity of the subject shoreline protective works repair. These measures would reduce potential cumulative impacts to the estuarine resources of Humboldt Bay associated with the rock slope revetment repair.

E. Public Access.

Coastal Act Section 30210 requires that maximum public access opportunities be provided when consistent with public safety, private property rights, and natural resource protection. Coastal Act Section 30211 requires that development not interfere with the public's right of access to the sea where acquired through use. Coastal Act Section 30212 requires 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, as when adequate access exists nearby. 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 those 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 objectives of the project to ensure that vessels can continue to use berthing areas at the Woodley Island Marina for mooring will help maintain recreational boating as a form of public access to Humboldt Bay and the ocean. In addition, as the project would have a duration of only a few months, as all portions of the disposal pipeline and the dredging area itself would be sufficiently marked to warn boaters of its presence, and all portions of the line crossing navigational channels would be submerged to the bottom where they would not block vessel passage, the project will have no significant effect on vessel access during project construction. Similarly, as the portion of the pipeline that crosses the Samoa Peninsula and the disposal site would also be marked and lighted during the several months of the winter that the project would be undertaken and would not preclude

passage up and down the peninsula by public access users, the project will have no significant impact on public access use of the Samoa Peninsula. Furthermore, as the dredging would only maintain the existing mooring and maneuvering areas, the proposed project will not create new vessel mooring opportunities that could draw more people to the waterfront and create more demand for public access.

Therefore, for the reasons indicated above, the proposed project will not have any significant adverse effect on public access. The Commission finds that the proposed project, which does not include any new provision for shoreline public access, is consistent with the public access policies of the Coastal Act.

F. Water-oriented Recreational Activities.

In addition to the provisions of Sections 30224 and 30233(a)(2) for enhancing and maintaining facilities for recreational boating use, the policies of the Coastal Act also extend to other recreational uses of coastal waters and oceanfront lands. Section 30220 states that, "*Coastal areas suited for water-oriented recreational activities that cannot readily be provided at inland water areas shall be protected for such uses.*" Further, Section 30221 reads, "*Oceanfront land suitable for recreational use shall be protected for recreational use and development unless present and foreseeable future demand for public or commercial recreational activities that could be accommodated on the property is already adequately provided for in the area.*"

As further described in Project and Site Description Findings Section IV.A.3, the proposed nearshore disposal of the dredged bay sediments would be at a location on the open strand of the North Spit of Humboldt Bay situated west-southwest of the intersection of Highway 255 and New Navy Base Road (see Exhibit No. 4). This site lies in the vicinity of two locally popular recreational sites, the so-called "Power Poles" surfing spot and Samoa Beach, located approximately 2,000 feet to the south-southwest of the proposed spoils slurry pipeline discharge point. Samoa Beach is one of three day-use coastal access facilities developed along the ocean side of the Samoa Peninsula, improved with 25 off-street parking areas. This facility is used by local residents as well as residents of other nearby communities for beach walking, picnicking, surf fishing, and other similar recreational pursuits. No specific data has been collected for the areas adjoining the proposed nearshore disposal site with respect to recreational use levels.

At the project's September 14, 2005 hearing, numerous speakers commented about the potential impacts the nearshore disposal of dredged materials could have on the quality of recreational opportunities in areas surrounding the proposed spoils outfall. Several commenters raised concerns over: (1) the potential health risks to persons engaged in water-related recreational activities, including surfing, surf fishing, sea kayaking, and dog walking in and along the ocean waters in proximity to the pipeline outfall; and (2) the desirability of recreating in those water and beach areas in the presence of the discharge from an aesthetic standpoint.

With regard to impacts to coastal recreation, especially water-oriented activities, the Commission acknowledges that the discharging of dredged materials into the ocean waters at the proposed disposal site would affect the desirability of recreating in those water and beach areas due to the presence of elevated suspended sediment content, detectable concentrations of hydrogen sulfide, discoloration of the water column, and for some the presence of the pipeline and/or the knowledge that dredged materials are being discharged into the nearshore area. However, the Commission notes that: (1) as no significant risks to human health have been found to likely result from exposure to the dredged materials as discussed in detail in Water Quality at the Nearshore Disposal Site Findings Section IV.C.2(8); (2) alternative sites exist in relative proximity nearby where these activities could be pursued; and (3) the discharge of dredged materials is temporary and of relatively short-term duration occurring over a period of about four months out of an approximately seven- to ten-year maintenance cycle.

Nonetheless, the presence of elevated levels of suspended sediment in the waters at the disposal site may render the area undesirable for some visitors and certain coastal recreational users, including those who walk or run along the beach's wetted strand or undertake water-related activities, such as surfing, swimming, or kayaking in the open ocean. Some visitors may wish to avoid the disposal area during maintenance dredging disposal operations and seek alternate sites for these recreational activities.

Therefore, to provide constructive notice to these user groups of the temporary use of the site for dredged materials disposal and the significant increase in suspended sediments within ocean waters in proximity to the disposal pipeline outfall, the Commission attaches Special Condition No. 9. Special Condition No. 9 requires the applicant to submit a plan for the review and approval of the Executive Director for the installation of signage along the beach and landward approaches to the spoils slurry pipeline outfall. These signs shall inform coastal visitors: (1) that they are entering a permitted maintenance dredging disposal site authorized for the nearshore pipeline disposal of excavated spoils for a specified time period; (2) of the presence of elevated levels of suspended sediment within the discharged sediments; (3) of the location of alternative sites nearby for such activities where water clarity and odor would not be as affected by the discharge of the dredged materials.

In conclusion, the Commission finds that no significant adverse impacts to water-oriented coastal recreational opportunities will not result from the development as conditionally approved and the project as conditioned is consistent with Sections 30220 and 30221 of the Coastal Act.

G. Visual Resources.

Section 30251 of the Coastal Act requires that the scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance, and requires

in applicable part that permitted development be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural land forms, and to be visually compatible with the character of surrounding areas. Furthermore, Section 30240(b) of the Coastal Act states that development in areas adjacent to parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those recreation areas.

Maintenance dredging and related spoils disposal operations present a temporary intrusion into visual resource areas and occur generally along the disposal line within Humboldt Bay, or in proximity to the spoils disposal outfall on the North Spit of the Samoa Peninsula. The bay is generally visible from numerous public viewing areas. These include the Eureka waterfront itself, the A.M. Bistrin Memorial Bridge crossing of State Route 255 over Humboldt Bay, and along the bay shorelines of Indian Island and the Samoa Peninsula. In addition the dredge spoils disposal outfall would be visible from the open ocean and sandy beach areas in the immediate vicinity of the discharge line. In terms of scenic areas of importance, the City of Eureka and the County of Humboldt LCPs both designate views of Humboldt Bay and the Pacific Ocean from specified viewing points as visual resource areas.

The project elements that would occur within the public viewshed include: (1) the dredge platform itself, along with any floating sections of pipe; (2) sections of flexible pipe placed across land segments to transport sediment for nearshore disposal, and (3) the ocean beach portions of the pipeline. However, views of these facilities would not result in a significant impairment of scenic resources, for the following reasons: (1) the presence of the dredge would simply blend in with other vessels already visible and should not be counted as an adverse impact, and (2) the surface-lain flexible piping for transporting dredge spoils slurry would be similarly temporary and vary in locale, depending on the particular disposal destination of the dredged materials.

Therefore, given its temporary and transient nature, and the fact that the proposed dredging and disposal activity would not significantly alter scenic public views within and along the shorelines of Humboldt Bay along the route of the dredge spoils transmission pipeline or along the open ocean shoreline in proximity to the dredge spoils pipeline outfall, the Commission finds that this project is consistent with Sections 30251 and 30240(b) of the Coastal Act.

H. U.S. Army Corps of Engineers Review.

The project is within and adjacent to a navigable waterway and is subject to review by the U.S. Army Corps of Engineers (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 U.S. Army Corps of

Engineers, the Corps will not issue a permit until the Coastal Commission approves a federal consistency certification for the project or approves a permit.

On December 10, 1997, pursuant to Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act, the U.S. Army Corps of Engineers (Corps) issued Permit No. 22215N to the Harbor District. The permit, which expires on March 15, 2008, is for maintenance dredging of accumulated sediment in the Outer and Inner Reaches of the Eureka Channel in Humboldt Bay, and for surf disposal of dredged material in the Pacific Ocean off the Samoa Peninsula, Humboldt County, California. The first dredging episode took place in 1998, and permitted the District to excavate and dispose of 67,155 cubic yards (cy) of dredged materials. Although SONCC coho salmon was listed as threatened at the time the permit was issued, the Corps did not consult NMFS. However, a special condition of each permit required completion of Section 7 Endangered Species Act (ESA) consultation, prior to authorization of any additional dredging episode. As discussed in the following finding, a final biological opinion regarding the project's potential impacts to coho salmon and the essential fish habitat was released on December 6, 2005 by the NMFS for the November 2005 – March 2006 project timeline (see Exhibit No. 11). An extension to the opinion or a new opinion covering the project's November 2006-March 2007 timeframe must be secured before the proposed dredging for that time period can be authorized by the Corps. Based upon the recommendations received from NMFS as contained in the biological opinion, the terms and conditions of Permit No. 22215N may be changed through a Letter of Modification Issued by the Corps.

To ensure that the dredging activities ultimately approved by the Corps is the same as the project authorized herein, the Commission attaches Special Condition No. 3 which requires the applicant to demonstrate that it has all necessary approvals from the U.S. Army Corps of Engineers for that season's dredging operations prior to commencing dredging each season. The applicant is required to inform the Executive Director of any changes to the project by the Corps and not implement the changes until the applicant obtains a coastal development permit amendment.

I. Consultations by National Marine Fisheries Service.

Pursuant to Section 7 of the Federal Endangered Species Act (16 USC 1531) and the Magnuson-Stevens Fishery Conservation and Management Act (50 CFR 600), the U.S. Army Corps of Engineers Federal Clean Water Act Section 404 individual permit is subject to prerequisite and interim consultations with the National Marine Fisheries Service (NMFS) regarding the project's potential environmental effects on fisheries. A final biological opinion regarding the project's potential impacts to coho salmon and the essential fish habitat was released on December 6, 2005 by the NMFS for the November 2005 – March 2006 project timeline (see Exhibit No. 11). An extension to the opinion or a new opinion covering the project's November 2006-March 2007 timeframe must be secured before the proposed dredging for that time period can be authorized by the Corps.

To ensure that project incorporates operational procedures and restrictions identified by NMFS as necessary for minimizing the take of coho salmon to incidental levels, the Commission attaches Special Condition No. 5. Furthermore, to ensure that any extended or superseding biological opinion issued by NMFS addresses the same project operational procedures and restrictions authorized herein, the Commission includes within Special Condition No. 5 a requirement that the applicant submit, for the review of the Executive Director, a copy of the extended or revised final biological opinion issued for the dredging project, and notification of any project changes required by the Corps in response to the recommendations within the final opinion. The Executive Director would determine whether an amendment to the coastal development permit would be required before the November 2006-March 2007 dredging work could commence.

J. Compliance with California Endangered Species Act.

SONCC coho salmon are also listed on the California Endangered Species Act as "threatened." As set forth in Section 2080.1 of the California Fish and Game Code, for any threatened or endangered species co-listed under both the Federal Endangered Species Act and the California Endangered Species Act, for which the responsible federal resource agency has issued an incidental take statement or permit, the California Department of Fish and Game (CDFG) is directed to conduct a consistency review of that federal agency's action with CESA. To assure that the Commission is apprised of the results of such a consistency review, Special Condition No. 6 has been attached to the permit's approval requiring that, prior to issuance of the subject coastal development permit, the permittee provide a copy of the CDFG's determination. Alternately, if the CDFG is compelled to issue a take permit pursuant to CESA, the applicant shall similarly submit a copy of the state incidental take permit project and the project shall not commence until the Executive Director has reviewed the take permit to determine whether an amendment to the coastal development permit is required.

K. California Environmental Quality Act.

Section 13096 of the Commission's administrative regulations requires Commission approval of coastal development permit applications to be supported by a finding showing the application, as modified by any conditions of approval, to be consistent with any applicable requirement 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 substantially lessen any significant adverse effect the proposed development may have on the environment.

The Commission incorporates its findings on conformity with the Chapter 3 policies of the Coastal Act at this point as if set forth in full. These findings address and respond to all public comments regarding potential significant adverse environmental effects of the project that were received prior to preparation of the staff report. As specifically

discussed in these above findings, which are hereby incorporated by reference, mitigation measures that will minimize or avoid all significant adverse environmental impacts have been required. As conditioned, there are no other feasible alternatives or feasible mitigation measures available which would substantially lessen any significant adverse impacts which the activity may have on the environment. Therefore, the Commission finds that the proposed project can be found to be consistent with the requirements of the Coastal Act to conform to CEQA.

V. EXHIBITS

1. Regional Location Map
2. Vicinity Map
3. Mid-Humboldt Bay Maintenance Dredging Overview Map
4. Project Narrative and Site Plan
5. Woodley Island Marina Bathymetric Survey
6. Woodley Island Marina Maintenance Dredging Cross-sections
7. Dredge Spoils Pipeline Route Map
8. Dredge Spoils Nearshore Disposal Site Map
9. Executive Summary – 1998 Dredge Spoils Disposal Site Monitoring Report
10. Excerpts, *Sampling Results Report for Dioxin/Furans, PCP, and PCB Testing*, Pacific Affiliates, Inc., December 2005
11. Excerpts, NMFS' FESA Section 7 Consultation Biological Opinion
12. Review Agency Correspondence
13. Memo from Brian Ross, USEPA Region 9 Dredging and Sediment Management Team
14. Memo from Jack Gregg PhD, CCC Water Quality Unit
15. General Correspondence

ATTACHMENT NO. 1

STANDARD CONDITIONS:

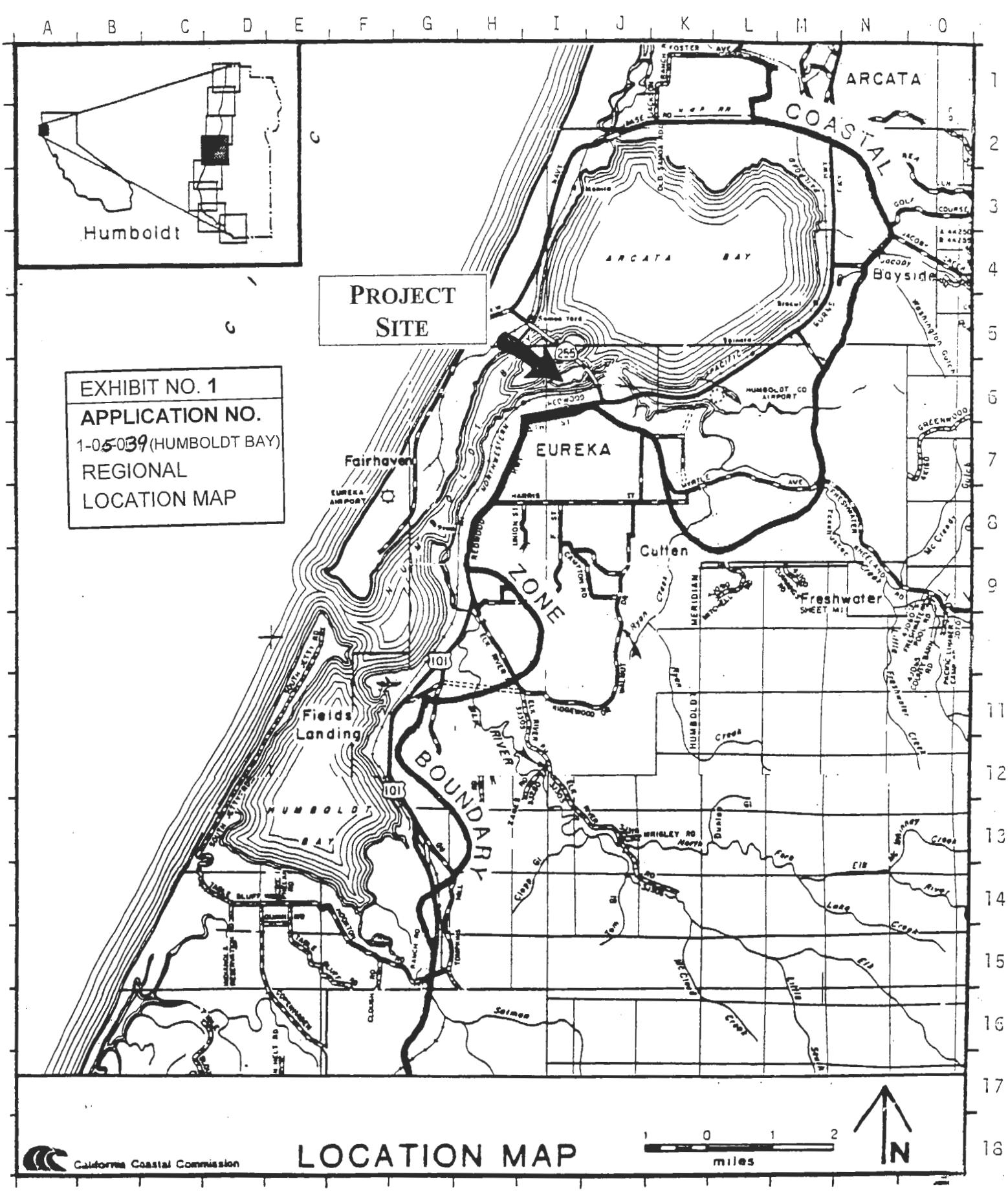
1. Notice of Receipt and Acknowledgment. The permit is not valid and development shall not commence until a copy of the permit, signed by the permittee or authorized agent, acknowledging receipt of the permit and acceptance of the terms and conditions, is returned to the Commission office.

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.



County of Humboldt

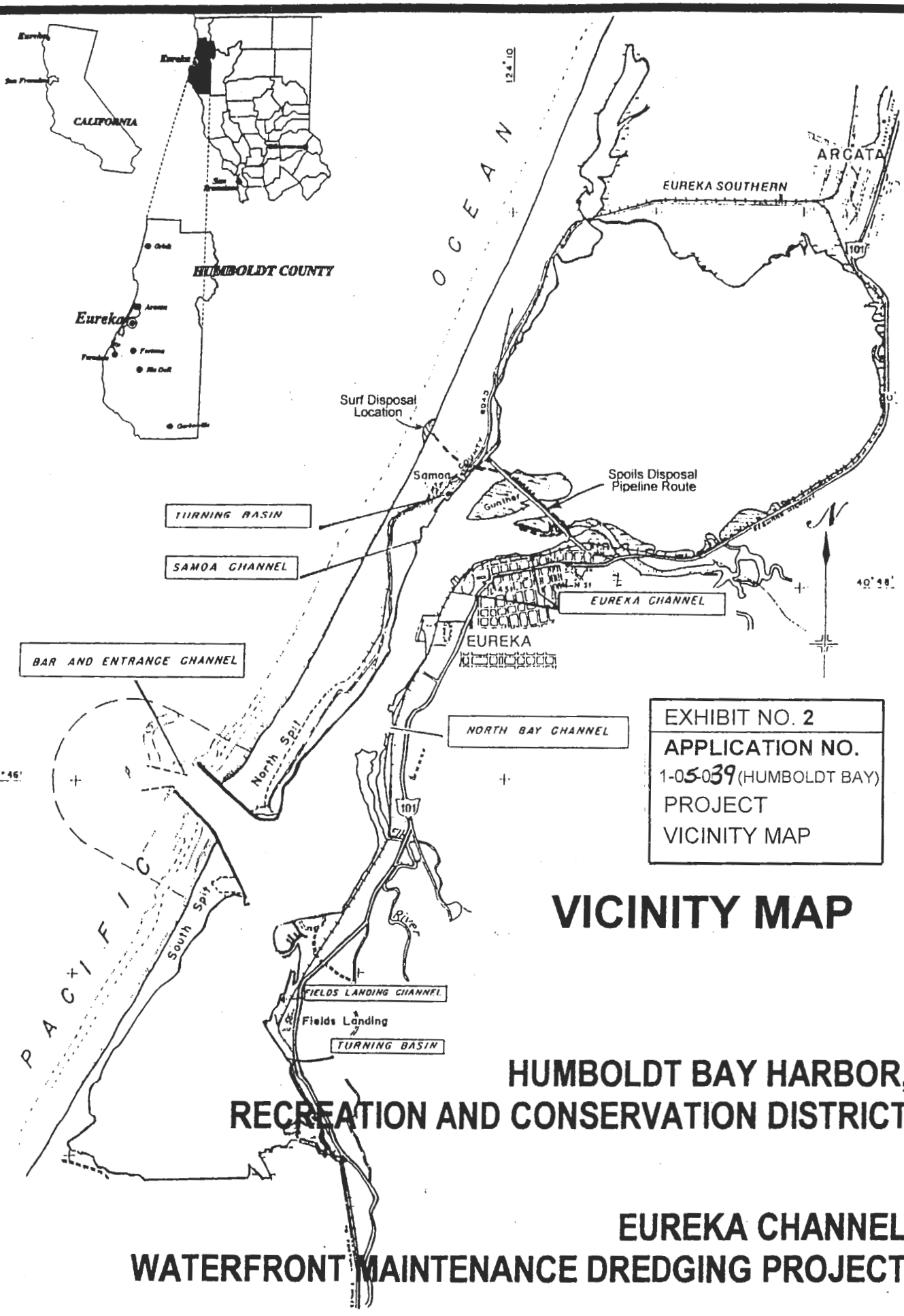


EXHIBIT NO. 2
APPLICATION NO.
1-05-039 (HUMBOLDT BAY)
PROJECT
VICINITY MAP

VICINITY MAP

HUMBOLDT BAY HARBOR, RECREATION AND CONSERVATION DISTRICT

EUREKA CHANNEL WATERFRONT MAINTENANCE DREDGING PROJECT

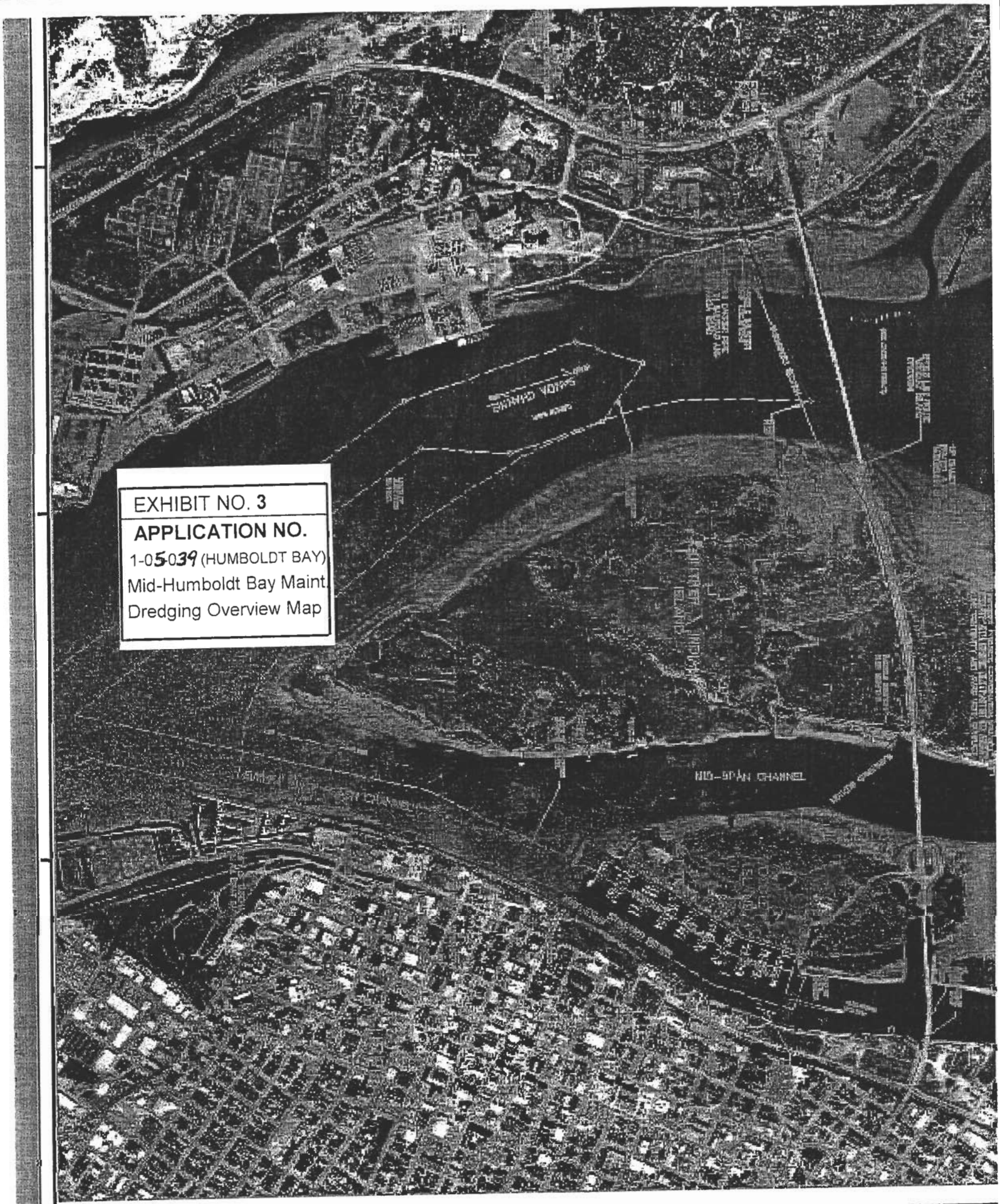


EXHIBIT NO. 3

APPLICATION NO.

1-05-039 (HUMBOLDT BAY)

Mid-Humboldt Bay Maint. Dredging Overview Map

HE-1

HBHRCD & CITY OF EUREKA

MAINTENANCE DREDGING

EUREKA INNER REACH

EUREKA, CA

OVERHEAD VIEW

DAVID L. SCHNEIDER

PACIFIC APPLIED

HUMBOLDT BAY HARBOR, RECREATION AND CONSERVATION DISTRICT MAINTENANCE DREDGING OF THE WOODLEY ISLAND MARINA

CALIFORNIA COASTAL COMMISSION PERMIT APPLICATI

Project Description

History

Woodley Island Marina, constructed for the Humboldt Bay Harbor, Recreation and Conservation District in 1978, berths approximately 320 small craft recreational, pleasure and fishing boats on the Eureka Inner Reach Channel of Humboldt Bay. The marina, located on the southern shore of Woodley Island, is directly north across the Channel from the Carson Mansion area of the Historic Old Town District of Eureka.

The marina is configured so that the western two-thirds of the berths (Transient Dock - Dock F) can accommodate vessels having drafts of up to 12 feet and the eastern one-third (Docks G - I), vessels of drafts less than 10 feet. The design depths of -14 feet Mean Lower Low Water (MLLW) and -10 feet Mean Lower Low Water (MLLW) compliment the two areas respectively. Both berthing areas were designed with a one foot maximum overdepth allowance below the depths specified above. The marina was last dredged in 1998 when 120,000 cubic yards of accumulated sediment was removed by cutter-suction dredge and disposed of in the surf along the Samoa Peninsula. Prior to that in 1987, 140,000 cubic yards of accumulated sediment was removed, also by cutter-suction dredge and disposed of in the surf along the Samoa Peninsula. The dredging performed in 1987 was the first since the original construction dredging of the marina in 1978.

The Eureka Inner Reach Channel receives upland run-off from Ryan Slough and Freshwater Slough (Freshwater Creek) and tidal run-off from the Arcata Bay. The winter upland run-off from Ryan and Freshwater Sloughs accounts for the bulk of the Marina's sedimentation, with the Inner Reach Channel becoming very turbid during storm events.

Purpose of Project

The project is required in order to maintain adequate berthing depth for the 300+ vessels which moor within the existing berthing areas of the Woodley Island Marina, as well as insure the continued safe and convenient operation of this moorage facility. The project will be conducted in combination with the maintenance dredging of the Eureka Small Boat Basin and Waterfront properties. The project is scheduled to commence in November of 2005 and terminate on March 31, 2005, pending approval of all permits.

Proposed Project

The dredge site, maintenance dredging scenario and the dredge disposal pipeline route proposed are the same as that utilized under the 1998 permits. The current proposal involves the maintenance dredging and disposal of an estimated 120,000 cubic yards of accumulated sediment from the marina's berthing areas. The majority of the material to be dredged is within the western two-thirds of the marina, Transient Dock - Dock F, as

currently 96,000 cubic yards of material is present above the maximum project line of -15 feet MLLW. The shallower 10 foot berths, Docks G - I, account for the remaining 24,000 cubic yards of sediment to be dredged. This project also involves minor rock slope protection maintenance, inasmuch as rocks that have migrated down the slope into the dredging prism will be reinstated to their original position.

Project Description

The proposed project involves the maintenance dredging and disposal of an estimated 120,000 cubic yards (including overdredge) of accumulated sediment from the moorage areas of the Woodley Island Marina located on the Inner Reach Channel of the Humboldt Bay Channel System.

Dredging is proposed to be conducted by a cutter-suction pipeline dredge, the same method utilized during the 1987 and 1998 maintenance dredging projects. Approximately 70% if the material to be dredged by this project is fine, silt, and clay. The remainder is about 30% sand. The small cutter-suction dredge used in 1987 and 1998 had the ability to maneuver itself between the main docks and finger slips of the marina and remove dredge material from beneath the areas covered by the floats. The utilization of cutter-suction dredge method of dredging is also the best technology for reducing the turbulence at the dredge location, as the cutter head loosens the sediment and a constant suction is maintained by the pump, drawing the loosened sediments and much of the turbid water into the pipeline. Turbid water will be present at the dredge site and down current, (depending upon the tide) but in significantly lower quantities than if a hopper dredge or clamshell dredge were used. The timing of the project, during the winter months, will effectively reduce the turbidity caused by dredging due to the significant turbidity within the Inner Reach Channel from upland run-off caused by storm events.

The schedule of dredging will be circulated to all tenants of the marina so that boats can be moved as necessary to facilitate the complete maintenance dredging activity.

From the cutter-suction dredge at the marina the spoils slurry will be pumped through a semi-flexible disposal line to the designated disposal area. The spoils line is floated across minimal access open water areas and weighted and submerged where crossing navigable waters. The route of the spoils line is the same as that used in the 1987 and 1998 dredging projects. It is proposed that the spoils line for this project will leave the marina running parallel to the north side of the Inner Reach Channel and upon reaching the Samoa Bridge, will proceed west along the Highway 255 right-of-way. On the Woodley and Indian Island portions of the pipeline route the line will be positioned off the westbound shoulder through an Encroachment Permit from Cal-Trans . Where the line enters the mid-span channel and the Samoa Channel, it will be submerged to allow the passage of vessels. At no point in the pipeline route will the line cross the federally authorized shipping channels of Humboldt Bay. Floating sections of the line will be marked with buoys and lights to warn vessels of its presence for the duration of the project. Booster pumps stationed in the pipeline to assist in pumping the spoils slurry, will be positioned on Woodley Island to the east side of the center span of the Samoa Bridge at the western approach and on the shore of the west side of the Samoa Channel approximately 700 feet south of the Samoa Bridge. From the Samoa booster, the spoils line will be routed through an existing carrier pipe beneath Old Samoa Road,

then above ground across the eastern end of the Louisiana Pacific Corporation upland disposal site to the edge of New Navy Base Road. From this point the line will pass through another existing carrier pipe beneath New Navy Base Road, then run above ground along existing off road vehicle roads to the surf zone of the Samoa Peninsula (Pacific Ocean). Through the dune area to the surf, the pipeline will be covered where utilized roads or trails intersect the route, and marked to warn the public of its presence. At the beach discharge area, signs and barricades will be posted to warn the public of the temporary conditions.

The dredging scenario and the pipeline route described are the same as utilized under the 1987 and 1998 permits. Pipeline route areas disturbed by placement, maintenance and removal of the spoils line will be reclaimed to as near pre-project conditions as possible, and as per conditions of all individual permits.

Surf disposal of spoils has been utilized for several dredging projects and most recently during the 1998 maintenance dredging project and is again proposed herein. Surf disposal during the Winter (2005) will reduce the effects of turbidity within the surf zone of the Samoa Peninsula. During this period of the year, the Eel and Mad Rivers are typically discharging significant amounts of turbid water into the ocean proximal to the surf zone discharge point. The higher sediment-laden levels of the ocean waters, experienced during winter months, aids in reducing the effects of suspended concentrations of sediments at the spoils discharge point relative to the seasonal background levels. Higher wave action during the winter also helps to distribute the discharged sediments through the surf zone.

The winter dredge/disposal period effectively reduces turbidity at the dredge sites, especially within the Eureka Inner Reach Channel of Humboldt Bay where the predominance of turbid run-off from uplands of the North Bay drain. The minor quantity of suspended sediment generated within the Eureka Inner Reach Channel by the cutter-suction pipeline dredge would not be detectible over the diminished background water quality for a good portion of the winter rainy season. Dredging within the Eureka Inner Reach Channel during the summer and fall (May - October) would result in noticeable effects to water quality.

The spoils discharge area will be posted at several locations as to the activities and duration of the project. Barricades and lighting will be provided and maintained throughout the project to further inform users of the Peninsula of the temporary activities. The discharge area will be inspected and maintained daily to ensure the proper public notification of the project activities and safe access to the North Spit Recreational area.

Through the shallows and unnavigable waters of the Bay, the spoils line will be floated. Where the line will cross navigable waters of Humboldt Bay, weights will be attached to submerge the line and permit the normal passage of vessels. Buoys and lights mark the line throughout the bay crossings to prevent navigational hazards to mariners. A Notice to Mariners is also filed with the U.S Coast Guard for the duration of the project, advising marine travelers of the project activities within navigable waters.

Sections of plastic disposal line will be floated into position within the Bay, or placed in position using a small rubber tired tractor within the upland right-of-ways, then heat

fused to prevent leakage of spoils. Cleanup of any leakage will be the responsibility of the dredging contractor. Regular inspection and maintenance of the entire length of the line is carried out during the project to ensure integrity and prevent leaks or breaks.

The dredge and booster pumps rely on diesel engines for the pumping of sediment. They generate the equivalent noise and exhaust of a semi-tractor rig when in operation. Booster pumps are located away from residences for the prevention of noise related impacts. All fuel burning engines will be fitted with appropriate muffler systems and maintained throughout the project. Dredging operations along the Eureka Waterfront are within areas of regular industrial and commercial activities. The diesel engine of the dredge should not cause significant noise increases above the typical daily operational levels of the project area. Other than live-aboards at the Eureka Public Berthing Facility (Small Boat Basin) and the Woodley Island Marina, there are no other residences on the immediate Eureka Outer and Inner Reach Waterfront that would be affected by the proposed project.

Mobilization of the spoils line, booster pumps and dredge is expected to take ten to fifteen days and involve eight to ten full time employees. Following contractor mobilization, the dredging contractor's crew will consist of five to six full time employees. Three or four persons will split the twenty-four hour shift work operating the dredge and the remaining employees will conduct the maintenance activities of the operation. Dredging operations, especially those encumbered by a specific seasonal operating period, run six to seven days a week, twenty-four hours a day. An operational schedule such as this is expected for this project, based upon historic requirements and present informal consultation with the California Regional Water Quality Control Board.

Upon completion of the project, the general public will enjoy efficient access to Humboldt Bay and the important recreational and commercial facilities thereon.

Dredge Material Disposal Specifics

A sediment sampling plan was approved by the Regional Water Quality Control Board (Mr. Bill Rodriguez) and performed by Pacific Affiliates for the 1998 and the 2005 maintenance dredging project. In short, the final determination on suitability for surf dispersion was that, as characterized, contaminant levels were within acceptable limits for ocean dispersion. A copy of that "Report of Sediment Sample Analysis" is appended herein this permit application as well as a copy of the Chemical Analysis, Toxicity Evaluation and Bioaccumulation Testing of Sediments from Humboldt Bay for prepared for the U.S. Army Corps of Engineers by Toxcan, Inc. and Kinnetic Laboratories, Inc.

Review of the volumes of existing sediment testing data from 2005 of Humboldt Bay and the proposed dredge sites has not indicated any areas of concern. The surf disposal site has been repeatedly monitored, and again the data does not reflect any areas of concern. Since the last sampling, there have not been any vectors, which could have effected a change. As such, re-sampling will not result in any variance of the current samples/data and therefore no new sampling is proposed for this project.

Estimated Cost of Development

This project and the Woodley Island Marina Maintenance Dredging Project are scheduled to be a cooperative project between the City of Eureka and the Humboldt Bay Harbor, Recreation and Conservation District in an effort to share project related costs, better serving the citizens of the region.

The total estimated cost of development for this project is $1,250,000.00. The City's portion is estimated to be $500,000.00 which will be paid for by the City's Redevelopment Funds and the Humboldt Bay Harbor, Recreation and Conservation District's portion is estimated to be $750,000.00.

Directions to the Site

To access the Woodley Island dredge site from Highway 101, North or South, proceed into the City of Eureka to the Highway 255, Samoa Bridge Exit (near the north end of Eureka). Head west on Highway 255 across the southern span of the Samoa Bridge and exit to the Woodley Island Marina, where the southern span touches down upon Woodley Island.

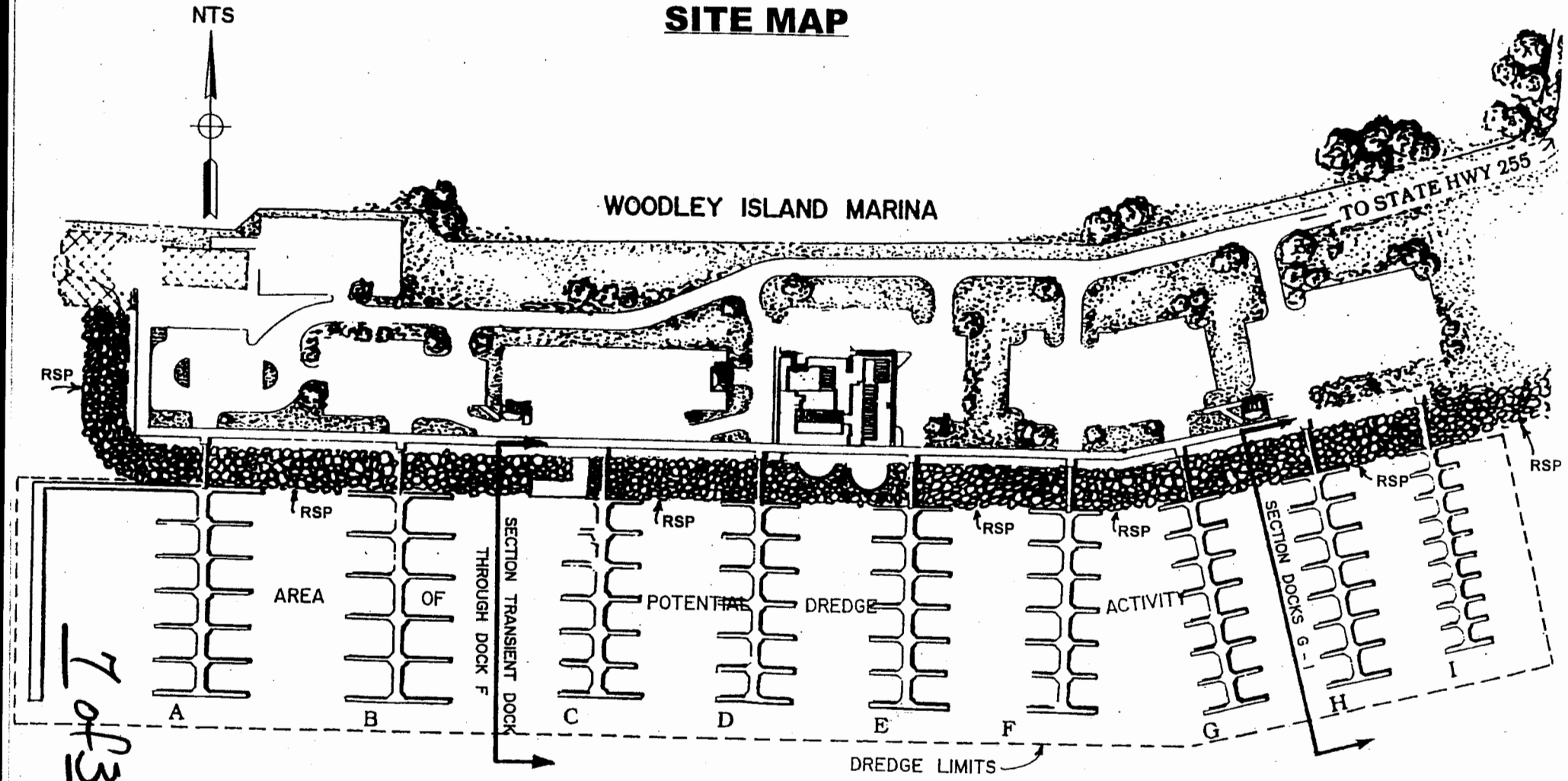
To access the proposed spoils pipeline route and beach disposal site, continue northwest across the Samoa Bridge (the disposal pipeline is proposed to be placed along the westbound shoulder) to the Highway 255, New Navy Base Road Intersection. The pipeline will exit the Bay at a point approximately 700 feet southwest of the west span of the bridge, enter carrier pipes beneath Old Samoa and New Navy Base Roads. The spoils line will exit the carrier pipes at a point approximately 300 feet southwest of the Highway 255 New Navy Base Road intersection and continue overland on existing off road vehicle roads to the ocean beach of the Samoa Peninsula.

Woodley Island Marina Rock Slope Protection

The contactor shall excavate all rock slope protection (RSP) that has slid down the slope and into the dredging prism. Extracted rock slope protection shall be re-placed on the slope as directed by the Project Engineer. An excavator or approved piece of machinery capable of lifting a 500 lb rock at fifty feet shall be the minimum size employed for the RSP relocation.

The RSP replacement task will occur during low tide. During the last dredging cycle it was found that a lot of RSP had migrated into the dredging prism and it caused problems for the cutter head of the suction dredge. The rocks will be removed as we dredge and then placed back on the slope. Since the rocks will be "hunted" for with an excavator in the dredging prism, it will be under the direction of the engineer on a time and materials basis.

SITE MAP



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HUMBOLDT BAY
EUREKA INNER REACH CHANNEL

PACIFIC AFFILIATES, INC.
A CONSULTING ENGINEERING GROUP
990 W. WATERFRONT DRIVE • EUREKA • CA • 95501
PHONE: (707) 445-3001 • FAX: (707) 445-3003

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DAVID L. SCHNEIDER R.C.E. 27285
TRAVIS L. SCHNEIDER R.C.E. 67393

January 20, 2006

Mr. Jim Baskin AICP, Coastal Planner
California Coastal Commission
710 E Street, Suite 200
Eureka, CA 95501-1865

Re: City of Eureka and Humboldt Bay Harbor, Recreation and Conservation District Cooperative Maintenance Dredging Project, CDP Applications 1-05-039 and 1-05-040 – Modifications to project description.

Dear Mr. Baskin:

On Behalf of the City of Eureka and the Humboldt Bay Harbor, recreation and Conservation District we would like to modify the above referenced project description to include the 2007 dredging window (November 1st, 2006 – March 31st, 2007). The project is expected to begin in the 2006 dredging window and terminate at the end of the 2007 dredging window. As such we have requested form the US Army Corps of Engineers (ACOE) to extend the Biological Opinion issued by National Marine Fisheries Service (NMFS) on December 7, 2005 until the end of 2007 dredging window (attached is the letter to the ACOE).

In addition, on behalf of the City of Eureka we would like to remove Coast Seafoods Dock from application 1-05-039. Due to elevated contaminant levels in the sediment from this site, the sediment at Coast Seafoods was not recommended by the EPA for aquatic disposal and will therefore be dredged separately and disposed upland.

Should you have any questions or require any additional information please contact me at (707) 445-3001 or via email to ytilles@pa-schneiderdock.com.

Sincerely,

Yoash Tilles

Yoash Tilles
Project Manager
E.I.T 117566

Attachment: Letter to ACOE dated January 20, 2006

cc: David M. Hull - Humboldt Bay Harbor, Recreation and Conservation District
Mike Knight - Department of Public Works, City of Eureka
Greg Dale – Coast Seafoods Company
File 04-930/940
File 05-1005

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DAVID L. SCHNEIDER R.C.E. 27285
TRAVIS L. SCHNEIDER R.C.E. 67393

January 20, 2006

Mr. Clyde Davis
Regulatory Branch
US Army Corps of Engineers
San Francisco District
333 Market Street, 8th Floor
San Francisco, CA 94105-2191

Re: City of Eureka and Humboldt Bay Harbor, Recreation and Conservation District Eureka Waterfront and Woodley Island Marina Maintenance Dredging Project – Permit 22215N.

Subject: Request to extend Biological Opinion issued by NMFS to cover 2007 dredging window. Request for Episode III of Permit 22215N to dredge Coast Seafoods.

Dear Mr. Davis:

On behalf of the Humboldt Bay Harbor, Recreation and Conservation District and the City of Eureka we would like to request that the US Army Corps of Engineers (USACOE) extend the Biological Opinion issued by National Marine Fisheries Service (NMFS) on December 6th, 2005 to cover the 2007 dredging window (November 1st, 2006 – March 31st, 2007).

In addition, on behalf of the City of Eureka, we request that the USACOE approve Episode III for Permit No. 22215N which expires on March 15th, 2008. The applicant proposes to exclude the dredging of Coast Seafoods Dock from Episode II and include this project in Episode III. It is proposed in Episode III to excavate approximately 3,800 yd^3 of dredge material from the moorage area of Coast Seafoods Dock. The addition of Coast Seafoods to Episode II of Permit No. 22215N was requested by the applicant in a letter sent to the USACOE on March 8th, 2005. Since the dredged material from Coast Seafoods was not authorized by the USACOE and the EPA for nearshore ocean disposal, as proposed in Episode II, the applicant proposes to dispose the dredged material upland.

The purpose of the project is to restore berthing depth for commercial oyster boats that moor at Coast Seafoods Dock. The excavation is proposed to be completed by a clamshell dredge from shore. Dredged material will be clamshelled and transferred to lined trucks that will transport the dredged material to an approved upland dredge disposal site.

The proposed site for dredging necessitates immediate maintenance dredging to insure the continued utility of the dock. The dredging is scheduled to commence on March 1st, 2006 or when all permits are secured. The project is expected to take five (5) days to execute. Approximately 100 yd^3 will be removed each hour using the clamshell dredge. The clamshell dredge will operate eight (8) hours a day. The project is expected to be completed by March 5th, 2006.

The sediment from Coast Seafoods Dock was tested on February, August and November, 2005. All sediment testing episodes were approved by the USACOE, EPA and the Regional Water Quality Control Board (RWQCB). The sediment from the site was tested on February 2005, for grain size distribution, percent solids, total mercury, Total Organic Carbon (TOC), Total Petroleum Hydrocarbons (TPH), Total Volatile Solids (TVS), metals, semivolatile organics, Polychlorinated Biphenyls (PCB) and speciated butyltins in the sediment. The site was tested again for grain size, PCBs and Semivolatile organics on August 2005. On November, 2005 the site was tested for PCBs, Pentachlorophenols (PCP), Dibenzo-p-dioxin (PCDD), and Polychlorinated Dibenzofurans (PCDF). The testing results are attached and are also included in the April 1st, 2005 and December 12th, 2005 Sediment sampling report submitted to you by Pacific Affiliates.

The proposed project descriptions for the dredging of Coast Seafoods is as described in the application for dredging in Episode II, except for the dredging methodology (clamshell for Episode III vs. cutter-suction dredge in Episode II) and are attached to this letter. Also please find enclosed a copy of the cross section and the hydrographic survey for Coast Seafoods Dock.

Should you have any comments or questions or require any additional information please contact me at (707) 445-3001 or via e-mail at ytilles@pa-schneiderdock.com.

Yoash Tilles

Signature on File

Project Manager
E.I.T 117566

Enclosures: Site Description
Summary of Test Results
Hydrographic Survey and Cross Section

cc: Mike Knight – City of Eureka (Letter)
David Hull – Harbor District (Letter)
Greg Dale – Coast Seafoods Company (Letter)
Dean Prat – RWQCB (Letter)
Vicki Frey – CDFG (Letter)
Diane Ashton – NMFS (Letter)
Jim Baskin – CCC (Letter)
P.A. Files 930, 940 and 1005

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DAVID L. SCHNEIDER R.C.E. 27285
TRAVIS L. SCHNEIDER R.C.E. 67393

January 11, 2006

Mr. Clyde Davis
Regulatory Branch
US Army Corps of Engineers
San Francisco District
333 Market Street, 8th Floor
San Francisco, CA 94105-2191

Re: City of Eureka and Humboldt Bay Harbor, Recreation and Conservation District Eureka Waterfront and Woodley Island Marina Maintenance Dredging Project – Permit 22216N.

Subject: Modified Project Description - Proposal to Undertake Coho Salmon Mitigation Measure

Dear Mr. Davis:

To comply with section 2081 of the Fish and Game Code, the Humboldt Bay Harbor Recreation, and Conservation District (the District) offers the following mitigation measure.

Enhancement of Habitat on Coho Rearing Tributaries to Humboldt Bay

The District will participate in one or more projects to further enhance coho habitat in tributaries to Humboldt Bay. On a one-time basis, on or before November 1, 2006, the District will commit $15,000 to help fund qualified projects that would improve production of coho salmon in the Humboldt Bay watershed. Qualified projects include those projects, which have been approved by the Department of Fish and Game, that allow access to previously inaccessible or underutilized spawning and rearing habitat and/or improve existing in-stream habitat. Examples of projects that may qualify for funding include, but are not limited to, enhancement of Rocky Gulch stream restoration project, and/or riparian tree planting at Campbell Creek. The District may disperse these mitigation funds to governmental agencies or non-governmental organizations either as part of a cost-share or to fully fund an approved project.

Should the District proceed with their Project before completing the required mitigation activity (including monitoring and reporting), the District will ensure funding to complete the mitigation by providing to the Department: (1) an irrevocable letter of credit, (2) a pledged savings account, or (3) another form of security ("Security") in the amount of $15,000 approved by the Department. The Security would allow the Department to draw on the principal sum if the Department, at its sole discretion, determines that the District has failed to comply with the conditions used as a basis for a Consistency Determination (Fish and Game Code §2080.1).

On behalf of the Humboldt Bay Harbor, Recreation and Conservation District we propose the Rocky Gulch Salmonid Access and Habitat Restoration Project as mitigation for the take of 30 juvenile Southern Oregon/Northern California Coast (SONCC) coho salmon (*oncorhynchus kisutch*) that will be entrained in February and March, 2006 during the dredging of Woodley Island Marina (NMFS 2005 Biological Opinion). The complete description of the restoration project can be found in the document entitled Rocky Gulch Salmonid Access and Habitat Restoration Project, Phase I Restoration: Final

Report, December 7, 2005. The report was prepared for the California Department of Fish and Game and U.S. Fish and Wildlife Service by McBain & Trush, Inc.

As provided by Darren Mierau of McBain & Trush, Inc. the work proposed for 2006 involves:

1. Modification of the existing grade control structure (large 2-ton boulders) that was placed at the downstream end of the PG&E Ercon concrete structure at project station 50+00 to provide backwater over the concrete mattress to prevent head-cutting and assure adult and juvenile fish passage at this site. Additional rock-slope bank protection will be installed to prevent bank erosion and fortify riparian fencing at the cattle crossing site.

2. Addition of approximately 40 tons of washed river rock in the 1,000' section of creek upstream of station 50+00 cattle crossing, to provide coho salmon spawning habitat and aquatic invertebrate substrate (food source for juvenile salmon).

There may be need to modify or improve the existing access with several loads of crushed rock to allow heavy equipment onto the site.

All the required permits are in place and extend through the 2006 construction season. The contractor (Environmental Restoration Service) will perform the restoration work. In addition, the above Fisheries Restoration Grant Program Project has already committed funds to monitor and report on the mitigation implementation.

We request that the Corps and NMFS issue an amendment or letter of "non-substantive change" to the Biological Opinion/Incidental Take Statement acknowledging the change in the project description. This modified project description and amendment to the Biological Opinion will then be submitted to the CDFG with an application for a Consistency Determination.

Should you have any comments or questions or require any additional information please contact me at (707) 445-3001 or via Email at ytilles@pa-schneiderdock.com.

Yoash Tilles

Signature on File

Project Manager
E.I.T 117566

Enclosures: Rocky Gulch Salmonid Access and Habitat Restoration Project. Phase I Restoration: Final Report. Prepared for: California Department of Fish and Game and US Fish and Wildlife Service. McBain & Trush, Inc. December 7, 2005.

cc: David Hull – HBHR&CD
Mike Knight – City of Eureka
Vicki Frey – CDFG
Diane Ashton - NMFS
Dean Prat – RWQCB
Jim Baskin – CCC
P.A. Files 930

ROCKY GULCH SALMONID ACCESS AND HABITAT RESTORATION PROJECT

PHASE I RESTORATION: FINAL REPORT

prepared for:

California Department of Fish and Game

and

US Fish and Wildlife Service

prepared by:

Darren Mierau
McBain & Trush, Inc.
980 7th Street
Arcata, CA 95521
(707) 826-7794

December 7, 2005

In partial fulfillment of:

California Department of Fish and Game

Grant Agreement No. P0210414
Grant Agreement No. AWIP-N-1
Grant Agreement No. ADWI-NO-16

U.S. Fish and Wildlife Service

Grant Agreement No. 813315J127

ACKNOWLEDGEMENTS

I would like to thank Johanna and Roger Rodoni for their participation in this project, without which the project would not have been possible. With their support and trust, we have successfully demonstrated that restoring fish access and habitat can mutually benefit landowners as well as the environment.

The support this project received from the Department of Fish and Game, particulary John Schwabe and Gary Flosi, has been tremendous. Without their wealth of experience and participation, this project would not have moved forward. CDFG provided 81% of the project funding, provided field crews for fish removal, coordinated the HSU volunteer crews, and spent many office and field hours making sure the project was a success. I thank them for their continued assistance.

The US Fish and Wildlife Service also contributed funding, and I thank Paula Golightly and Greg Gray for their support of the project.

PG&E and the City of Eureka Engineering Department were helpful and responsive to provide on-site supervision during the work surrounding their utilities. We also thank the resource agencies for providing permits for the project.

The team of professionals who contributed their time and expertise to develop and implement this project included Aldaron Laird, Environmental Planner; Jeff Anderson, Project Engineer along with Brian Schlosstein, Water Resources Engineer; Fred Meyer, CAD Designer and Surveyor; Matt Smith, Construction Contractor and equipment operator; John Bair, Riparian Botanist; and Suzanne Isaacs, Six Rivers Native Plant Nursery.

I would also like to recognize the efforts of Kristin Kanahele of Pacific States Marine Fisheries Commission for timely funding and administrative support; Doug Kelly who built fences, drove the dumptruck and barbequed lunches; Ben Levering and Casey Massei who worked long hours in the field with Matt Smith; Geoff Hales for his field assistance and construction experience; Rose Patenaude who helped with surveying and site inspections; and Arieh Scharnberg who volunteered for a school project.

Finally, I thank Scott and Becky McBain and Bill Trush for providing leadership and scientific oversight of the project, and the rest of McBain and Trush for field and office assistance and tons of support.

TABLE OF CONTENTS

1 INTRODUCTION

Small coastal watersheds were historically a stronghold of the *coho salmon (Oncorhynchus kisutch)* population along the north coast. Adult coho could gain quick access from the ocean into these small tributaries during the winter to spawn the next cohort, which then found abundant habitat in the streams and estuaries to rear and grow before entering the ocean. Many coastal streams were blessed with tidal marsh and estuarine habitats accessible to juvenile fish during spring and summer months for rearing. Tidal marshes and estuaries may have been critical to increasing juvenile growth rates and ocean survival for coho salmon, perhaps sustaining strong year classes when upstream conditions were less favorable. The period of estuarine residence of migrating juvenile coho salmon may be an important component of their life history (Miller and Sadro 2003). Estuaries provide the spatial salinity gradient necessary during the physiological adaptation from freshwater to salt water as well as high quality rearing habitat that offers a last opportunity for growth before ocean entrance (Healey 1982).

Population expansion and development during the past century and a half in these coastal watersheds has severely impacted salmon habitat, disrupted migratory access, and diminished salmon abundance. Human development has transformed not only the landscape, but has also changed the physical processes that sustained these habitats by altering sediment budgets, hydrodynamics, and salinity distributions. As a result of these disturbances and other factors such as ocean conditions, Coho salmon abundance has declined at least 70% since the 1960s, and is currently 6 to 15% of its abundance during the 1940s (CDFG 2004).

Few watersheds along the northcoast escaped impacts during the past century, but rarely does a watershed as small as Rocky Gulch (one square mile) embody so many historical impacts, contemporary issues, and restoration opportunities. As early as 1885, the removal of old growth redwood forests began in Rocky Gulch [Daily Humboldt Standard (23 April 1885) "Logging operations are about to be commenced on Rocky Gulch by Wm. Carson."]. The original railroad grade bisected the upper watershed from its seasonally flooded wetlands and the estuary. By the 1940's, timber mills had been built in the watershed, the entire tidal marshes had been diked and converted from wetland to pasture, and residential development had begun. The mill site upstream of Old Arcata Road contributed enormous sediment inputs into the creek. In 1957, California Department of Fish and Game's Fisheries Manager Ralph McCormick described lower Rocky Gulch "from the mouth up to Old Arcata Road a distance of about one mile [as] an intertidal estuary." The following historical information obtained from the CDFG Rocky Gulch files was provided to illustrate the history of impacts that has occurred to the stream and its fisheries as a result of logging operations. On December 12th 1956, Mr. John Williamson, a rancher on lower Rocky Gulch reported to Fish and Game Warden John O. Finigan that:

> *"There was a sudden rise in the creek and the abnormally heavy amount of clay silt was killing spawning salmon. These fish had been washed completely out of the creek by the sudden onrush of heavy silt. He [Mr. Williamson] further stated that*

> *the creek was so heavily silted that it didn't have the appearance of water at all, but appeared to be semi-solid, moving very sluggishly down the streambed."*

That catastrophic environmental calamity, caused by a huge land-slide in the Rocky Gulch watershed in 1956, may have caused the extirpation of Coho salmon, steelhead (*O. mykiss*), and coastal cutthroat trout (*O. clarkii clarkii*) populations from Rocky Gulch, and perhaps tidewater goby (*Eucylogobius newberryi*) if they were present in Rocky Gulch. Compounding the logging damage to Rocky Gulch's anadromous salmonid populations was the installation of a tidegate (first reported in 1964) at the mouth of Rocky Gulch, which significantly reduced the opportunity for migrating adult salmonids to enter the stream. After nearly fifty years since these two events occurred, CDFG's 2001-03 surveys still found no coho salmon, steelhead, or anadromous cutthroat trout in Rocky Gulch, nor has tidewater goby been observed. Resident cutthroat trout are abundant in Rocky Gulch.

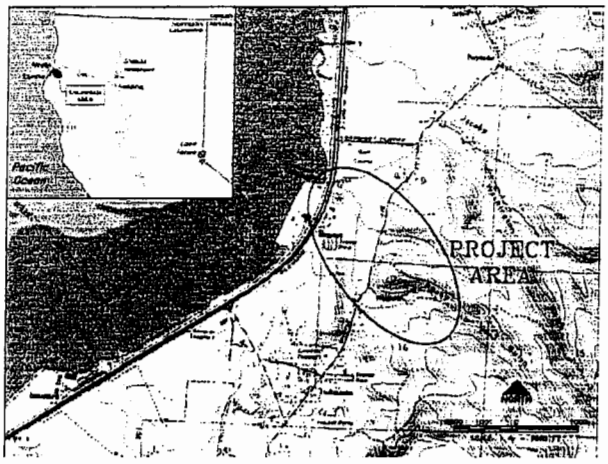

Figure 1. Location of Rocky Gulch, tributary to Humboldt Bay near Bayside CA.

Despite the history and persistence of numerous problems, including a moderately high sediment load, blocked migratory access, and limited estuarine rearing areas, Rocky Gulch has good potential to support populations of coho salmon and steelhead, and resident cutthroat trout are already present. The initial planning study for Rocky Gulch evaluated instream habitat from Old Arcata Road to the Old Rock Quarry approximately 2.0 miles upstream of the Humboldt Bay confluence (McBain & Trush 2002). Apart from short reaches with remnant impacts from the mill, this study found abundant, high quality habitat to support both coho salmon and steelhead. Pools with adequate depths to provide juvenile coho rearing habitat are plentiful. Spawning gravels, woody debris, root wads, undercut banks, and overhead cover are all abundant. The riparian understory and redwood canopy have also recovered from the most recent timber harvests.

The overarching goal for Rocky Gulch is to restore anadromous fish access and naturally reproducing anadromous salmonid populations (coho salmon and steelhead) from Humboldt Bay to approximately the Rock Quarry located 0.9 miles upstream of Old Arcata Road. This goal entails the following objectives :

- provide unimpeded fish passage through the tidegate;
- increase tidal marshes and slough channels in lower Rocky Gulch to provide juvenile salmonid rearing habitat and possibly tidewater goby habitat;
- widen the creek channel and re-create a floodplain, rehabilitate dikes to better contain winter floods and protect the grazed pasture from flooding;
- restore riparian and conifer vegetation on the newly created floodplain along Rocky Gulch;
- replace the upstream barrier culvert to restore fish access to upstream habitat (to be implemented in Phase II of restoration).

2 SITE DESCRIPTION

Rocky Gulch is a small watershed (1 mi^2) that drains into Arcata Bay approximately six miles north of Eureka, CA (Figure 1). The upper watershed is redwood forest, with headwaters along Greenwood Heights Ridge at approximately 1,000 ft elevation. The creek intersects Old Arcata Road approximately 4 miles south of Arcata and traverses bottomlands used as pasture, before passing under US Hwy 101 and flowing into Humboldt Bay.

The project area includes approximately 5,500 feet of stream, associated salt marshes, and riparian

corridor between Old Arcata Road and Hwy 101. The upper 2,000 feet of stream downstream of Old Arcata Road was narrowly channelized between poorly maintained dikes and the Old Arcata Road embankment. Much of this reach had become plugged by fine sediment deposition and overgrown by willow and alder thicket. In 2004 and 2005, the dike in this upper reach breached in several locations, allowing the entire stream discharge to flow onto the pasture. The lower 3,000 feet of stream runs through straightened sections across the middle of a pasture with sharp 90-degree bends. Dikes along the left bank (looking downstream) contained most tides (although extreme high tides in 2005 overtopped this dike) and flood-flows, including tributary input from three small perennial streams. At the downstream end, the stream flowed through an old wood tidegate with concrete wing-walls, and then joins Washington Gulch to form Brainard Slough above Highway 101. In 2005, the dike along the left bank (south side) of Washington Gulch was breached in several locations causing extensive flooding of the salt marsh and pasture in the project area.

The entire project area is a pasture. Roger and Johanna Rodoni are the property owners, and use these bottomlands year-round to graze cattle. Humboldt County's Local Coastal Plan has designated the entire valley traversed by lower Rocky Gulch as a coastal wetland and transitional agricultural combining zone. Maintaining reclaimed tidelands for agricultural use requires repair of dikes, tidegates, drainage ditches, and stream channels. During the normal course of agricultural use, vehicles and equipment regularly traverse the pasture. Cattle graze the seasonal wetland pasture, riparian corridor, willow swamp, salt marsh, and uplands. Rocky Gulch is the primary source of water for these cattle, and there are several stream crossings and trails that they habitually use along the stream corridor. As a working ranch, there will be constant disturbances to these wetlands and need to maintain channels and dikes. This project intends to reduce the need for future maintenance.

2.1 Reach 1: Tidal Pool [Station 0+00 to 6+00]

In the following site description, stationing refers to distance (in feet) from the confluence with Humboldt Bay, The major project elements are summarized in Figure 2 and are shown in detail in the construction design drawings in Appendix A.

Reach 1 extends from the Arcata Bay side of the Highway 101 culvert up to the tidegate on Rocky Gulch. This area has been designated the 'tidal pool' due to the influence of Humboldt Bay tides and the Hwy 101 culvert. Water surface elevations are nearly equal on both sides of the Hwy 101 culvert, indicating that the culvert does not significantly affect tide stage. To the east of Highway 101, dikes enclose the tidal pool (Brainard Slough), which receives runoff from both Washington Gulch and Rocky Gulch. Two tidegate structures span the mouth of Rocky Gulch: one has been abandoned and filled with concrete. The other structure was upgraded by this project with a new tidegate to allow fish passage upstream of the tidegate. The newly installed tidegate is designed to maintain a muted tidal prism and brackish aquatic habitats while simultaneously allowing fish passage.

2.2 Reach 2: Tidal Slough [Station 6+00 to 16+50]

Reach 2 extends from the tidegate to station 16+50 and is still tidally influenced. The slough channel bottom is predominately fine silts and mud, approximately 10 feet wide by 4 feet deep. The south bank is confined by a dike that averages 2-3 feet higher than the pasture, and the north bank is a salt marsh that is confined farther to the north by another dike paralleling Washington Gulch. Both slough banks are vertical and undercut from tidal action. Regular tidal flushing in this reach has reduced sediment deposition and keeps the channel free of vegetation (Figure 3). The areas on both sides of the slough channel, with the exception of the dike, are salt marsh. Grazing within the salt marsh area is minimal. Discharge draining from the grazed wetland to the south enters Rocky Gulch at station 9+00 via a 2 ft diameter drainage culvert and flapgate installed under the dike. During the winter of 2004, a 10 ft section of the dike surrounding the drainage culvert eroded away.

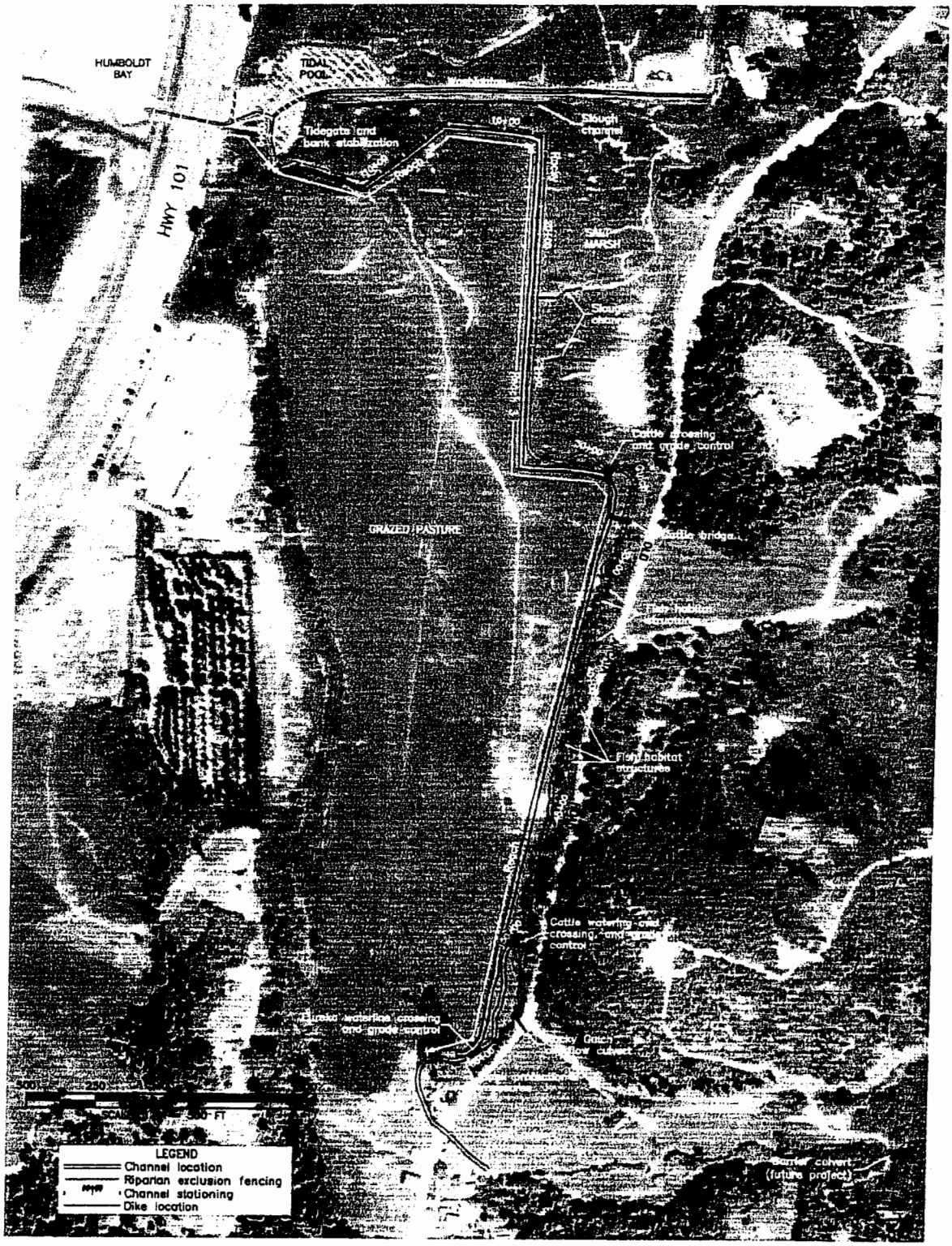

Figure 2. Location of major elements of the project.

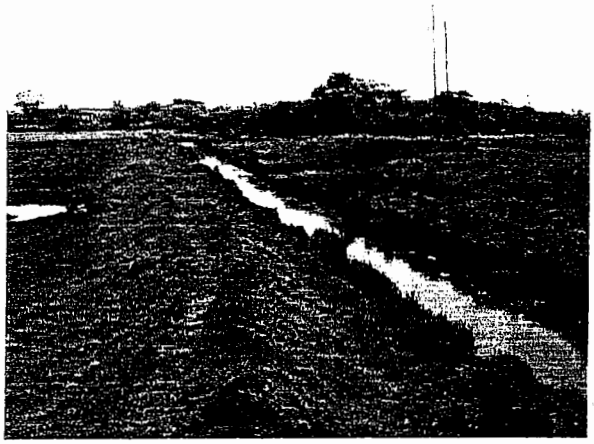

Figure 3. Lower slough channel and dike at moderate high tide.

Tidal waters were temporarily allowed to ascend a tributary network, flooding the salt marsh and grazed wetlands. The landowners repaired the dike in Spring of 2004 and tilled under much of the grazed wetland to the south of the dikes that was inundated by saltwater intrusion. In 2005, high tides in excess of 8.5 ft MLW caused several breaches in the left bank dike between Washington Gulch and Rocky Gulch, flooding the salt marsh and pasture again.

2.3 Reach 3: Tidally Influenced Stream [Station 16+50 to 37+00]

In Reach 3, Rocky Gulch has been channelized to follow a north-south running property line. The stream was a ditch approximately 10 feet wide by 4 feet deep at its greatest width. From station 28+25 to 32+25, the channel has become so aggraded with sediment, that there is no discernable channel, and instead forms a willow swamp during winter/spring runoff. A dike 2-3 feet in height above the pasture borders the stream to the west and south (Figure 4). This reach is entirely straight channel sections with three 90-degree bends.

During the winter 2002-03, most flow overflowed the channel at the 90-degree bend near station 32+50 and passed across a salt marsh, abandoning the reach between station 28+25 and 32+25 at low flow (Figure 5).

Figure 4. View looking south, showing the dike and heavily aggraded channel near the upstream boundary of tidal influence in 2004.

During winter 2003-04, conditions worsened when the dike breached at station 46+00, extending the section of abandoned channel from station 28+25 up to station 46+00. Most flow drained across the seasonal wetland pasture and through the dike and drainage culvert at station 9+00. The landowners repaired the dike in spring of 2004 and tilled under much of the grazed wetland to the west of the dikes.

Figure 5. Heavily aggraded section of channel between two 90-degree bends, overgrown with willow and grass in the channel.

There was a cattle crossing at station 35+00 where the stream passed through a 1-½ foot steel culvert. This culvert was undersized and had caused severe sediment aggradation upstream for nearly 1,200 ft. During the winter of 2004-05 this culvert began to back up water and cause the stream to flow out of the channel and across the

pasture. On the east side of the channel, salt marsh vegetation dominates up to station 27+00. Riparian vegetation begins to line the channel at station 28+50 and continues upstream to station 61+00, primarily along the east (right) bank. An un-named perennial tributary joins Rocky Gulch near station 35+00.

2.4 Reach 4: Freshwater-Riparian Reach [Station 37+00 to 57+00]

In Reach 4, streamflow is not influenced by tides, average discharges are estimated during summer low flow to be 0.5 to 1.0 cfs, and winter base flow averages 3.5 cfs, while the 100-year flood is estimated between 350 to 450 cfs (McBain & Trush 2002). In the 1950s, this reach was relocated to its present location and channelized to parallel Old Arcata Road along the eastern side of the wetland pasture. The channel was contained by dikes in a narrow corridor, and served as a drainage ditch. This reach had a dike along its west bank up to station 56+00 that confined the stream to less than 20 feet from Old Arcata Road in many locations. The channel ranged from 3 to 10 feet wide and 1 to 3 feet deep, and the dike averaged 2-3 feet high (Figure 6). Significant aggradation of the channel had occurred from station 35+00 to 47+00. There were sections of dike in this transitional (tidal to freshwater) zone that were breached and allowed runoff to leave the channel and flow across the wetland pasture. During the winter of 2004, a breach in the dike at station 46+00 captured all stream flow and discharged the flow onto the grazed wetland pasture, causing much of the pasture to be saturated with standing water. The landowners repaired this breached dike in summer 2004. In the winter 2004-05, the dike again breached in several locations between station 42+00 and 46+00. These breaches allowed all the streamflow to exit the Rocky Gulch channel, flow across the pasture, then collect in drainage ditches that routed water back into the diked system through the culverted flapgate at station 9+00, 300 ft upstream of the tidegate.

Figure 6. Upper section of channel heavily confined between Old Arcata Road and the dike.

The lower section of this reach flowed through a willow swamp from station 28+50 to 41+70.Above station 41+70 was dense riparian woodland with stands of redwood.At station 54+50, a PG&E high pressure gas main transmission line crosses under the Rocky Gulch channel and had become exposed due to local channel downcutting, requiring on-site repairs to protect the pipeline from damage or leaks. From station 56+00 to 61+00 (upstream of the project area), Rocky Gulch flows around a private residence and is not bound by dikes. There is very little riparian vegetation in this area. The upper boundary of this reach is at station 61+50 where Old Arcata Road crosses the stream. This Humboldt County culvert is considered to be undersized and causes occasional flooding upstream, but is not a barrier to anadromous salmonid migration. High flows in Rocky Gulch often back-up above Old Arcata Road, and water is routed into a bypass channel paralleling the road and is then conveyed through a culvert beneath the road to again discharge into Rocky Gulch at station 53+00.

2.5 Vegetation Survey

Vegetation is defined as "all the plant species in a region, and the way they are arranged" and usually appears as a mosaic of numerous, definable plant stand types (Saywer and Keeler-Wolf 1995). The dominant plant species in the canopy defines the stand type. A vegetation classification system utilizing stand types was used to inventory

vegetation within the project area. Unvegetated polygons were assigned a cover attribute based on visible substrate and level of human disturbance.

We mapped wetland vegetation using habitat classes developed by Shapiro (1980) in December 2003. The wetland habitat classification lumps marsh-related cover types into salt, brackish, and freshwater emergent classes. The wetland habitat class map illustrates the site vegetation at a coarser scale (Figure 7).

We mapped cover types during a vegetation inventory in December 2003 (Figure 8). A field based inventory ensured a highly detailed and accurate vegetation map. A riparian botanist conducted the field inventory by walking the entire site and mapping all plant stands onto a laminated aerial photo. Mapped plant stands were no smaller than 100 ft^2 and included all salt, brackish, and freshwater wetlands, and adjacent upland plant stands within the project boundary.

The cover type map was used to describe vegetation, particularly wetland vegetation, in greater detail than the wetland habitat classification map. The habitat based map is useful for NEPA/CEQA permitting purposes, while a cover type map based on species dominance is useful for assessing vegetation quality at the site.

We mapped twenty two cover types within the Rocky Gulch project area in December 2003. Mapped cover types developed by Saywer and Keeler-Wolf (1995) were related to the wetland habitat classes developed by Shapiro (1980) and are briefly described within the respective wetland habitat class.

2.5.1 Salt Marsh Habitats

Salt marshes are plant-dominated intertidal habitats. Salinity can vary greatly within these habitats (Zedler 2001). Plant species occurring in this habitat are salt tolerant and able to withstand frequent and prolonged tidal inundation. Less than 10% of the original salt marsh coverage around Humboldt Bay remains, making the remaining salt marshes rare and important species reserves. The salt marsh habitat class begins below mean lower low water (MLLW) and continues to the extreme high water tidal elevation (EHW). We mapped five cover types within the salt marsh habitat class, representing 53.1% of the project area.

Within the salt marsh habitat class, three special status plant species could potentially occur: Humboldt Owls Clover (*Castilleja ambigua* ssp. *Humboldtiensis*), Point Reyes Bird Beak (*Cordylanthus maritimus*), and Lyngbye's sedge (*Carex lyngbyei*). A floristic survey using the Nelson method of intuitive control assessed the presence of these species at a seasonally appropriate time.

2.5.2 Brackish Marh Habitats

Brackish marshes are plant-dominated intertidal habitats with suppressed salinities. Salinity can vary greatly within these habitats (0.5-30ppt), but salinity is depressed because of freshwater influence (Zedler 2001). The brackish marshhabitat class begins at mean higher high water (MHHW) and may continue past the extreme high water tidal elevation (EHW) to where salinity is no longer present. We mapped two cover types within the brackish marsh habitat class, representing 1.3% of the project area.

2.5.3 Freshwater Marsh Habitats

Freshwater marshes are plant-dominated non-tidal freshwater habitats. There is no salinity associated with freshwater marshes. Freshwater marshes occur along the margins of seasonal and perennial freshwater bodies to a depth of 6 feet. All freshwater emergent cover types are dominated by obligate wetland indicator species. We mapped one cover type within this habitat class, representing 0.5% of the project area.

2.5.4 Grazed Wetland Habitats

Grazed wetlands are plant-dominated non-tidal freshwater habitats. These wetlands are agriculturally valuable. There is no salinity associated with grazed wetlands. Grazed wetlands dominate the project area. All grazed wetland cover types are dominated by obligate wetland indicator species. We mapped three cover types within this habitat class, representing 28.1% of the project area.

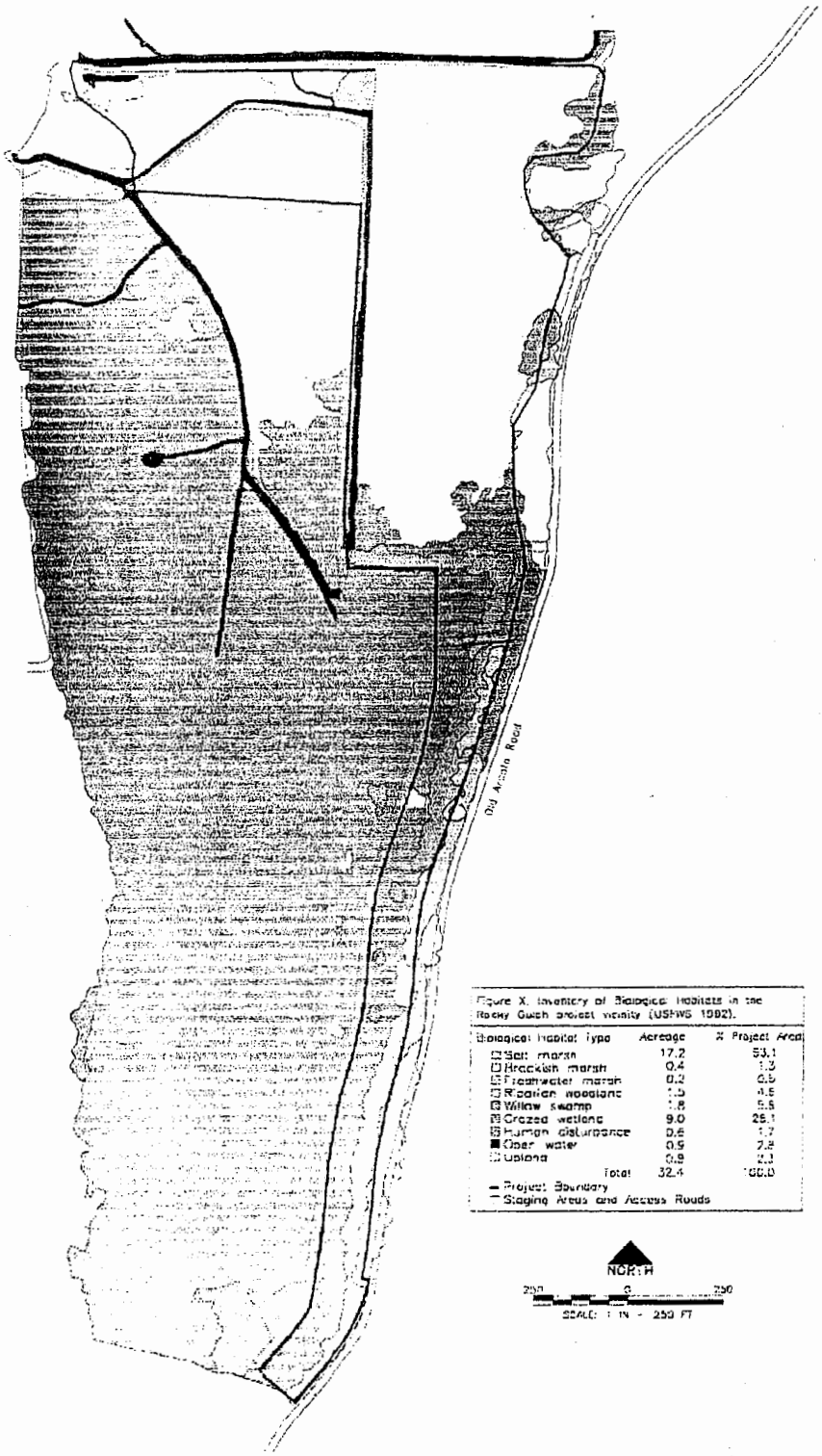

Figure 7. Inventory of biological habitats occurring within the Rocky Gulch project vicinity, mapped in December 2003.

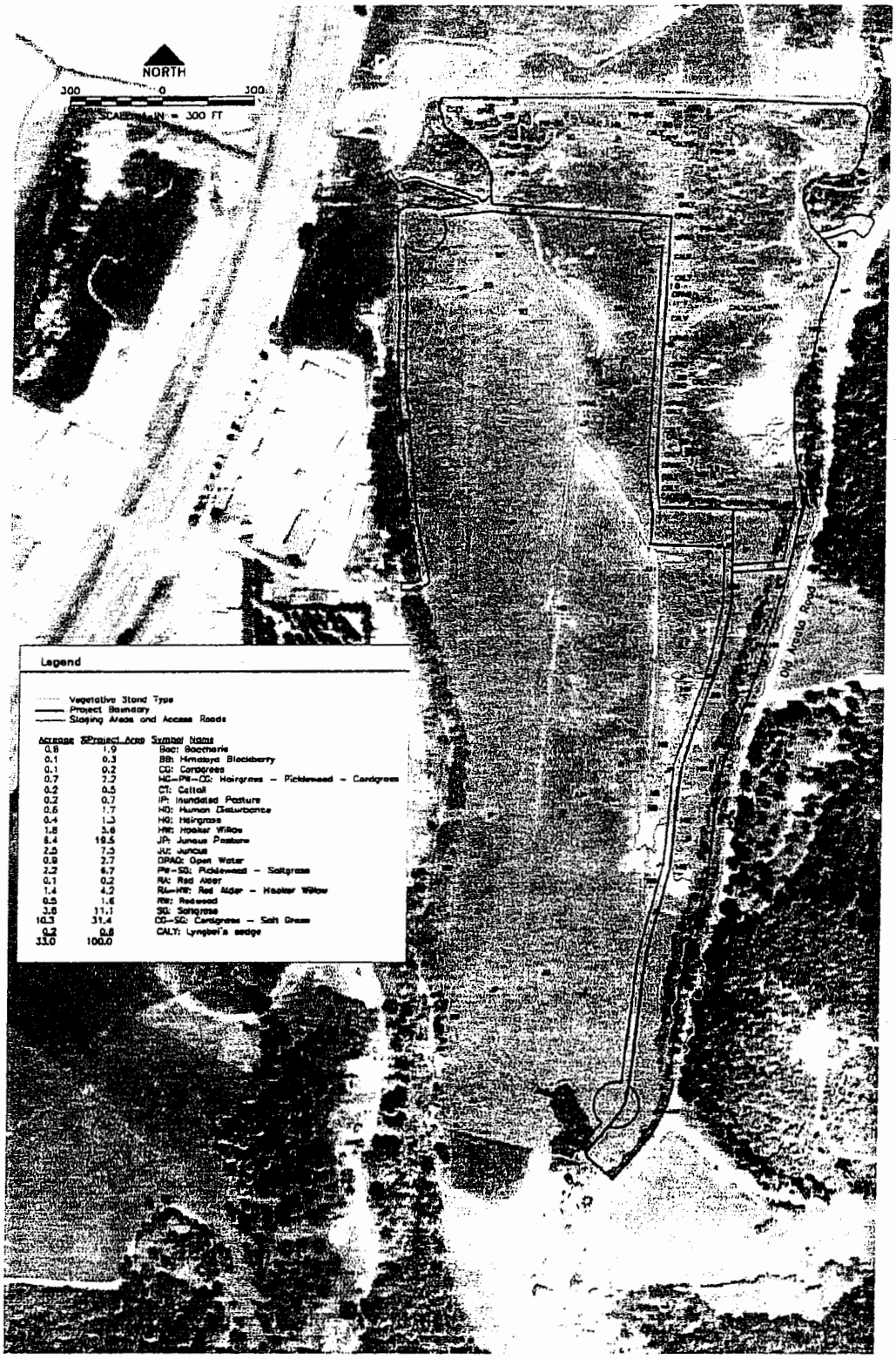

Figure 8. Inventory of cover types occurring within the Rocky Gulch project vicinity, mapped in December 2003.

2.5.5 Willow Swamp Habitats

Willow swamps are woody-plant-dominated non-tidal freshwater habitats. There is no salinity associated with willow swamps. Willow swamps occur where seasonal and perennial freshwater bodies pond. Willow swamps are dominated by wet facultative wetland indicator species. We mapped one cover type within this habitat class, representing 5.6% of the project area.

2.5.6 Riparian Woodland Habitats

Riparian woodlands are woody plant dominated terrestrial freshwater habitats. Riparian woodlands occur along the margins of streams, and freshwater bodies (both perennial and seasonal). Riparian woodlands are most often dominated by wet facultative wetland indicator species. We mapped two cover types within this habitat class, representing 4.6% of the project area.

2.5.7 Upland Habitats

Upland cover types are plant-dominated non-wetland habitats. These cover types are not inundated for any length of time and have groundwater supplied by local precipitation alone. Upland cover types may have some wetland indicator species but the majority of plants with these cover types are facultative wetland or upland plants. We mapped five cover types within this habitat class, representing 2.3% of the project area.

2.5.8 Other Habitats

These habitats include all unvegetated cover types. The cover type classification is independent of hydrology with the exception of the open water cover type. We mapped two cover types within this habitat class, representing 4.5% of the project area.

2.5.9 Special Status Species

The project area is in close proximity to documented populations of Humboldt Bay Owls clover (*Castilleja ambigua ssp. Humboldtiensis*) and Point Reyes Bird Beak. (*Cordylanthus maritimus ssp. palustris*) at the Bracut Marsh Restoration Project and the Jacoby Creek National Wildlife refuge Salt Marsh. These plant species could therefore occur within the project site, though it is improbable due to the restriction of incoming seed sources by tidegate structures. Lyngbye's sedge is known to occur at the site (Mad River Biologists 2001).

In June 2004 a qualified botanist visited the site and performed a complete floristic survey of the site using the Nelson method of intuitive control for the special status plant species (CDFG 2000, CNPS 2001b). An intuitive control searches areas on the site where these special status plants are likely to occur. Other than Lyngby's sedge, no other special status species were observed

3 PROJECT IMPLEMENTATION

The major phases of this project are briefly described in the following sections:

3.1 Initial Planning

In 2001, McBain & Trush was awarded a grant for the **"Rocky Gulch Stream Assessment Project" (CDFG Contract No. P0010372).** The objectives of this project were to assess migratory access, habitat conditions, and restoration needs of Rocky Gulch, prioritize restoration actions, and develop site-specific recommendations for habitat restoration. In addition, we coordinated with the landowners, resource agencies, and the local community to hear different restoration perspectives and ultimately achieve a shared vision for restoration in Rocky Gulch.

3.2 Conceptual Restoration Design

A proposal for the **"Rocky Gulch Salmonid Access and Habitat Restoration Project" (CDFG Contract No. P0010372)** was submitted to the CA Department of Fish and Game California Coastal Salmon Recovery Program (CCSRP) in May of 2002. The proposal contained a conceptual restoration design developed during the Stream Assessment Project. This original conceptual design was negotiated and agreed to by the landowner (Roger and Johanna Rodoni) and CDFG prior to submittal of the 2002 proposal. After the grant was awarded and a contract was in place, the project environmental planner (Aldaron Laird) conducted a "regulatory constraints analysis" as an initial step toward developing a regulatory compliance strategy. This constraints analysis formally identified sensitive species and

habitats within the proposed project footprint, identified a lead agency pursuant to CEQA, and identified regulatory permits that would be required. The constraints analysis also discovered ACOE and NOAA Fisheries documents that had classified a portion of the grazed wetland within the project boundary as tidal marsh, which then required several project tasks to be modified. The resulting updated conceptual restoration design was formalized in a meeting with CDFG representatives, the landowners, and the project team in February 2004. This final restoration design contained eight elements that formed the basis of the Salmonid Access and Habitat Restoration project. These elements were:

1) Installation of a new tidegate at the bottom end of Rocky Gulch designed to provide reliable salmonid fish passage to the upstream watershed, and allow a muted tide cycle that was calibrated to maintain the existing tidal marsh habitat upstream of the tidegate;
2) Excavation of aggraded sediments from approximately 1,100 ft of slough channel that reduced channel capacity and impeded adult salmonid fish passage to the upstream watershed
3) Reconstruction of nearly 2,800 ft of channel to eliminate unnatural 90 degree bends and re-meander straightened sections to increase channel capacity and improve fish habitat;
4) Use of dredged material to rehabilitate approximately 4,900 feet of dikes to contain winter floods and tidal waters, and protect the grazed pastures to the south and west of the dikes;
5) Relocation of the 2,500 ft section of dike that parallels Old Arcata Road to 50 ft back from the existing stream channel by excavating the existing dike and moving the fill material away from the channel, creating a floodplain and increasing the riparian corridor and floodway capacity;
6) Installation of 3,200 ft of riparian fencing, two armored cattle crossings and watering access sites and one bridge, to reduce impacts from cattle grazing on stream, wetland, and riparian habitats;
7) Revegetation of native riparian and wetland plant species, installation of willow baffles and other materials to reduce erosion from excavated areas;
8) Development of a maintenance procedure and protocols for future maintenance (if needed) in the channel.

3.3 Engineering Design and Regulatory Compliance

The engineering design phase and the regulatory compliance phase were conducted concurrently during the period from February 2004 to August 2005. With completion of a conceptual design, we proceeded to develop a formal 'project description' that formed the basis of an impact analysis, and then developed elements to mitigate significant project impacts. The project description, impact analysis, and proposed mitigation were summarized in the "Biological Assessment: Lower Rocky Gulch Salmonid Access and Habitat Restoration Project: Bayside, Humboldt County, California" (Rocky Gulch BA), dated February 2005. This document was submitted to the Army Corp of Engineers for the ACOE Permit and for ESA consultations, and was used by Humboldt County Planning Department (acting as CEQA Lead Agency) as the basis for developing a Mitigated Negative Declaration pursuant to provisions of CEQA.

In early 2004, a decision was made to pursue informal ESA consultations with NOAA Fisheries and the USFWS. This decision eventually resulted in a one-year delay in project implementation because the federal agencies' workload delayed them from addressing our project permit requests. Without action on the permits, we were unable to implement the project in summer 2004, and the project was postponed. At that point a second decision was made, to pursue separate administrative permits to implement the tidegate replacement task independent of the other project elements. The rationale behind this decision was that: (1) tidegate replacement represented a maintenance action regulated but allowed under Army Corp Section 404 and the California Coastal Act, and (2) installing the tidegate before winter 2004-05 would allow adult salmon to access the Rocky Gulch watershed and potentially accelerate reestablishment of the population. This strategy proved successful and the new tidegate was installed in December 2004.

Between December 2004 and August 2005, the project team worked to complete all regulatory agency permit requirements. Permits required for implementation of this project included:

- US Army Corp of Engineers Individual Permit; US Army Corp of Engineers Nationwide Permit 27 Stream and Wetland Restoration;
- NOAA Fisheries Section 7 Consultation and Biological Opinion;
- US Fish and Wildlife Service Section 7 Consultation and Concurrence;
- California Department of Fish and Game Streambed Alteration Agreement;
- North Coast Regional Water Quality Control Board Water Quality Certification;
- California Office of Historic Preservation Section 106 Compliance;
- Humboldt County Coastal Development Permit CDP 04-92 and Conditional Use Permit CUP 04-32;
- Humboldt Bay Harbor, Recreation, and Conservation District Encroachment Permit;
- City of Eureka Engineering Department Encroachment Permit;
- Pacific Gas & Electric Encroachment Permit;

The engineering design was developed by Jeff Anderson (the consulting project engineer) and McBain & Trush. The primary elements of the engineering design were (1) development of hydraulic models to evaluate existing conditions and predict flood stages through the restored project reach and within the freshwater/tidal interface, (2) development of grading plans with proposed longitudinal channel profile, cross sections, and grading contours which were used to estimate cut and fill volumes and construction sequencing, and (3) development of plans to protect utility infrastructure, including the City of Eureka Mad River water pipelines and PG&E gas transmission pipeline. The utility infrastructure was an unanticipated design constraint that required close correspondence with engineers representing both the City of Eureka and PG&E.

The engineering design phase resulted in 18 construction design sheets (Appendix A), each detailing specific components of the project. These construction drawings were used by the contractor to build the project during summer 2005.

3.4 Project Construction

3.4.1 Tidegate Installation

At the downstream end of Rocky Gulch, the stream flows through a tidegate and joins Washington Gulch to form Brainard Slough, before passing through a culvert under Hwy 101. The old tidegate (Figure 9) was a barrier to anadromous salmonid migration. Because former tidelands behind the tidegate are currently used as cattle pasture, these lands had to be protected from saltwater intrusion.

However, some areas of the pasture had been receiving periodic tidal inundation due to damage to the tidegate, and these tidal marshes had to be maintained by the upgraded tidegate.The new tidegate (Figure 9) thus required a "muted tide cycle" in which a controlled volume of seawater is allowed past the tidegate during each tide cycle.

Because the new tidegate installation proposed to modify an existing structure, and was designed to maintain the existing hydrology, the project was determined to be exempt from ACOE jurisdiction. We obtained administrative permits from the Humboldt Bay Harbor District and the California Coastal Commission for the tidegate construction task. The Army Corp was notified in writing of the scope of the project. Our analysis determined the project had "no effect" on federally listed chinook or coho salmon, steelhead, or tidewater goby, or to critical habitat designated for coho salmon or on any coastal resources.

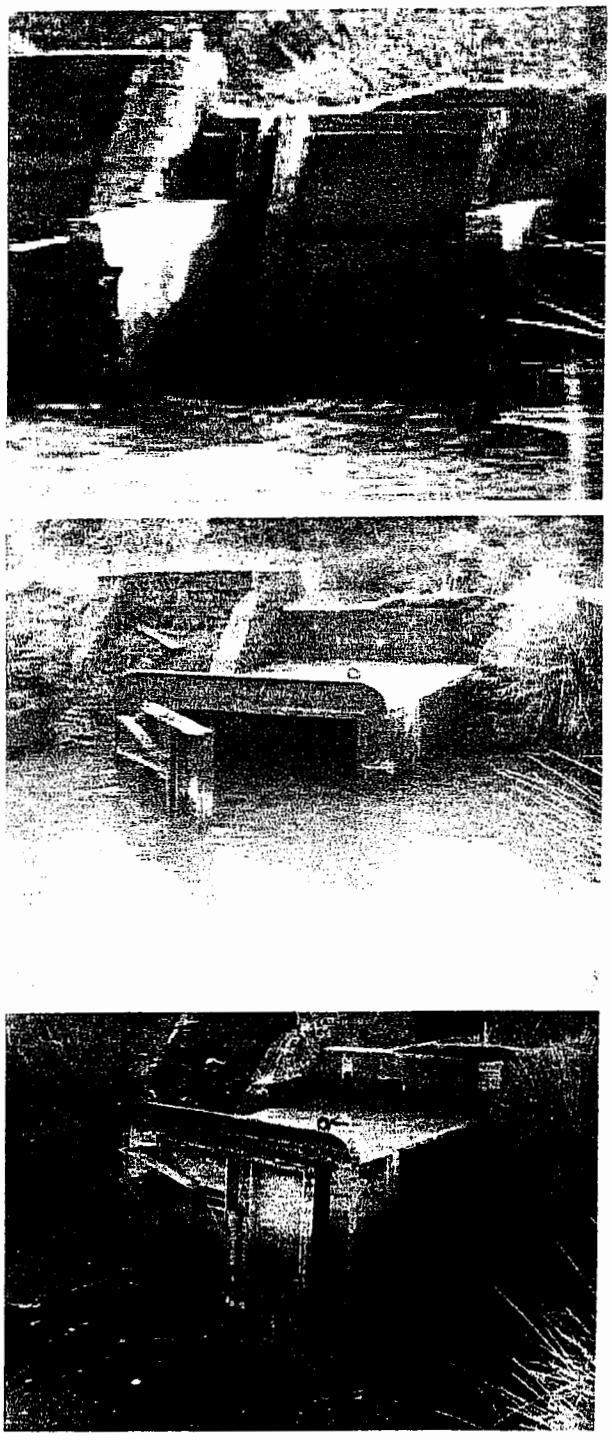

Figure 9. Top: The old tidegate at ebb tide showing the gate partially open but a barrier to adult migration. Middle: The new side-hinged tidegate at ebb tide showing the door wide open to fish passage. Bottom: The new tidegate at low tide showing the auxiliary door which is always open.

The subcontractor Nehalem Marine, owned and operated by Leo Kuntz, constructed and installed the new tidegate during the week of 11/29/04 to 12/3/04. The new tidegate is a custom-fabricated, side-hinged aluminum gate mounted on the wing-walls of the existing structure (Figure 2 and 10). The new tidegate has a muted opening with an adjustable "guillotine-style" auxiliary door with maximum aperture of 1 ft wide by 2 ft tall. The auxiliary door is a top-hinged gate mounted on a track that can be adjusted up and down by rotating a stainless nut and threaded rod. The 1 ft wide auxiliary opening can be reduced to 0.5 ft wide by mounting a choke plate over the opening on the back side of the gate. The auxiliary door can be closed completely by screwing down the stainless nut and threaded rod. Installation of the new tidegate required repairs to the existing concrete wing-walls and construction of a concrete "ceiling" spanning the wing-walls between the new tidegate headwall and the existing headwall. After installation of the new tidegate, the concrete headwall of the adjacent non-functioning tidegate was repaired to plug a hole.

The project was implemented in 4 days during low tides. Vehicular and equipment access to the work site was provided by an existing dirt road maintained by the property owner. Approximately 30 yd^3 of 3" x 6" crushed rock were imported to improve the road access. The rock base was left in place after the project was completed.

The new tidegate headwall included a 4 ft aluminum sleeve that was bolted onto the inside of the concrete wing-walls. The sleeves enclosed the ends of the eroded wing-walls (Figure 10) and created small void spaces that were dry-packed with concrete to reinforce the walls. A "high-early" type of concrete was used that hardened rapidly and allowed full loading by approximately 12 hours. Metal rebar was installed to reinforce the concrete. Approximately 4 cubic ft of concrete were required for the aluminum sleeve installation. Before being inundated with tidewater, the concrete wing-walls and aluminum sleeve were scrubbed down, and the wash-water and debris were collected on the floor of the tidegate in temporary tarpaulin ponds where it was removed for disposal in the upland area. This activity prevented discharge of concrete or other debris into the adjacent waters.

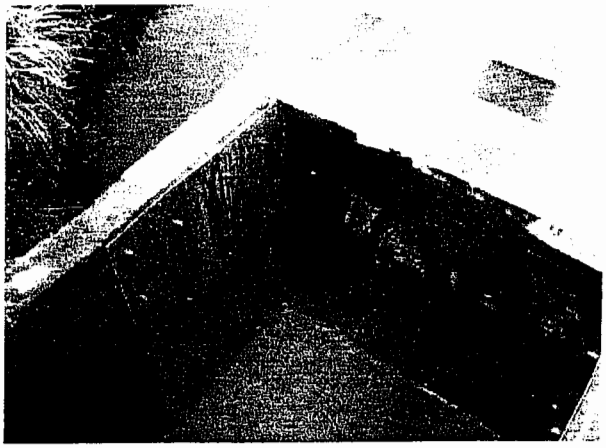

Figure 10. Top view looking inside new tidegate during construction, showing aluminum sheeting reinforcement of the concrete wingwalls.

After the tidegate was installed onto the wing-walls and secured adequately, an aluminum ceiling was installed over the wing-walls to create an enclosed box culvert. The project originally proposed using concrete for the ceiling, but during implementation the existing concrete was judged to be not structurally sound enough to support the weight of concrete, so the aluminum ceiling was installed. This reduced the amount of concrete used in the project by approximately 12-15 cubic ft. All bolting was done with stainless steel expansion bolts. After adequate time to allow the concrete to fully harden, spaces between concrete and the new aluminum tidegate headwall were grouted and sealed with urethane injection on dry areas and concrete on the parts that were sealed in the water.

Once the new tidegate installation was complete, the fill material plugging the hole in the adjacent tidegate's headwall was removed to allow the hole to be permanently plugged. The area surrounding the hole was cleared, and forms were installed to plug the hole with approximately a cubic yard of concrete. This task also used a rapid drying concrete and was done on the upstream side of the tidegate to prevent tidewater from inundating the concrete patch until after the concrete had set-up. Once the concrete was set, the forms were removed.

After completion of the tidegate installation, the area surrounding the construction site was seeded with grass to reduce erosion of exposed soil. The tidegate auxiliary door was initially kept closed until the tidegate was observed during a one-month period of tide cycles, including high tides that exceeded 9 ft MLW. The hydraulic model developed for the project was used to determine the size of the auxiliary door opening, which has been set at 1.0 ft^2.

Daily tidal inundation of the tidegate now allows a muted tide prism to flow through the auxiliary door to fill the slough channels upstream of the tidegate. There are numerous benefits to daily seawater intrusion upstream of the tidegate. Regular tidal flux will help maintains slough channel capacity by flushing fine sediments delivered from the upper watershed into the bay, suppresses vegetation from growing in the tidally influenced channel, and provides valuable brackish aquatic habitat used by migratory marine, anadromous, and resident fish species. At the peak tide, the auxiliary door allows tidewater to rapidly fill behind the tidegate and achieve equilibrium in water surface elevations on the inside and outside of the tidegate. As the tide ebbs, the tidegate is pushed fully open to nearly 90 degrees. This wide opening will allow anadromous salmonids to pass through the tidegate and migrate upstream to their spawning grounds.

3.4.2 Channel and Dike Reconstruction

We recognize that restoration practice—as well as restoration science—is continually evolving, with considerable uncertainties and unknowns. We rediscovered this concept during the lead-up to construction. In June 2005, the CEQA Mitigated Negative Declaration was approved by the Humboldt County Planning Commission. In August 2005, the final permits were obtained from the Coastal Commission (issued August 15th) and the ACOE (issued August 18th) for the main project construction elements. Up until the middle of August 2005 it was unclear whether or not these permits would even be issued. The construction schedule was delayed several weeks from our expected start date, causing the construction window to be pushed up against the October 15th required construction end-date and the threat of early fall rains. Once permits were obtained, on-the-ground construction activities were initiated,

and lasted a total of eight weeks into middle of October.

The construction was lead by Matt Smith of Environmental Restoration Services, and employed an excavator, D5 bulldozer, and backhoe. The construction phase included dredging the existing channel and/or excavating new sections of channel for approximately 3,900 ft of stream, widening and deepening the channel in all but approximately 500 ft of the stream within the project area. Channel dimensions varied from 12-13 ft wide (bankfull width within the upper freshwater reach) (Figure 11) to 20 ft wide (lower slough channel top width) (Figure 12), and 2-3 ft average depth. Channel excavation removed approximately 3,200 yd^3 of fill. The existing dike along the upper 2,400 ft of stream was removed to produced an additional 1,300 cu yds of fill. Approximately 2,800 ft of channel that was previously a straight ditch was re-meandered to increase channel length, provide better aquatic habitat, and improve planform morphology.

The combined 3,700 yd^3 of cut material was used to rebuild approximately 2,300 ft of dike 50 ft away from the stream channel in the upper reach, and increase the dike elevation along the entire 2,300 ft of lower reach (Figures 13-14). The target elevation for the top of dike was 9.0 ft (NAVD 88). We were able to achieve a slightly higher dike elevation with the volume of dredged material available. Along the lower 1,100 ft section of dredged reach where Lyngby's sedge was growing in the channel, the sedge was removed in large "wafer" sections and immediately placed back into the excavated channel to re-establish along the channel margins instead of mid-channel (Figure 13).

The grading plans had no design contours for the new floodplain because the dikes were simply moved to a new location, theoretically eliminating the need for floodplain grading. However, during construction, several areas of the floodplain were nevertheless re-graded to eliminate areas that were too-high or too-low, but the floodplain was left as the pre-construction topography. After the first season's rains in late October, swales were dug in several shallow depressions that ponded water to reconnect them to the channel and reduce ponded water on the floodplain.

Figure 11. Newly reconstructed upstream channel reach with habitat structure and small gravel deposit from late-October rainstorm.

Figure 12. Newly reconstructed lower slough channel that replaced the straightened, aggraded section and eliminated 90-degree bends.

There were four "instream structures" installed during construction. Two structures were Ercon® concrete mattresses installed over the top of the PG&E gas transmission line to protect the pipe from exposure from future channel erosion (Figure 15). These mattresses were laid in place on top of the final grade and pumped full of slurry concrete to form a 6-8" thick protective shield.

Figure 13. Lower section of reconstructed dike adjacent to the salt marsh. Wetland plant material was salvaged and replaced back into the channel during the dredging operation.

Figure 14. Upper dike section that was set back to create new floodplain.

The top elevation of the Ercon® mats were also set as grade control for longitudinal profile elevations. The mattresses were backfilled with 1-3" washed river rock to provide a hardened path for cattle to water and cross the stream. The third structure was installed to protect the City of Eureka Mad River Water Pipelines. At the pipeline crossing, the channel was over-excavated and backfilled with a 6" layer of 1-3" river rock to protect the top of pipes. Bank rock-slope-protection (RSP) and rock grade control were installed along the bank and in the channel downstream of the pipeline crossing to prevent unwanted bank and channel erosion (Figure 16).

The fourth structure was a cattle bridge installed to replace the undersized culvert (Figure 17). The bridge was pre-engineered with dimensions of 12x20 ft, and was placed on top of two concrete blocks (1.5x5x13 ft) set upright in the channel banks as bridge abutments. The base of the concrete abutments were protected with ½ to 1 ton boulders, and the bridge was bolted down to the concrete abutments. The abutments were not engineered to bear any specific weight because it is only intended to be used as a cattle crossing. The bridge surface and approaches were backfilled with 1.5" crushed quarry rock.

Figure 15. Lower gas pipe crossing with Ercon mattress installed and partially backfilled with gravel. The log installed at the downstream edge of the mattress is for grade control.

Ten fish habitat structures were installed in the stream bed and banks by Matt Smith. Habitat structures used redwood stumps salvaged locally, "culled" logs acquired from Simpson/Green Diamond Timber, and large 1-2 ton quarry boulders (Figure 18). Structures were installed and anchored in place following standard methods described in the CDFG Stream Restoration Manual (CDFG 1998). Pool and riffle sequences were excavated around the habitat structures to provide aquatic habitat and promote stream scour at these structures.

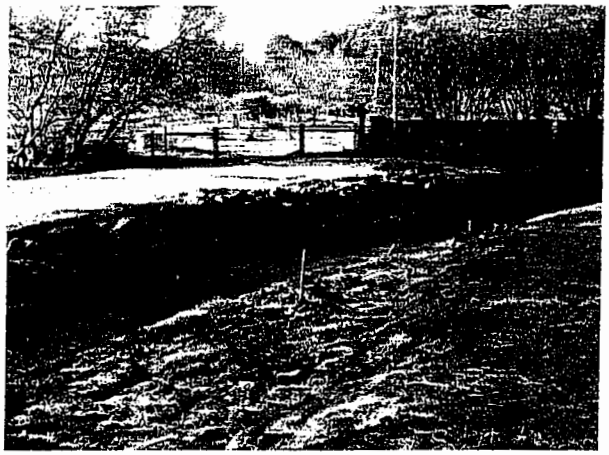

Figure 16. Bank RSP and grade control were installed to protect the Eureka waterline crossing.

The remnant section of abandoned channel within the willow swamp (between station 28+25 and 32+25) was left as-is and reconnected to the new channel section. This channel is small but is inundated at high tides and streamflows and functions as a slough channel that may provide tidewater goby and/or salmonid habitat. The remnant section of abandoned channel between station 50+00 and 57+00 was partially backfilled to become a shallow depression along Old Arcata Road that drains surface runoff back to the newly constructed channel. The gas pipeline that was exposed in this reach was backfilled with sand and then covered with dirt.

The temporary diversion ditch at the upstream boundary of the project was only partially backfilled and the diversion entrance was sandbagged to prevent streamflow from entering the channel. If extremely high flows occur this winter, sandbags may be removed to allow a portion of the floodwaters down the diversion ditch to protect the project reach from damage while the new channel and floodplain are still recovering. Next summer, the diversion ditch will be permanently plugged with large rock to prevent channel capture at this location.

Following the channel and dike construction activities, approximately 3,100 ft of riparian cattle fence and six cattle gates were installed (Figure 20). The fencing allows the entire riparian corridor to be closed to cattle grazing, and creats three separate "riparian pastures" within the new floodplain pasture. CDFG will develop a riparian grazing agreement with the landowners, which will allow seasonal cattle grazing within the riparian floodplain. Cattle will be permanently excluded during the first two or more growing seasons to allow planted riparian vegetation to become established.

The newly created floodplain will be planted with 95% of the total area in trees and 5% in shrubs, composed of the following species:

Coniferous Trees: 260 tree-pot sized containers
15 Coast Redwood, *Sequoia sempervirens*
22 Grand Fir, *Abies grandis*
180 Sitka Spruce, *Picea sitchensis*
43 Western Red Cedar, *Thuja plicata*
Deciduous Trees: 227 tree-pot sized containers
66 Black Cottonwood, *Populus balsamifera*
116 Red Alder, *Alnus rubra*
45 Cascara, *Rhamnus purshiana*
Salix species, poles taken on site
Shrubs: 164 one gallon sized containers
14 Douglas Spirea, *Spirea douglasii*
25 Red Elderberry, *Sambucus racemosa*
80 Pacific Wax Myrtle, *Myrica californica*
10 Western Azalea, *Rhododendron occidentale*
14 Twinberry, *Lonicera involucrata*
7 Oso Berry, Oemleria cerasiformis
14 Oregon Crab Apple, *Malus Fusca*

200 plugs Coastal hairgrass, *Deschampsia cespitosa*.

After the earthwork phase was completed on October 19th, student-volunteers from the HSU Natural Resources Club, organized by CDFG representatives, installed erosion control measures along the entire 5,000 ft long project reach, including grass seed and mulch, willow sprigging, straw waddles, and additional cattle fencing. These measures will help reduce short-term erosion during the coming winter. Planted riparian vegetation, once established, will provide long-term protection.

Throughout the planning and construction phases, there were no appeals to the project regulatory and permit documents, no landowner complaints or unresolved issues, no code violations or infractions related to the project permits, no major unresolved problems or uncompleted tasks, and no accidents, injuries, or harm to person or property.

Figure 17. A bridge was installed to replace the culvert and provide cattle access to the north side of the pasture.

3.4.3 Summary of Benefits

Some of the primary benefits of the completed project are:

- fish passage at the tidegate at all times during the tide cycle, either through the main tidegate during ebb tide or through the 1x2 ft auxiliary door within the main door that is permanently open (currently open 1x1 ft);
- improved adult passage by eliminating the potential for dikes to breach and flood the pasture during winter, and creating a defined channel with adequate widths and depths for upstream migration;
- significant protection of the pasture by: (1) reducing or eliminating flooding onto the pasture, (2) reducing or eliminating salt water intrusion onto the pasture, (3) providing watering access for cattle at erosion-resistant hardened streambeds, (4) improving access to the pasture along Old Arcata Road via the new bridge crossing;
- a defined floodway within reconstructed dikes that will contain floods of approximately Q_5 to Q_{10} year recurrence and a muted tidal prism;
- greatly improved rearing habitat in the freshwater/tidal "ecotone" for high quality summer and winter rearing, and down into the brackish estuarine slough channels;
- maintenance of pre-existing salt marsh sustained by the muted tidal prism from the tidegate;
- long-term protection of utility infrastructure;
- increased riparian vegetation along Old Arcata Road, existing mature conifer cover that was preserved, and improved plant species diversity;
- better drainage of tributaries along Old Arcata Road (Halvorsen Gulch, Stevens Gulch, others) to flow directly into Rocky Gulch, improving overall drainage of rainfall runoff.

In addition to the benefits described above, there are several important ancillary benefits to this project. First, by working successfully with the private landowners to implement this project, we have clearly demonstrated the mutual benefits to both the landowners and the fishery resources. This success may encourage future cooperation with other landowners for restoration projects around Humboldt Bay. Additionally, despite a one-year delay to the original implementation schedule, we were able to design, permit, and implement this project in a little over two years from completion of the CDFG Agreement (Agreement completed June 1, 2003; project completed October 19, 2005). This timeline demonstrates the feasibility of implementing other large-scale projects around Humboldt Bay. Finally, in August 2005, following the first winter with a new "fish-friendly" tidegate in place, young-of-year coho salmon were positively identified in Rocky Gulch for the first time in nearly 50 years! Assuming adults continue to stray into Rocky Gulch, achieving our goal of re-establishing an entirely new, naturally reproducing coho salmon population is already underway.

4 MONITORING

The most important task remaining for the Rocky Gulch Phase I restoration project is to develop, fund, and implement a monitoring program. Monitoring should assess compliance with mitigation requirements and the performance of the project relative to the project goals and objectives. Compliance monitoring is required by several permitting agencies for at least five years, including the Coastal Commission, Fish and

Game, and the Army Corp of Engineers. Annual and final reports that describe the as-built conditions, fish habitat availability and fish presence, water quality and sedimentation, vegetation recovery in disturbed areas (primarily Lyngby's sedge), and survival success of planted riparian vegetation will be provided. CDFG is responsible for this compliance monitoring component.

Performance monitoring should evaluate project objectives such as (1) re-establishment of viable anadromous salmonid populations in Rocky Gulch, (2) adult salmonid passage through the tidegate and across the lower restored reaches, (3) amount and condition of salmonid spawning and rearing habitat in restored and unrestored reaches, (4) juvenile salmonid use of habitat in the reach above Old Arcata Road, and downstream within the Phase I project area, and (5) presence of tidewater goby within the lower slough channels.

Figure 18. Aerial photograph of the upper reach after project completion.

5 FUTURE CHANNEL AND RIPARIAN MAINTENANCE

An objective of the Rocky Gulch project was to design a stable channel that better conveys the estimated bankfull discharge and improves sediment transport continuity from headwaters to the ocean. Different channel dimensions were developed for three distinct reaches of the Rocky Gulch project reach. In general, the channel designs resulted in a wider and deeper channel cross section capable of conveying the bankfull discharge. The increased channel cross section should also provide a more geomorphically stable channel in balance with the sediment load. The channel dimensions constructed in Phase I, combined with reconstructed dikes that contain larger floods, should improve sediment transport throughout the project reach, and should reduce the need and frequency of in-channel maintenance.

Periodic maintenance of the Rocky Gulch channel and floodplain, however, will likely be necessary. Long-term maintenance may include: (1) selective thinning of riparian vegetation to allow equipment access to the creek channel, and (2) removal of sediment that has accumulated in the channel. Maintenance could be required after larger floods, and if needed, will proceed as follows:

Reach-1. Periodically during the summer period of low streamflow, and during moderately low high-tides not exceeding 5-6 ft MHW, the Rocky Gulch tidegate may be propped open for several days or weeks to allow a larger tidal prism to flush out fine sediments accumulated in the channel. This operation will help maintain the lower reach at approximate design channel dimensions, and will help keep the channel free of vegetation. Under no circumstance should the high tide elevation exceed the bankfull channel elevations in the reaches upstream of station 34+00.

Reach 2. Due to the sharp slope transition, Reach 2 will likely be the most susceptible to sediment deposition and will therefore have a higer potential for maintenance needs. Future maintenance will be limited to restoring the channel dimensions to the as-built 2005 constructed dimensions. In-channel woody debris or other structural habitat features will not be disturbed. Permanent survey monuments (e.g., rebar cross section pins) will be installed to allow surveying of the channel during maintenance operations.

Reach 3. The upstream-most reach has adequate slope to maintain sediment transport and discourage sediment accumulation in the channel. However, given past experience and uncertainty about sediment delivery rates from the upstream watershed, some maintenance in this reach may be necessary. Maintenance will be limited to restoring channel dimensions to the as-built 2005 constructed dimensions.

Channel and floodplain maintenance will incorporate routine measures and "best management practices" (BMP's) intended to avoid unnecessary and/or temporary adverse affects to fish and wildlife including federally listed salmonid species. These measures include:

- A qualified fishery biologist will be present during all maintenance activities to assure that no avoidable harm occurs to listed fish species;
- Prior to in-channel excavation, exclusionary fencing (blocking nets, hardware cloth, or other suitable materials) will be installed upstream and downstream of the maintenance sites to prevent fish from moving into the maintenance areas, and reasonable efforts will be made to trap and remove all fish and aquatic organisms from within the maintenance area and relocate them to sites outside the maintenance area;
- Prior to excavation, erosion control silt fences will be installed at the downstream end of the maintenance reach to reduce turbidity during maintenance operations;
- Excavation of fine sediment material will proceed with backhoe or small excavator equipment, and excavated "spoils" will be discarded on-site onto adjacent upland areas. Under no circumstance will spoiled sediment material be permanently placed onto the pasture (wetland) areas;
- During excavation, channel elevations will be surveyed intermittently (relative to survey monuments) to ensure that design channel widths and depths are achieved.
- Following the maintenance operations, all temporary fencing or block-net structures will be removed from the channel, the volume of sediment removed will be estimated, and known or assumed fish mortalities will be recorded. This information will be available from the landowner on request.

6 CONCLUSION

Coho salmon recovery is integrally tied to restoration of migratory access and aquatic habitat in small coastal watersheds of Northern California. Projects of the scope of the *Rocky Gulch Salmonid Access and Habitat Restoration Project* are essential for species recovery.

In December 2002 we laid out a plan to restore fish access and habitat conditions in Rocky Gulch, with the hope and intention that "if you build it, they will come". The 2002 plan recommended

seven primary actions be implemented in several phases of restoration, which were:

Task A: Replace the tidegate;

Task B: Enhance estuarine conditions in lower Rocky Gulch;

Task C: Realign the channel to reduce confinement and increase flow capacity;

Task D: Set-back dikes confining the creek along Old Arcata Road;

Task E: Rehabilitate the channel at old Williamson ranch (downstream of Old Arcata Road);

Task F: Enlarge the Old Arcata Road culvert;

Task G: Replace the barrier culvert to allow fish passage upstream.

Tasks A through D have now been completed in the first phase of implementation. Funding has also been provided by the Five-Counties Restoration Program to prepare engineering designs for the 500 ft reach (Task E) around the old Williamson Ranch (now owned by Ginni Hasrick), and the Humboldt County Public Works Department has re-submitted a proposal to the CDFG California Coastal Salmon Recovery Program (CCSRP) for funding to upgrade the Old Arcata Road culvert (Task F) with a larger capacity culvert that can convey up to the Q100 flood event. If funding is awarded in 2006, the targeted schedule for replacing this culvert would be 2007. Finally, grant funding from the State Coastal Conservancy has been provided for design and implementation to replace the upstream barrier culvert (Task G) with a bridge. This task will be completed in 2006. With completion of these remaining tasks, the entire length of Rocky Gulch historically available to anadromous salmonids will have been restored, and a viable fish population may once again inhabit Rocky Gulch.

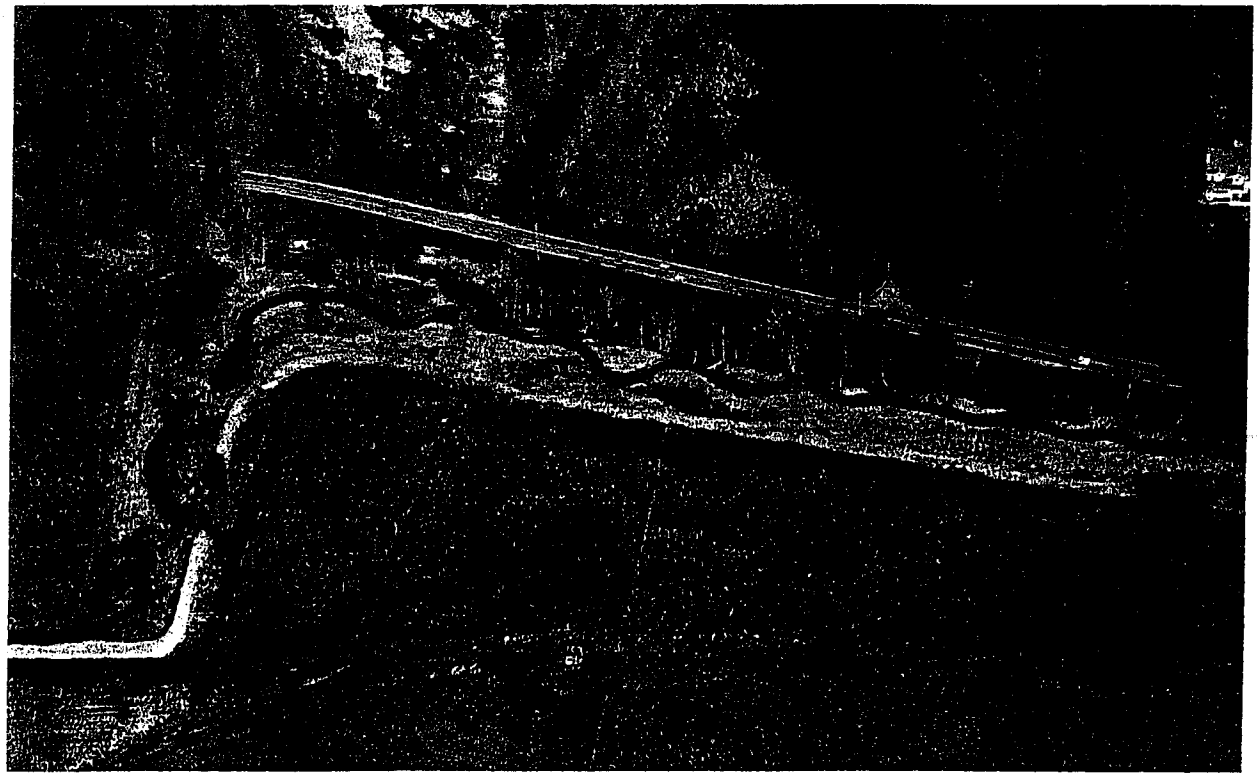

Figure 19. Aerial photo of the middle section of Rocky Gulch with new meandering channel, reconstructed dikes, and new floodplain.

7 REFERENCES

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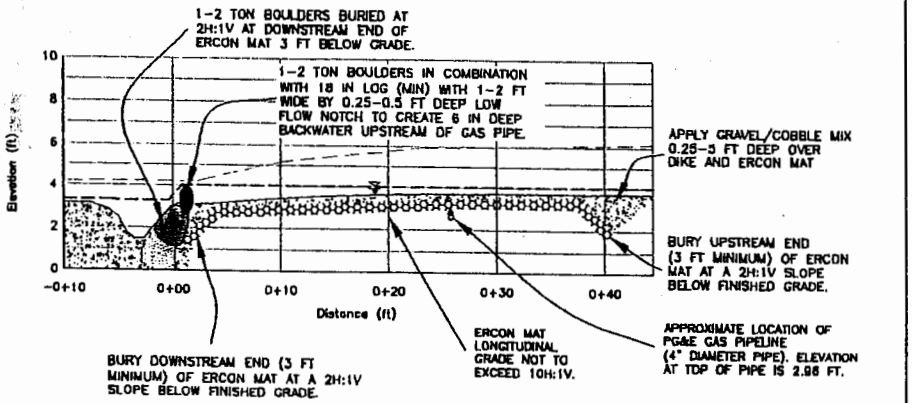
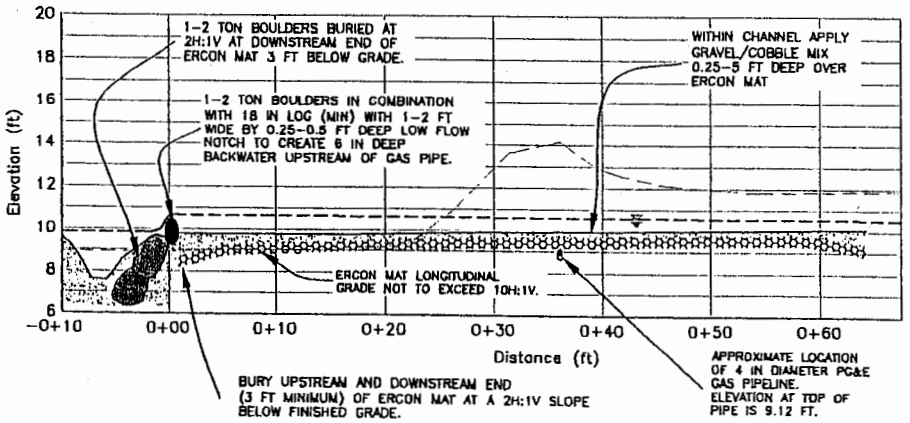
PG&E PIPE CROSSING AT STATION 31+00 – LONG PROFILE



NOTES:

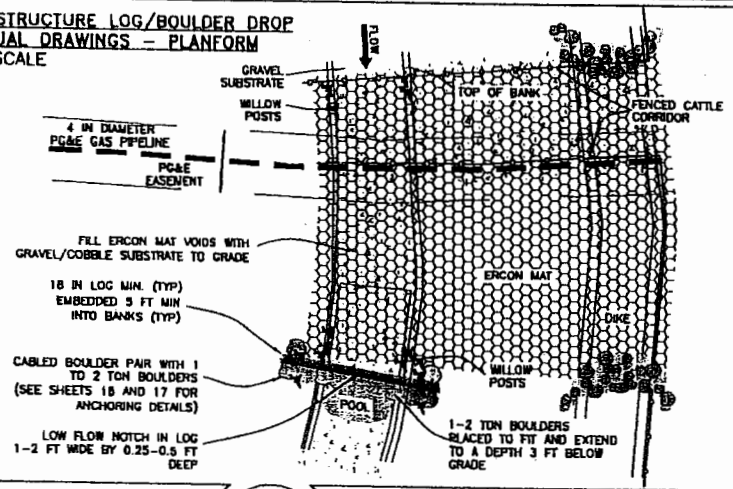
1) 2X VERTICAL EXAGGERATION – LONG PROFILES
2) GTS INC. TO OVERSEE ERCON MAT INSTALLATION.
3) PG&E REPRESENTATIVE TO OVERSEE ALL EXCAVATION AND FILL NEAR OR OVER GAS LINE.

PG&E PIPE CROSSING AT STATION 50+00 – LONG PROFILE



HABITAT STRUCTURE LOG/BOULDER DROP CONCEPTUAL DRAWINGS – PLANFORM

NOT TO SCALE



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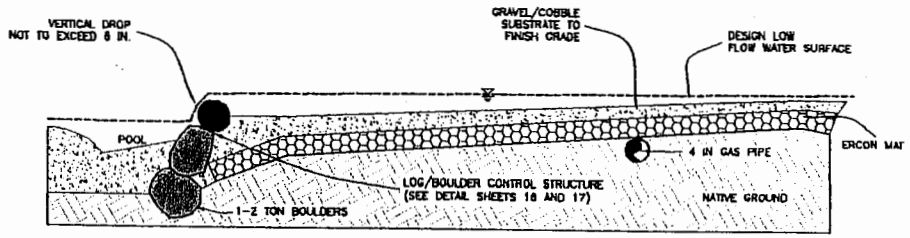
NOT TO SCALE



McBain & Trush | FISHERIES HYDROLOGY STREAM RESTORATION FLUVIAL GEOMORPHOLOGY
P.O. BOX 663, ARCATA, CALIFORNIA 95518

Jeff Anderson & Associates
Engineering & Hydrology
P.O. Box 841
Arcata, CA 95518

ROCKY GULCH
Cattle and Gas Pipe Crossing Habitat Details

PREPARED FOR:
California Department of Fish and Game
619 2nd Street
Eureka, CA 95501

DATE	8-15-05
REVISION	REV B
SCALE	
DRAWN BY	FM
CHECKED BY	AA/SM/DM
DWG	DHShtsV4.DWG

LEGEND
- FUTURE LOW FLOW WATER SURFACE
- EXISTING GROUND
- FINISHED GROUND
- ERCON MAT
- GRAVEL/COBBLE MIX

SHEET 13
13 OF 18

137 of 137

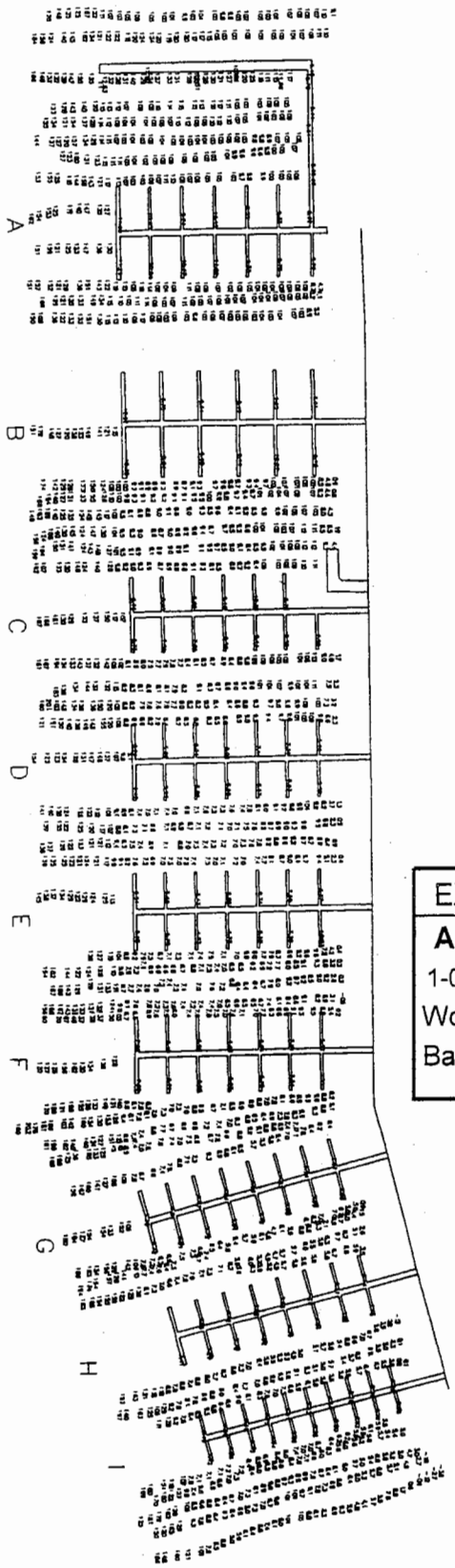


EXHIBIT NO. 5

APPLICATION NO.

1-05-039 (HUMBOLDT BAY)

Woodley Island Marina

Bathymetric Survey

SURVEY NOTES

SURVEYED BY PACIFIC AFFILIATES CONSULTING ENGINEERS ON FEBRUARY 4,23,26, 2004. TIDE STATION FOR SURVEY PACIFIC AFFILIATES BENCHMARK AT WOODLEY ISLAND MARINA FISHERMAN'S LOADING DOCK IN EUREKA, CA. ELEV. 15.54' MLLW.

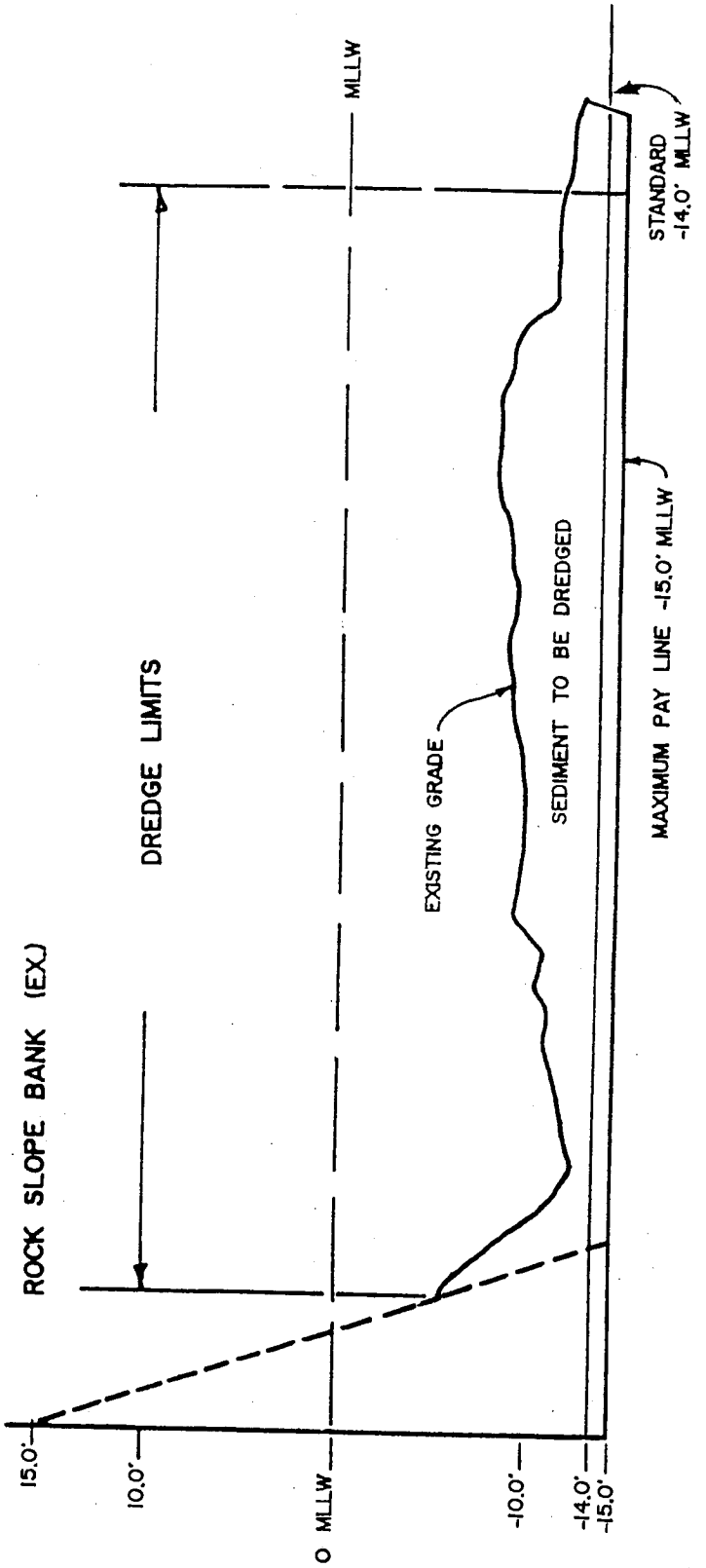
SOUNDINGS ARE SHOWN TO THE NEAREST FOOT AND TENTHS OF A FOOT. VERTICAL DATUM UTILIZED – MEAN LOWER LOW WATER (MLLW).

HORIZONTAL CONTROL REFERENCED TO NAD 27, CALIFORNIA ZONE 1, LAMBERT CONFORMAL PROJECTION. SURVEY REPRESENTS THE CONDITIONS ON THE DATE SURVEYED (FEBRUARY 4,23,26, 2004).

DRAWINGS NOT TO BE USED FOR NAVIGATION. ONLY CHANNEL CONDITION AT DATE OF SURVEY.

SHEET NUMBER C-1.1	Date: June 14, 2004 Scale: 1"= 80' U.O.N. Drawn by: Travis Schneider	HUMBOLDT BAY HARBOR, RECREATION AND CONSERVATION DISTRICT P.O. BOX 1030 EUREKA, CA 95502-1030	WOODLEY ISLAND MARINA CONDITIONAL BATHYMETRIC SURVEY	ENGINEER DAVID L. SCHNEIDER 980 WEST WATERFRONT DRIVE EUREKA, CA 95501 (707) 445-3001	PACIFIC AFFILIATES A CONSULTING ENGINEERING GROUP 980 WEST WATERFRONT DRIVE EUREKA, CA 95501

REVISIONS BY



SECTION

TRANSIENT VESSEL DOCK - DOCK F

SCALE: HORIZONTAL 1" = 60' VERTICAL 1" = 10'

AREAS MAINTAINED
TO
-14.0' MLLW

EXHIBIT NO. 6
APPLICATION NO.
1-05-039 (HUMBOLDT BAY)
Woodley Island Marina Maint.
Dredging Cross – Sections
(Page 1 of 2)

SITE 11 **WOODLEY ISLAND MARINA** **Transient Vessel Dock to Dock F**	**PROFILE** Datum: Mean Lower Low Water (MLLW)	**PACIFIC AFFILIATES, INC.** A CONSULTING ENGINEERING GROUP 990 W. Waterfront Drive Eureka, CA 95501

SITE 11

WOODLEY ISLAND MARINA
Docks G to I

PROFILE
Datum: Mean Lower Low Water (MLLW)

PACIFIC AFFILIATES, INC.
A CONSULTING ENGINEERING GROUP
990 W. Waterfront Drive
Eureka, CA 95501

NOTES

SOUNDINGS ARE SHOWN TO THE NEAREST FOOT AND TENTHS OF A FOOT.

SOUNDINGS REFER TO THE DATUM OF MEAN LOWER LOW WATER (MLLW) AT THE LOCALITY. SOUNDINGS ARE REFERENCED TO CALTRANS SURVEY MONUMENT NO. S.C. 22S, ELEV. 8.49' MLLW.

HORIZONTAL CONTROL POINTS FOR HYDROGRAPHIC SURVEYS ARE L.P. PIPE AND COURT HOUSE.

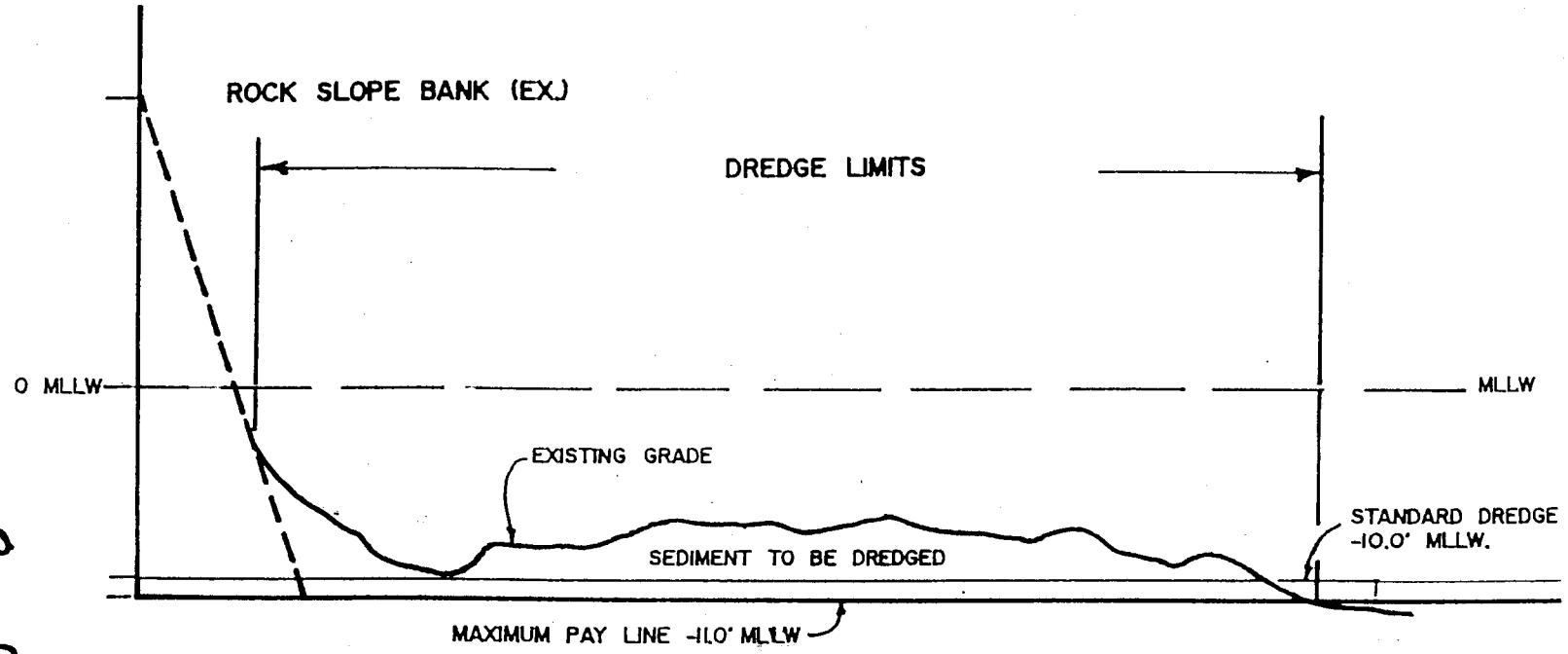
COORDINATES ARE BASED ON THE CALIFORNIA COORDINATE SYSTEM, ZONE I, LAMBERT CONFORMAL PROJECTION.

BERTHING AREA FROM STATION 66+07 TO THE TRANSITION SLOPE SHALL BE DREDGED TO -14.0' MLLW. MAXIMUM PAY LINE WITHIN AREA IS -15.0' MLLW.

BERTHING AREA FROM TRANSITION SLOPE TO STATION 87+93 SHALL BE DREDGED TO A DEPTH OF -10.0' MLLW. MAXIMUM PAY LINE WITHIN AREA IS -11.0' MLLW.

CONDITIONAL SURVEYS FOR SHOWN SOUNDINGS AND PRELIMINARY DREDGE ESTIMATES WERE CONDUCTED ON AUGUST 23, 1995 AND NOVEMBER 22, 23, 1995.

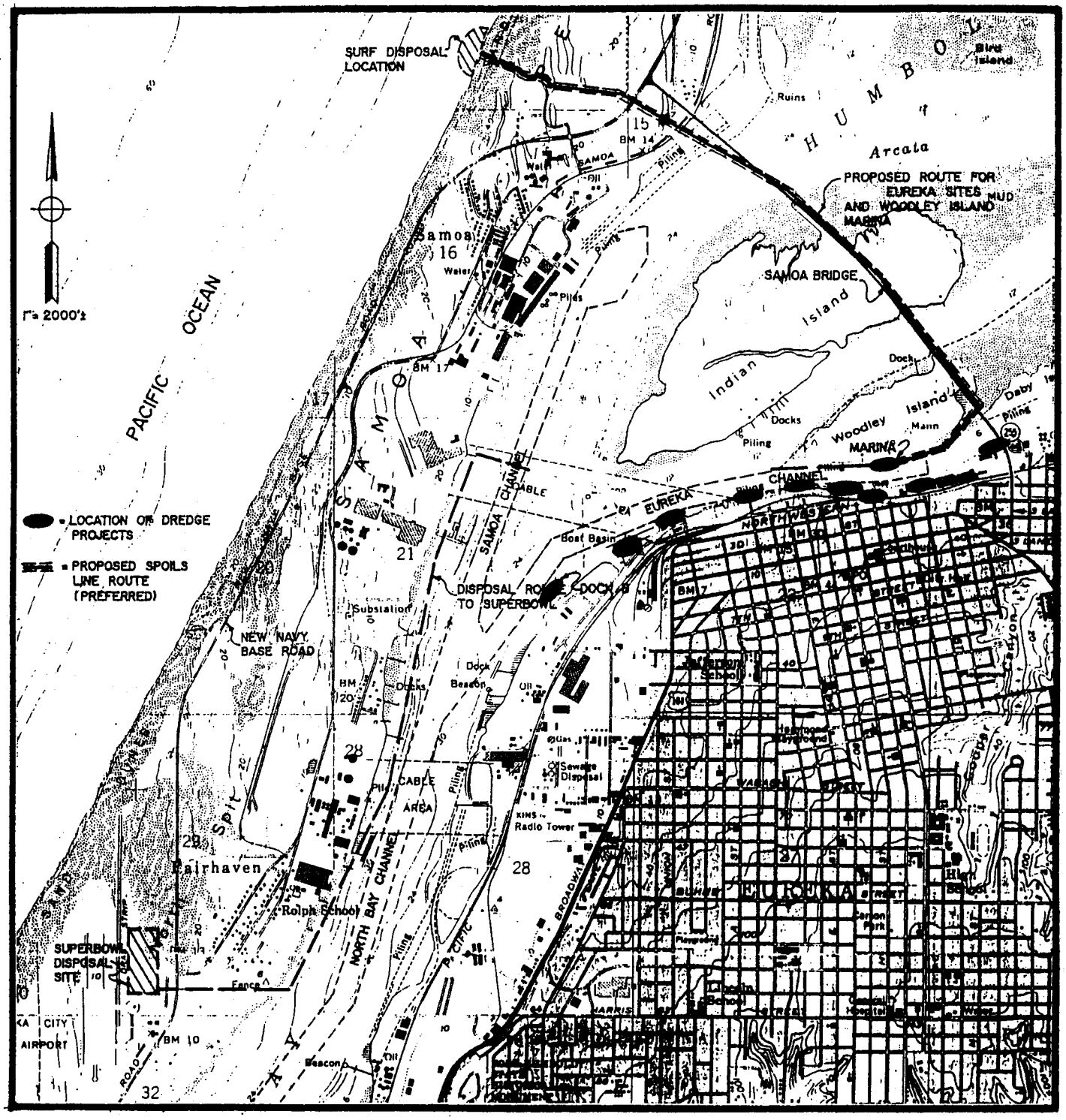
AREAS MAINTAINED TO -10.0' MLLW



2 of 2

SECTION
DOCKS G - I

SCALE: HORIZONTAL 1" = 60' VERTICAL 1" = 10'



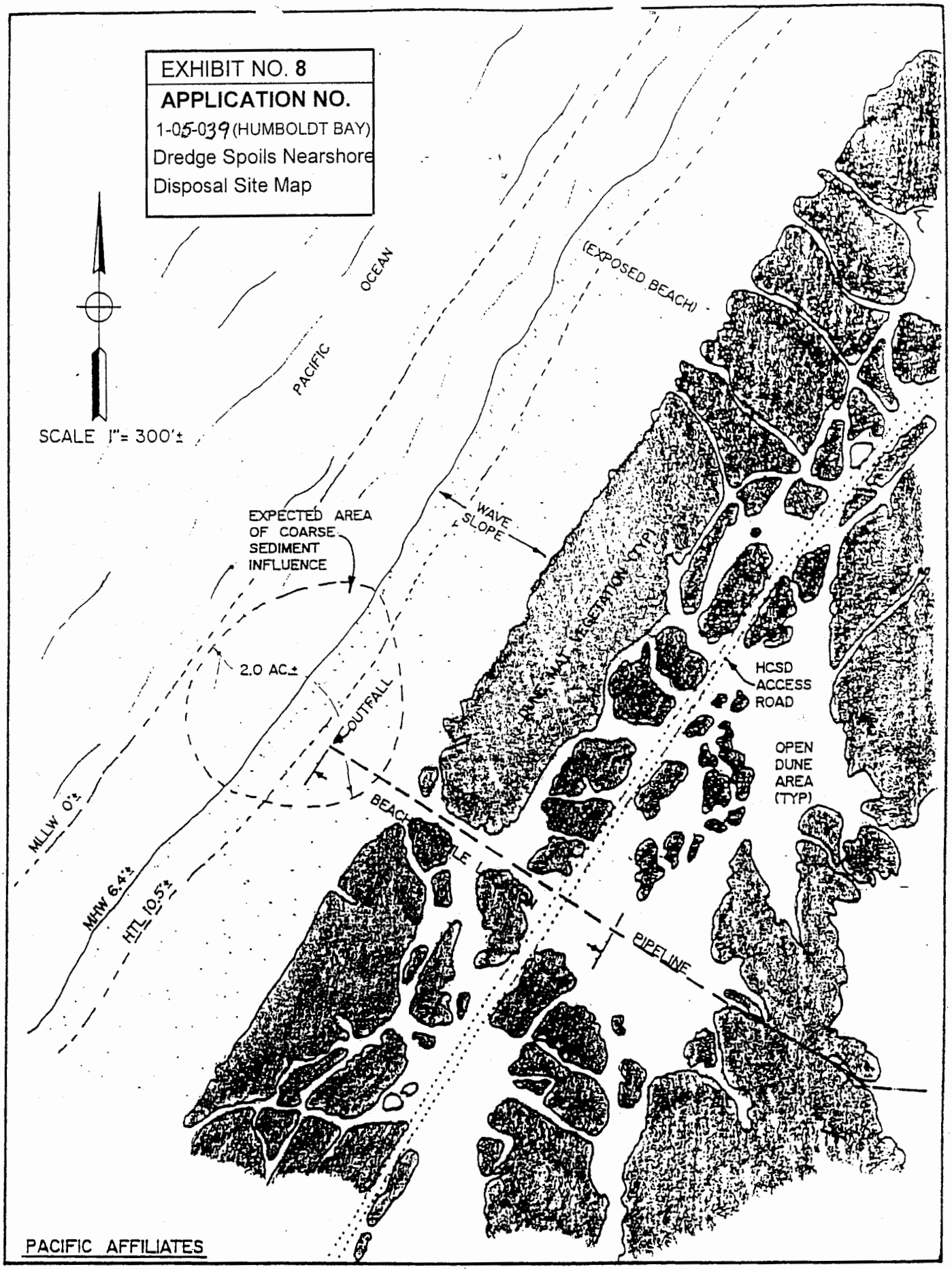
DISPOSAL ROUTE

CITY OF EUREKA & HUMBOLDT BAY HARBOR DISTRICT WATERFRONT FACILITIES MAINTENANCE DREDGING HUMBOLDT BAY, EUREKA INNER REACH CHANNEL

COUNTY OF: HUMBOLDT
STATE OF: CALIFORNIA

EXHIBIT NO. 7
APPLICATION NO.
1-05-039 (HUMBOLDT BAY)
Dredge Spoils Pipeline Route Map

PREPARED BY PACIFIC AFFILIATES



SAMOA BEACH SPOILS LINE OUTFALL SITE

CITY OF EUREKA & HUMBOLDT BAY HARBOR DISTRICT
COOPERATIVE MAINTENANCE DREDGING PROJECT